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How Blockchain Technology Could Improve Transparency and Reduce Corruption in the Banking System

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Abstract

Corruption and transparency: Corruption and absence of transparency have been thorny issues in the banking systems especially in the developing and fragile economies where the inadequacy of the institutions and the absence of supervision erode the public confidence and sustainability of the financial systems. A new digital technology called blockchain has come up and has the potential to solve such problems by radically transforming the way records of financial transactions are stored, checked, and tracked. This paper will discuss how blockchain technology can enhance transparency and curb corruption in the banking system through its centralized properties of decentralization, immutability and distributed consensus. The paper based on the applicable theoretical frameworks, such as Principal–Agency Theory and institutional governance theories, examines why and how blockchain can help curb discretionary authority, increase audit trail, improve regulatory supervision, and curtail fraud and embezzlement, insider abuse opportunities. There is a special focus on the situation in the developing and conflict-prone banking systems, and it is illustrated by the Democratic Republic of the Congo, where money dependency, poor supervision, and low confidence of the population contribute to the risks of corruption. The paper goes further to describe how blockchains are used in practice, including distributed ledgers, smart contracts, and blockchain-enabled KYC and AML systems, and as well as discusses challenges in implementing blockchains, in terms of infrastructure, regulation, and capacity building. On the whole, the research can add to the scholarly and policy discussion about financial governance by showing how blockchain innovation can yield transparency, accountability, and trust restoration in the banking sector and stating the way to introduce it in a responsible and context-aware way.

Keywords: Blockchain technology; Banking system; Transparency; Corruption reduction; Financial governance; Distributed ledger technology.

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Introduction

The effective operation of banking systems relies on transparency and integrity, but the ongoing corruption, fraud, system of opaque operations, and other aspects are threatening financial stability and trust among people especially in developing and emerging economies. Traditional banking systems are traditionally described to have centralized control, fragmented information systems and manual verification procedures, which expose them to insider abuse, financial manipulation and poor auditability. One of the reasons is that these issues have become even more complicated in recent years because the volume of transactions, cross-border financial flows, and the complexity of financial crimes increase, which reveals the shortcomings of traditional governance and oversight mechanisms (Autade, 2021; Bhatti, Shah, and Chaudhry, 2022).

The blockchain technology has been a disruptive digital innovation with great implications in financial governance. Blockchain can provide a new system of control over financial transactions, which can contribute to a decrease in information asymmetry and limit discretionary authority in banking activities by providing decentralized, immutable and transparent records. Recent research has focused on highlighting that the distributed ledger framework presented

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by blockchain improves the traceability, the data integrity, and the possibility to verify items in real-time, which makes it especially appropriate in direct relation to the need to combat fraud, corruption, and inefficiencies within banking systems (Sakho et al., 2019; Shrivastava and Ahmed, 2024). Due to that, blockchain is being considered not only as a means of technology but also as an institutional approach that can strengthen accountability and trust in financial systems.

Blockchain and its applicability in the context of anti-corruption in the banking sector are discussed extensively in modern literature. They have demonstrated that blockchain systems will contribute to the elimination of the most common channels of corruption, such as falsifications of the records, unauthorized modifications to transactions, and collusion between the bank personnel and third parties (Hota et al., 2024; Trequattrini et al., 2024). Blockchain reduces the possibility of concealing malpractices and enhances efficient internal and external audits with unmodifiable audit trails and shared ledgers that are available to different stakeholders (Kaplan, 2021; Parvez and Khan, 2025). These characteristics are in tandem with the international regulatory concerns that are being pursued to enhance transparency, money laundering, and financial integrity.

In addition, the blockchain together with additional supporting technologies such as artificial intelligence (AI) and regulatory technologies (RegTech) reinforces its potential usefulness in the field of transparency and corruption prevention as well. Ai analytics supported by a secure data platform through blockchain will have a high potential of improving anomaly detection, risk evaluation, and monitoring compliance in the banking sector (Rane, Choudhary, and Rane, 2023; Martinez, Magdalena, and Savitri, 2024). This convergence encourages more proactive and factual regulatory oversight particularly in extremely complex financial environments where most of the traditional controls are no longer adequate.

The application of blockchain in the banking industry has not been distributed equally with a significant distance between developed and developing financial industries. The structural constraints that are experienced in the emerging economies are poor regulatory frameworks, lack of digital infrastructure, and lack of institutional capacity wherein it not only exacerbates corruption risk but also makes technology adoption challenging (Sanka and Cheung, 2019; Hussain et al., 2024). Nevertheless, the new models of adoption also presuppose that context-dependent blockchain utilization can result in transparency, the reduction of fraud, and enhanced operational cost-effectiveness even in the condition of resources limitation (Begum, Munira, and Juthi, 2022; Kukman and Gričar, 2025).

It is against this context that this paper discusses how blockchain can enhance transparency in the banking system and minimize corruption. In the paper, the authors seek to examine the theoretical background, practical implementation, and governance consequences of blockchain implementation in the banking sector, specifically in its usage as an anti-corruption mechanism. The study would add to the current academic and policy debate on the role of the emergent digital technologies in enhancing financial governance and regaining citizens trust in banking systems by synthesizing current empirical and theoretical literature as well as positioning the analysis within the larger discourse on financial technology and institutional reform (Al Qudah, ALhaddad, and Elwaked, 2025).

Conceptual Framework and Literature Review

The section will constitute the conceptual underpinning of the research project and critically discuss the literature available on the subject of blockchain as an instrument of enhancing transparency and reducing corruption in the banking system. It systematizes theoretical information and empirical evidence to establish how the blockchain-based financial infrastructures can address the governance, information asymmetry, and integrity challenges in the banking industry with particular reference to emerging and developing markets.

Conceptual Framework

The theoretical framework of the proposed research is formulated on the correlation between the adoption of blockchain technology and the rise of the transparency, accountability, and the decrease of corruption in the banking system. Blockchain is represented as a socio-technical form of government, the primary features of which are the decentralization, immutability, traceability, and automated verification, which directly affect the institutional behavior and transactional integrity.

Centralized control systems, absence of transparency in the transaction processes, weak audit trail and over use of human discretion in traditional banking system are usually used to facilitate corruption. As the past studies claim, blockchain shifts all that to a number of nodes, distributing the control to them, offering permanent and unalterable records and making authentications to the authorized parties real-time (Autade, 2021; Sanka and Cheung, 2019). As a result, the fraud and embezzlement, insider and regulatory arbitrage risks are reduced to a minimum.

The independent variable, in this case, is the use of blockchain, and the dependent variables are the transparency of banking, reduction of fraud, and restoration of trust. The moderating variables that define the success of blockchain implementation are regulatory quality, institutional capacity, and digital infrastructure and governance preparedness (Hussain et al., 2024; Al Qudah et al., 2025). The framework in turn associates technological innovation with institutional reform in which anti-corruption potential of blockchain is streamlined at the point where there are appropriate regulatory and organizational environments where it can have impact.

Essentials of Blockchain technology.

This literature repeatedly singles out a number of principles underlying why blockchain is especially applicable in the governance of banking:

Decentralization

It will decentralize the process of transaction validation through a network, instead of being centralized to one authority, minimizing the chances of collusion and abuse of authority (Bhatti et al., 2022; Sanka and Cheung, 2019).

Immutability

Once the records have been made, the transactions in it can never be changed or removed, which creates trusted audit trails and deters fraudsters (Kaplan, 2021; Kukman and Gričar, 2025).

Transparency and traceability

On the one hand, the authorized stakeholders can monitor transaction histories in real time, which strengthens the control and responsibility (Shrivastava and Ahmed, 2024; Trequattrini et al., 2024).

Smart contract auto-automation

It entails a set of automated rules that code complies with, which minimizes human discretion in the compliance, settlement, and reporting process (Hota et al., 2024; Parvez and Khan, 2025).

All these aspects make blockchain an enhancing governance infrastructure, but not a financial technology, as such.

Empirical Literature on Blockchain in the Transparency of Banking and Anti-Corruption.

Empirical and review based studies have a high likelihood of improving transparency and reducing corruption in the financial system through blockchain. As Hussain et al. (2024) demonstrate, blockchain adoption models in the new financial markets would expose the adoption of the new financial products significantly and reduce fraud through the standardisation of the verification processes. Similarly, Hota et al (2024) also find that blockchain-banking reduces the risks of manipulation through elimination of manually kept records and through imposing compliance rules.

These are also buttressed by systematic reviews. The authors prove that blockchain technologies could be significant to resolve anti-corruption with the help of improving auditability and reducing information asymmetry between the principal and the agent (Trequattrini et al., 2024). Begum et al. (2022) note that blockchain has been exploited in security of banking and trade finance particularly, the detection of document forgery and funds duplication.

Another aspect of development that has been observed in recent studies is the combination of blockchain and artificial intelligence (AI). According to Martinez et al. (2024) and Rane et al. (2023), AI-powered analytics coupled with the static data formats of a blockchain have the potential to enhance fraud identification and forecast regulatory and fraud-related intelligence as well as fraud. This assimilation improves preventive actions against corruption, compared to corrective measures.

The materials devoted to the problem of system confidence and financial integrity indicate the beneficial impact of blockchain implementation on the rates of confidence in the banking business in society. According to Shrivastava and Ahmed (2024), transparent systems through blockchain have a greater degree of trust and validity in the eyes of the population, and Kaplan (2021) emphasizes that blockchain is crucial to modern auditing and even forensic accounting.

However, with all these benefits not blotted out, scholars caution that blockchain is a unilateral solution. According to Kukman and Gricar (2025) or Al Qudah et al. (2025), the keys to success are the governing systems, legal clarity, and the institutional capacity, particularly in the developing countries.

The Table 1 synthesizes major contributions from the literature and highlights their relevance to the present study.

Identified Research Gaps

Although the subject of blockchain and financial transparency is widely covered in the literature, there are still significant gaps. To begin with, much of the current studies have been focused on the economies of the developed world where little contextual analysis on weak and conflictual banking systems has been observed. Second, the technical efficiency in empirical studies is usually prioritized at the expense of institutional constraints, regulatory preparedness and governance dynamics in developing nations. Third, the anti-corruption functions of blockchain are not sufficiently implemented in the context of a wider range of financial governance systems.

This paper fills in these gaps by putting the adoption of blockchain into the institutional context of emerging banking systems and clearly connecting features of technology to the effects of transparency and reduction of corruption, which contributes not only to the theoretical but also to policy-relevant literature.

Theoretical Foundations

This section presents the theoretical framework of the discussion of how blockchain technology would help improve transparency and reduce corruption within the banking structure. It integrates governance theories, economics and technology in establishing how blockchain financial structures could decrease corruption risk, enhance accountability and rebuild trust in the banking institution, particularly in emerging and developing financial markets.

Table 1: Summary of Key Literature and Research Alignment

Author(s) & Year	*Focus Area*	*Key Findings*	*Relevance to Current Study*
Hussain et al. (2024)	Blockchain adoption models in emerging markets	Enhances transparency, reduces fraud, improves efficiency	Supports adoption framework for developing banking systems
Hota et al. (2024)	Blockchain and corruption mitigation in banking	Reduces manipulation and enforces compliance	Aligns with corruption reduction mechanisms
Trequattrini et al. (2024)	Systematic review of blockchain and anti-corruption	Improves auditability and accountability	Provides empirical grounding for governance impact
Martinez et al. (2024)	AI–blockchain integration	Enhances security and transaction transparency	Supports advanced monitoring and fraud detection
Kaplan (2021)	Blockchain in auditing	Strengthens audit trails and forensic oversight	Reinforces transparency and accountability claims
Sanka & Cheung (2019)	Blockchain in developing countries	Reduces corrupt practices through decentralization	Contextual relevance for fragile banking systems
Al Qudah et al. (2025)	FinTech, blockchain, and anti-corruption	Emphasizes regulatory and institutional readiness	Highlights moderating role of governance factors

Principal and Agency Theory and Information asymmetry in Banking.

Principal-Agency Theory can be used to explain corruption within the banking systems due to the absence of the alignment of interests and information asymmetry between the agents (bank managers, employees and intermediaries) and the principals (depositors, shareholders, regulators and the media). The conventional banking arrangement is often characterized by an increased level of information and discretion over transactions, records keeping and compliance processes that create opportunities of fraud, embezzlement and insider abuse. It is aggravated by the fact that in the developing economies, the regulatory supervision is rather weak or diffracted, which adds to such agency problems (Hota et al., 2024; Sanka and Cheung, 2019).

These agency problems will be addressed by the blockchain technology due to decentralization and sharing of the information control through decentralized and shared ledgers. In a blockchain, transactions become available to authorized parties effectively in real time and, thus, significantly minimize information asymmetry and the extent of opportunistic action by agents. The inability to manipulate the financial data by the post hoc is restricted by the unchangeability of the blockchain records that enhances accountability and raises the credibility of the banking transactions (Kaplan, 2021; Parvez and Khan, 2025). Principal-agent Blockchain may be considered a surveillance and enforcement system that will increase the consistency of the actions of agents with the interests of the principals by making them more transparent and more discretionary.

Reform of Governance through Digital Innovation and Institutional Theory

Institutional Theory lays emphasis on formal rules, norms and governance forms in shaping up the manner in which an organization acts out and its integrity. Weaknesses in terms of poor regulations, politicized supervision, ineffectiveness in most banking regimes and more so in emerging and weak states are fertile grounds on which corruption thrives. Such deficiencies in institutions adversely affect the sense of trust and foster opaque financial practices (Shrivastava and Ahmed, 2024; Trequattrini et al., 2024).

The idea of blockchain technology may be viewed as an institutional innovation through which the governance regulation is integrated into the technological context. Smart contracts, indicatively, can encode regulatory and contractual obligations in self-executing protocols with use of less regulation through human discretion and discourse. Compliance via institutionalization in code through blockchain can be used to create more consistency in the implementation of rules and reduce the likelihood of selective enforcement and rent-seeking behavior (Hussain et al., 2024; Bhatti et al., 2022). At the institutional level, blockchain is not an easy way to strengthen the resilience of the existing systems of governance, but on the contrary, reforms them through the introduction of technologically forced transparency and accountability schemes.

Models of Transparency and Restoration of Trust through Technology.

The models of transparency using technology suppose that digital systems can help to recover the trust in the institutions by increasing their visibility, traceability, and verifiability of transactions.Lack of trust is another characteristic of the banking system that gets corrupt, therefore the unclear processes and poor audit trails will not encourage the citizenry and their involvement in the financial system. Distributed ledger design of blockchain suggests that transaction records are irreversible, can be easily verified, and cannot be easily rewritten by a single entity, which contributes to the institution credibility (Autade, 2021; Kukman and Gricar, 2025).

Moreover, the effects of transparency can be enhanced with the help of blockchain and related technologies, artificial intelligence (AI) and regulatory technology (RegTech). Real-time fraud detection, anomaly detection, and predictive risk assessment can also be listed among the potential uses of blockchain data that are analyzed with the help of AI, and RegTech may be applied to optimize the process of automated reporting and regulatory compliance (Martinez et al., 2024; Rane et al., 2023; Al Qudah et al., 2025). The transparency is not simply informational but also operational according to the models of regaining trust by the application of the technology because the discretion of human beings in other dangerous financial practices is minimised by the use of the automated system.

Anti-Corruption and Financial Integrity Framework as a Blockchain

Combining such theoretical lenses, it is possible to introduce blockchain as an anti-corruption approach that can be deployed to resolve agency issues, institutional defects, and lack of trust simultaneously. The empirical and review-based research suggests that the adoption of blockchain in the banking sector increases the level of financial integrity through enhancing auditability, increasing the security of transactions, and minimizing the rate of fraud and financial scams (Begum et al., 2022; Sakho et al., 2019; Trequattrini et al., 2024). The blockchain-based systems, especially regarding emerging markets, are becoming considered as structural reform tools, instead of technological upgrades, which are incremental (Hussain et al., 2024; Sanka and Cheung, 2019).

Implications for the Banking System in Developing Economies

The theoretical foundations outlined above underscore the relevance of blockchain technology as a governance-enhancing instrument in corruption-prone banking systems. By aligning agent incentives, strengthening institutional enforcement, and restoring trust through technology-enabled transparency, blockchain offers a coherent theoretical basis for reforming banking governance in developing economies. These frameworks provide the analytical lens through which subsequent sections assess practical blockchain applications, implementation challenges, and policy implications for reducing corruption and improving transparency in the banking system.

Blockchain Applications in the Banking System

Blockchain technology provides a range of convenient applications that can radically change the way banking works by increasing the level of accountability, transparency, and minimizing corruption possibilities. Through the incorporation of credibility within the digital infrastructures, through blockchain-based banking systems, the reliance on discretionary human control, as well as the lack of transparency of the intermediaries, which is commonly abused in corrupt settings, is reduced. The section is a discussion of the significant blockchain applications in the banking system and how it can be applied towards the goals of transparency and anti-corruption.

Distributed Ledger Technology to Transparency and Traceability of Transactions

The fundamental structures of blockchain implementation in banking are the Distributed Ledger Technology (DLT), which allows the transactions to be shared among many authorised nodes and not stored in a single central database. This architecture will make transaction records transparent, time-stamped and verifiable by the appropriate stakeholders such as banks, auditors and regulators. As soon as they have been registered, it is impossible to make changes to the past, thereby minimizing the chances of information

Table 2: Theoretical Perspectives Linking Blockchain to Transparency and Corruption Reduction in Banking

Theoretical framework	*Core assumptions*	*Corruption problem addressed*	*Role of blockchain technology*	*Key supporting studies*
Principal–Agent Theory	Agents have more information and discretion than principals	Fraud, embezzlement, insider abuse	Reduces information asymmetry through shared, immutable ledgers and real-time visibility	Hota et al. (2024); Kaplan (2021); Parvez & Khan (2025)
Institutional Theory	Weak institutions enable opportunistic behavior	Selective enforcement, weak compliance, regulatory capture	Embeds governance rules via smart contracts and automated compliance	Hussain et al. (2024); Bhatti et al. (2022); Trequattrini et al. (2024)
Technology-Enabled Transparency Models	Transparency builds trust and accountability	Opaque transactions and weak audit trails	Provides immutable records, traceability, and auditability	Autade (2021); Kukman & Gričar (2025)
Integrated FinTech Governance Models	Digital integration enhances systemic integrity	Complex, technology-enabled financial crimes	Combines blockchain with AI and RegTech for monitoring and enforcement	Martinez et al. (2024); Rane et al. (2023); Al Qudah et al. (2025)

manipulation, record falsification, and concealment of illegal actions (Autade, 2021; Sakho et al., 2019).

DLT enhances traceability throughout the lifecycle of transactions in banking settings with a weak audit trail and inadequate information systems to support fraud and embezzlement. According to Hussain et al. (2024), the distributed ledger increases the level of operational transparency and minimizes informational asymmetry between financial institutions and the supervisory authorities, especially in new financial markets. Blockchain ensures financial integrity and promotes trust between parties in the system by providing easy access to transaction histories and making them accessible and auditable in near real time (Shrivastava and Ahmed, 2024).

Smart Contracts for Automated Compliance and Rule Enforcement

Smart contracts are computer code programs implemented in blockchain networks that automatically execute set rules and conditions verified when certain specified requirements are fulfilled. Smart contracts can also be used in the banking system in relation to loan payments, interbank settlements, trade finance, and payments of procurements. Smart contracts limit human discretion in compliance processes, where this factor is often a major cause of corruption and rent-seeking behavior (Hota et al., 2024; Bhatti et al., 2022).

Examples include loan funds, which may only be issued after they are able to determine verifiable requirements like collateral checks or regulator mandate and thus restrict chances of insider abuse or special treatments. According to Trequattrini et al. (2024), smart contracts are one of the aspects of anti-corruption because they provide the opportunity to implement transparency and accountability directly into transaction logic. They can also be used together with regulatory frameworks to greatly decrease delays, bribery risks and procedural manipulation in banking operations.

KYC and AML Systems Based on Blockchains.

Know Your Customer (KYC) and Anti-Money laundering (AML) compliance procedures are essential in the fight against financial crime and are usually compromised on the basis of ineffective data systems and poor inter-institutional coordination. KYC solutions based on blockchain enable the storage and sharing of verified customer identities with other qualified financial institutions, decreasing duplication and expenses and identity fraud possibilities (Begum et al., 2022; Parvez and Khan, 2025).

Having a unified source of confirmed identity information, blockchain increases the accuracy of customer due diligence and detection of suspicious transactions. Sanka and Cheung (2019) say that they are especially useful in developing nations, in which ineffective institutional capacities and manual checks introduce gaps in which money laundering and illegal financial transfer may occur. More effective monitoring of AML with the assistance of the blockchain and exchange of data also increases the regulatory control and cooperation between the countries (Kaplan, 2021).

Integration of Blockchain with Artificial Intelligence for Enhanced Oversight

Recent research points out synergistic incorporation of blockchain and artificial intelligence (AI) as an effective instrument of enhancing banking transparency and security.

In practice, AI algorithms can analyze data in blockchain transactions to determine suspicious patterns, fraud, and signal possible cases of corruption and corruption in real time. According to Kukman and Gričar (2025), this integration provides not only greater efficiency but also increased quality of governance because it allows supervision of activities but not enforcement in reaction to them. Al Qudah et al. (2025) also add that the meeting of blockchain, AI, and RegTech tools is one of the critical developments in financial governance and anti-corruption policies.

Real Time Auditing and Regulatory Oversight

It is also through the blockchain technology that a continuous and real-time audit can be conducted by opening up shared ledgers to regulators and other auditors authorized to access this data. Contrary to the standard periodic audits which are based on the ex-post reporting, blockchain-based systems provide supervisors with a chance to continue the monitoring of transactions instantly, so their corrupt activities have limited time to hide (Kaplan, 2021; Autade, 2021).

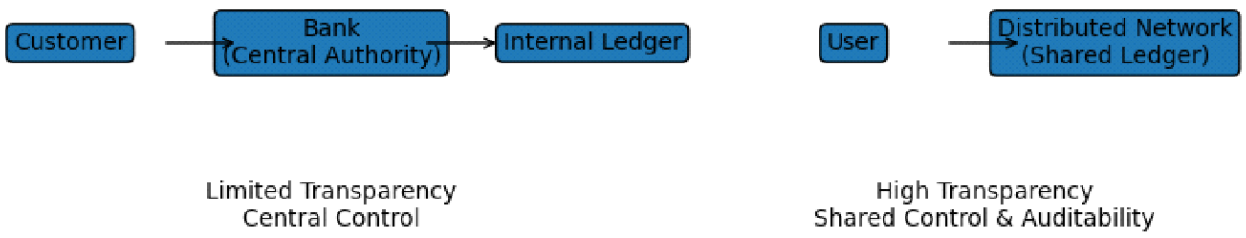

Fig 1: This diagram illustrates the structural difference between centralized banking systems, where transaction records and control are held by a single authority, and blockchain-based systems, where transactions are recorded on a shared ledger that enhances transparency, auditability, and distributed control

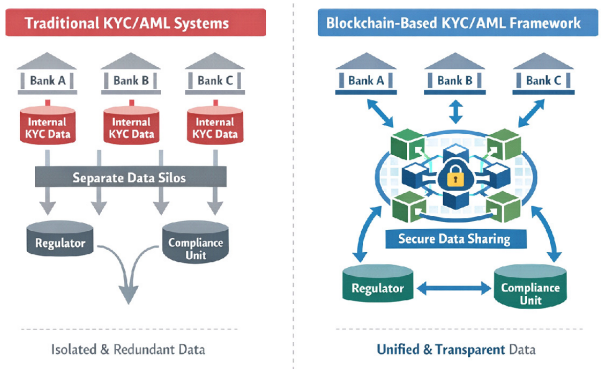

Fig 2: This diagram contrasts traditional siloed KYC/AML systems with a blockchain-enabled framework, highlighting how shared ledgers enable secure, transparent data exchange among banks, regulators, and compliance units while reducing duplication and improving regulatory oversight.

This ability improves regulatory performance especially in a weak enforcement and slow reporting environment. Blockchain helps enhance the accuracy of data, its timeliness, and accessibility, thereby enabling evidence-based supervision and enhancing instability towards the banking system (Shrivastava and Ahmed, 2024; Trequattrini et al., 2024).

Mechanisms Through Which Blockchain Reduces Corruption

The blockchain can be used to minimize corruption in the banking system by a combination of interconnected technical and institutional processes directly responding to the lack of transparency, the ability to discretion, and the poorly developed forms of accountability. Blockchain will limit the possibility of manipulation by redesigning the process of financial data recording, checking, and access, as well as enhancing stakeholder trust.

To begin with, blockchain removes the single points of controls through decentralization of record keeping and validation of transactions. With conventional banking, a small group of actors have too much discretionary control over centralized databases, which can heighten the chances of insider abuse, data manipulation and collusion. Blockchain decentralizes powers over a system of trusted actors so that no one goes unilaterally to make changes without agreement. This decentralization plays a major role in minimizing the possibility of corrupt practice and fraud, especially in the case of the environment where there is low institutional monitoring (Hussain et al., 2024; Hota et al., 2024; Sanka and Cheung, 2019).

Second, records in a blockchain are immutable, and this generates audit trails that are tamper-proof, and contribute to transparency and traceability. After a transaction is confirmed and inserted to the ledger, it cannot be changed or removed without being detected. This attribute enhances forensic accountability as it allows regulators, auditors and supervisors to trace financial flows in real time as well as in the retrospective. Non-editable records reduce the possibility of hiding unlawful operations, manipulating banking statements, and post hoc alteration of financial records, which are widespread forms of corruption in the banking system (Autade, 2021; Kaplan, 2021; Trequattrini et al., 2024).

Third, blockchain lowers the corruption rates by decreasing the human factor in risky financial procedures by automation. Self-executing agreements written on the blockchain (sometimes referred to as smart contracts) are explained as contracts that automatically implement predefined rules in the case of meeting criteria. It eliminates the use of manual approvals and discretionary decision making that can easily be used to perpetuate bribery, favoritism, or rent-seeking behavior. In banking tasks like loan issuance, settlement and compliance reporting, smart contracts facilitate procedural integrity and consistency, thus reducing opportunities of control that are corruptible (Sakho et al., 2019; Bhatti et al., 2022; Kukman & Gričar, 2025).

Fourth, blockchain would strengthen regulatory oversight and responsibility by providing access to validated financial information in real-time and shared. Distributed ledgers may be granted permissioned access to regulators and other supervisory authorities, allowing them to conduct monitoring as opposed to periodic and retrospective audits. This visibility in real time enhances early identification of anomalies, tightening of the leash on the prudential rules, and fighting with information asymmetry between the banks and the regulating bodies. Increased transparency also leads to institutional accountability because the violation of regulatory standards is more easily noticed and concealed (Shrivastava and Ahmed, 2024; Parvez and Khan, 2025).

Fifth, blockchain enhances anti-corruption activities in the provision of identity verification and compliance systems. Know Your Customer (KYC) and Anti-Money Laundering (AML) systems based on blockchain generate secure and verifiable and interoperable digital identities which curb identity fraud, shell accounts, and illegal financial transactions. Blockchain can be used to further boost anomaly identification and automate compliance when supported by artificial intelligence and RegTech applications, making the banking value chain more secure (Martinez et al., 2024; Rane et al., 2023; Al Qudah et al., 2025).

Lastly, blockchain promotes the restoration of trust and ethical conduct through enhancement of transparency due to increased cross-institutional transparency. Open access to sound financial information enhances confidence of people in banks and financial authorities especially in a corrupt society. Blockchain presents an anti-corrupt structural technology instead of an efficiency-saving device, as systematic reviews show that the cumulative impact of decentralization, immutability, automation, and transparency makes blockchain an anti-corrupt technology (Begum et al., 2022; Trequattrini et al., 2024).

These processes show that blockchain decreases corruption not by individual technical solutions, but by radically reforming the organization of governance, accountability and information in the banking system.

Case Context: Banking System Challenges in the Democratic Republic of the Congo

The Democratic Republic of the Congo (DRC) is an interesting case to analyze the issues of corruption and incompleteness in the banking systems. The financial sector of the DRC is a poorly institutionalized sector, inadequately regulated system, and widespread informal financial activities, all of which are associated with high levels of governance and operational risks. Such system-wide problems contribute to a lack of trust in the population, financial inclusion limitations, and susceptibility to fraud, embezzlement, and insider abuse (Hussain et al., 2024; Hota et al., 2024).

Systemic Issues with the DRC Banking Industry

Weak institutional capacity

The regulatory and supervisory frameworks of DRC are weak, and there is a lack of financial standards enforcement and monitoring banking activity. This is a weakness that creates the possibility of bias and corrupt activities (Shrivastava and Ahmed, 2024; Trequattrini et al., 2024).

Unemerged financial inclusion

A large part of the population is either not included in the formal banking structure, and it relies much more on the use of cash and informal financial networks. This diminishes financial transparency and complicates the process of following financial flows (Autade, 2021; Kukman and Gričar, 2025).

Corruption risk

Lack of proper audit trails, rough financial operations and insider abuse increase risks of fraud, embezzlement, and abuse of insiders. Banking corruption does not only compromise efficiency, but also the trust in the financial institutions by people (Parvez and Khan, 2025; Sanka and Cheung, 2019).

Low public trust

The prevalent view of corruption and secrecy prevents citizens using formal banking services, which limits the impact of regulatory intervention and financial policy (Kaplan, 2021; Bhatti et al., 2022).

Role of informal finance

The usage of cash-based operations and the use of informal money transfer systems results in a lack of transparency, as officials are unable to trace financial flows, and it is challenging to identify cases of corruption (Begum et al., 2022; Al Qudah et al., 2025).

The Table 3 summarizes the principal challenges in the DRC banking sector, alongside their implications for transparency and corruption.

Relevance to Blockchain Adoption

The systemic challenges of the DRC banking sector provide a critical rationale for exploring blockchain technology as a solution. By enabling immutable, tamper-proof ledgers, real-time monitoring, and automated compliance mechanisms, blockchain can directly address issues related to discretionary manipulation, poor auditability, and opacity in financial transactions (Hussain et al., 2024; Rane et al., 2023; Martinez et al., 2024). Furthermore, blockchain's potential to support secure digital identities and transparent transaction tracking can promote financial inclusion, rebuild public trust, and reduce corruption risks in both formal and informal banking channels (Shrivastava & Ahmed, 2024; Hota et al., 2024; Autade, 2021).

How Blockchain Innovation Could Address

Table 3: Key Banking Challenges and Implications

Challenge	*Description*	*Implications for Transparency and Corruption*
Weak Institutional Capacity	Limited regulatory oversight and enforcement	Increases discretionary power and opportunities for fraud and embezzlement
Limited Financial Inclusion	Majority of population relies on informal cash transactions	Reduces traceability of financial flows, fostering opacity
Corruption Risks	Fraud, embezzlement, and insider abuse prevalent	Erodes trust and undermines efficiency of banking operations
Low Public Trust	Citizens' lack of confidence in financial institutions	Discourages engagement with formal banking and reporting mechanisms
Informal Financial Networks	Cash-based and informal money transfer systems	Hinders transparency, auditability, and regulatory oversight
Weak Technological Adoption	Minimal integration of digital solutions for banking operations	Limits real-time monitoring, traceability, and automated compliance enforcement

Banking System Problems in the DRC

The Democratic Republic of the Congo (DRC) is a country with many issues in the banking sector such as poor institutional capacity, poor financial inclusion, deep-rooted corruption, and poor people's trust. Blockchain technology is potentially a way to curb such systemic problems by improving the transparency, safety, and effectiveness of financial transactions.

The implementation of blockchain-based payment and settlement systems is one of the main interventions since they may reduce the use of cash that can be easily misused and fraudulent transactions (Hussain, Babalola, Kokogho, and Odio, 2024; Hota et al., 2024). Using the distributed ledger technology, every transaction is stored in an unalterable and time-stamped ledger, which allows real-time validation and auditability, thus reducing the possibility of embezzlement and insider abuse (Shrivastava and Ahmed, 2024; Parvez and Khan, 2025).

The transparent monitoring of public funds, donor financing, and transactions within state-owned banks can also be done with the help of blockchain. As an example, smart contracts (self-executing agreements with rules that can be programmed) can be used to automate the process of disbursement under specified conditions to guarantee that resources are distributed and used in accordance with policy goals without discretionary intervention (Martinez, Magdalena, and Savitri, 2024; Kukman and Gričar, 2025). These mechanisms enhance accountability between the banks, regulators, and government agencies and lessen the likelihood of financial leakages and elite capture (Autade, 2021; Trequattrini, Palmaccio, Turco, and Manzari, 2024).

There is also another vital use in strengthening regulatory control. Using blockchain, regulators would have access to the real-time shared ledger, which can further be used to continually monitor the transactions and ensure compliance with the anti-money laundering (AML) and know-your-customer (KYC) regulations (Rane, Choudhary, and Rane, 2023; Bhatti, Shah, and Chuadhry, 2022). This disclosure can prevent corruption, as it will give their activity a higher chance of being detected and punished, which will lead to restoring trust in financial institutions (Kaplan, 2021; Sanka and Cheung, 2019).

Moreover, the blockchain technology has the capacity to enhance financial inclusion and trust through the ability to issue secure verifiable digital identities to people who are typically not covered by formal banking systems.Such digital identities facilitate access to banking, loans, and digital payment platforms, reducing dependence on informal cash-based systems that often operate outside regulatory oversight (Begum, Munira, & Juthi, 2022; Al Qudah, ALhaddad, & Khaled Elwaked, 2025). By integrating blockchain with artificial intelligence (AI) systems, banks can also enhance fraud detection and predictive risk analysis, reinforcing financial integrity and system-wide resilience (Martinez et al., 2024; Rane et al., 2023).

In sum, blockchain innovation offers a multifaceted solution to the DRC's banking system challenges. Through decentralized ledgers, smart contracts, real-time auditing, and secure digital identities, blockchain can enhance transparency, reduce corruption, strengthen regulatory oversight, and restore public trust. While adoption requires careful consideration of infrastructural, regulatory, and capacity-building constraints, the long-term potential of blockchain to transform the DRC's financial sector is substantial, offering a roadmap toward more accountable and inclusive banking practices (Hussain et al., 2024; Hota et al., 2024; Trequattrini et al., 2024).

Implementation Considerations and Challenges

Implementation of blockchain technology within banking systems, especially in developing and weak economies, should be done with a keen mind of some of the issues to implement. First, there is a major barrier towards infrastructure and digital preparedness. Poor internet connectivity, lack of updated equipment, and deficient digital infrastructure are common in many banking establishments in such countries as the Democratic Republic of the Congo and might deter the implementation of blockchain networks and distributed ledger technologies (Hussain, Babalola, Kokogho, and Ali, 2024).

Second, law and regulation as well as data protection issues should be taken care of. The decentralized and immutable design of blockchain tends to be incompatible with the current financial regulations, the law on data privacy, and the laws on national banking. Appropriate regulatory frameworks should be put in place to establish liability, to enforce compliance and to harmonize blockchain activities with anti-money laundering (AML) and Know Your Customer (KYC) standards (Trequattrini, Palmaccio, Turco, and Manzari, 2024; Parvez and Khan, 2025).

Third, regulators, banking professionals, and IT personnel require capacity-building requirements. Skilled experts and technical knowledge are required to ensure efficient and safe use of blockchain systems, smart contracts, and real-time auditing tools due to their complicated nature (Shrivastava and Ahmed, 2024; Kukman and Gričar, 2025). Devoid of efficient human resources, the institutions will face a threat of mismanagement, vulnerability of systems and inefficiency in using blockchain potential to facilitate transparency.

Fourth, technical barriers that can influence the blockchain implementation include scalability, energy usage, and governance. Latency and performance problems could occur if the transaction volumes are high, particularly in massive banking networks, whereas energy-consuming consensus mechanisms could cause high costs of operation and environmental impact, such as proof-of-work (Martinez, Magdalena, and Savitri, 2024; Rane, Choudhary, and Rane, 2023). Also, there must be transparency in the process of making decisions, resolving conflicts, and the involvement of stakeholders in permissioned blockchain networks to prevent the threat of centralization.

Lastly, it is hard to integrate with the current banking systems. Traditional infrastructures of payments and informal financial networks might not be easily interoperable with blockchain solutions, and that a slow integration strategy and pilot tests are necessary (Autade, 2021; Bhatti, Shah, and Chuadhry, 2022; Sanka and Cheung, 2019). The solution to these challenges will have to include a multi-layered initiative that will involve technological innovations and policy changes, stakeholder involvement, and capacity building.

Integration with existing banking systems remains a challenge. Legacy banking platforms, traditional payment infrastructures, and informal financial networks may resist interoperability with blockchain solutions, necessitating phased integration strategies and pilot testing (Autade, 2021; Bhatti, Shah, & Chuadhry, 2022; Sanka & Cheung, 2019). Addressing these challenges requires a coordinated approach that combines technological innovation with policy reform, stakeholder engagement, and capacity enhancement.

Overall, while blockchain holds significant promise for improving transparency and reducing corruption in banking systems, successful implementation depends on addressing infrastructural, regulatory, technical, and human capital constraints in a context-sensitive manner (Al Qudah, ALhaddad, & KHALED ELWAKED, 2025; Begum, Munira, & Juthi, 2022; Kaplan, 2021; Sakho, Jianbiao, Essaf, & Badiss, 2019).

Methodology

This study adopts a mixed-methods research design to comprehensively investigate how blockchain technology could improve transparency and reduce corruption in banking systems, with particular reference to developing and fragile economies such as the Democratic Republic of the Congo (DRC). The mixed-methods approach will allow combining the quantitative data on banking operations, transparency indicators, and corruption indexes with the qualitative information offered by expert interviews and case studies to obtain the holistic picture of blockchain adoption and its effect on governance, accountability, and financial integrity (Hussain et al., 2024; Hota et al., 2024; Trequattrini et al., 2024).

Research Design

- Quantitative Component: Statistical analysis of banking transparency indexes, frauds, financial reporting, and data related to blockchain pilot implementation to determine the measurable results.
- Comparative Case Studies: Analysis of blockchain application in the chosen developing countries to determine the best practices and the issue contextual to it, such as governance and technological preparedness (Autade, 2021; Shrivastava and Ahmed, 2024).

Data Sources

- Primary Data: Banking professionals, regulators and technology experts: Interviews, surveys of blockchain adoption readiness, and real-time transactional data of present pilot blockchain systems.
- Secondary Data: The academic journal articles, industry reports, governmental publications, reports of banking audits, and previous case study examples of blockchain and anti-corruption use in financial systems (Parvez and Khan, 2025; Bhatti et al., 2022; Begum et al., 2022).

Analytical Framework

The analysis is based on a triangulated analytic model that involves the combination of:

Quantitative evaluation of transparency improvements and reduction of fraud, descriptive and inferential statistics (Rane et al., 2023).

Qualitative interview data thematic coding to determine common patterns, difficulties, and perceived advantages of

Table 4: Proposed Methodological Steps

Step	*Description*	*Tools/Techniques*	*References*
1	Literature review and conceptual framework development	Systematic review of academic and industry publications	Hussain et al., 2024; Trequattrini et al., 2024
2	Quantitative data collection	Surveys, banking transparency indices, blockchain transaction logs	Parvez & Khan, 2025; Bhatti et al., 2022
3	Qualitative data collection	Semi-structured interviews, focus groups, policy document analysis	Autade, 2021; Shrivastava & Ahmed, 2024
4	Data analysis	Statistical analysis (SPSS, R), thematic coding (NVivo), comparative case analysis	Martinez et al., 2024; Kukman & Gričar, 2025
5	Validation	Triangulation of quantitative and qualitative results	Rane et al., 2023; Hota et al., 2024
6	Reporting and policy recommendation formulation	Synthesis of findings for academic and policy audiences	Al Qudah et al., 2025; Begum et al., 2022

blockchain adoption (Kaplan, 2021; Sanka and Cheung, 2019).

The comparison of case studies with each other to identify the contextual relevance and scalability of blockchain interventions (Al Qudah et al., 2025; Trequattrini et al., 2024).

Ethical Considerations

- Informed consent for all interview participants
- Confidentiality and anonymization of sensitive banking data
- Compliance with local and international data protection regulations

This methodology ensures a robust, evidence-based assessment of blockchain's potential to enhance transparency, improve financial integrity, and reduce corruption in banking systems while addressing contextual challenges unique to fragile economies (Sakho et al., 2019; Hota et al., 2024).

Conclusion

The blockchain technology has a disruptive potential of promoting transparency and curbing the aspect of corruption in the banking system especially in developing and crumbly economies with poor institutional structures and lax oversight, which have served to enhance the financial evils. With the help of the essential characteristics of decentralization, immutability, and distributed consensus, blockchain has the potential to reduce the risks associated with key corruption in the banking process (such as fraud, embezzlement, and discretion bending) on a functional level and enhance the auditability and accountability in the banking system (Hota et al., 2024; Hussain et al., 2024).

Empirical and theoretical sources indicate that blockchain-related applications, including distributed ledgers, smart contracts, and blockchain-enhanced KYC and AML systems, could bring major improvements in the area of traceability of transactions, automation of the process of compliance, and elimination of the risk of a human error or malpractice (Sakho et al., 2019; Parvez and Khan, 2025; Martinez et al., 2024). Additionally, blockchain with the use of innovative technologies, such as artificial intelligence, enhances the extent of security, predictive monitoring, and real-time supervision, which is a potent way of detecting and stopping financial anomalies (Rane et al., 2023; Kukman and Gričar, 2025).

In the case of developing countries like the Democratic Republic of the Congo, the blockchain can be used to address the systemic banking challenges since it can result in financial inclusion and the reduction of cash-based and informal transactions and the possibility to monitor a public fund and donor funding (Shrivastava and Ahmed, 2024; Sanka and Cheung, 2019). Moreover, with the introduction of blockchain, social trust in the financial institutions can be restored and, therefore, encourage more extensive changes in how the institutions are governed and increase the integrity of the institutions (Bhatti et al., 2022; Trequattrini et al., 2024).

Irrespective of this, infrastructural readiness, regulatory and legal limitations, energy usage, and capacity-building of actors should be put into careful consideration when implementing blockchain in the banking system practically (Autade, 2021; Al Qudah et al., 2025; Kaplan, 2021). The regulatory bodies and policymakers need to develop strategic road maps of integrating blockchain with the existing systems and ensure they are scalable, interoperable, and sustainable.

Blockchain technology presents an opportunity of providing a context-sensitive solution in increasing transparency, corruption containment, and institution of a stronger governance in banking systems. Its effective implementation, especially in the developing economies, requires a coordinated strategy comprising of regulatory reform, integration, and capacity building among the stakeholders, and eventually leading to robust, reliable, and responsible financial systems (Begum et al., 2022; Hota et al., 2024; Hussain et al., 2024).

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