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Blockchain-based financial reporting and corporate governance in Zimbabwean firms: Implications and Opportunities

Freedom Feya * and Fradreck Podzo

Reformed Church University.

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Abstract

The transformative possibilities of blockchain technology for corporate governance and financial reporting in Zimbabwean enterprises are investigated in this paper. Using a qualitative multiple case study approach, it examines the basic traits of blockchain and their importance in enhancing auditability, financial openness, and responsibility. The paper looks at the current state of affairs and continuous challenges in corporate governance and financial reporting in Zimbabwe, including issues with openness, confidence, and infrastructure limits. Important results show that the basic properties of blockchain—immutability and decentralisation—offer efficient answers to lower fraud, improve regulatory compliance, and maximise general operational efficiency. Still, significant issues particular to the Zimbabwean context—such as regulatory uncertainty, inadequate technological infrastructure, and limited human resources—must be addressed if successful application is to take place. The paper comes to the conclusion that blockchain can improve corporate governance, rebuild confidence, and create a more resilient financial system in Zimbabwe provided intentional adoption supported by strong legislative frameworks and targeted capacity building is undertaken.

Keywords: Blockchain; Financial Reporting; Corporate Governance; Zimbabwe; Transparency; Responsibility

1. Introduction

Building investor confidence, preserving market integrity, and supporting sustained organisational performance globally depends on strong financial reporting and effective corporate governance. The first Empirically linked with long-term sustainability and improved organisational performance are effective corporate governance procedures marked by openness, fairness, independence, and accountability. Any economy trying to attract investment and ensure efficient use of resources depends on these values. Global assessments show that blockchain could contribute over $1.7 trillion to global GDP by 2030, reshaping governance models, financial processes, and trust systems [39]. Blockchain technology has already been applied in various sectors beyond finance, including agriculture, logistics, and health, especially across African countries [19]. Still, Zimbabwe presents a unique and sophisticated political and financial scene. From 1998 to 2008, the nation went through a severe economic crisis and ongoing hyperinflation that fundamentally changed the financial reporting scene. Furthermore compromising the financial infrastructure was the notable loss of accounting experts during this period. The financial reporting system still needs major improvement even if the economy is in recovery phase to properly promote economic development and attract necessary investment.

1.1. Problem Statement

Within Zimbabwean companies, the complexity of financial reporting and corporate governance is deep and ingrained. Particularly in the public sector, a major obstacle still exists in the field of financial reporting concerning inadequate financial transparency and responsibility mechanisms [6].

* Corresponding author: Freedom Feya

The slow acceptance of international standards by Zimbabwe, notably the International Public Sector Accounting Standards (IPSAS), seriously compromises the quality of its financial reporting and the effectiveness of its government [6]. Further aggravating the slow rate of adoption are issues with capacity development, continuous governance concerns, and a major lack of the required funding for the effective application of IPSAS [6]. Furthermore impeding necessary improvements have been limited resources, a dearth of skilled people, and poor political commitment [6]. The nation's economic instability, marked by hyperinflation and devaluation of currencies, presents major difficulties in maintaining coherent financial documentation and correctly evaluating public assets and liabilities, therefore undermining the credibility of financial reports [11]. Effective financial data collecting, processing, and reporting is greatly hampered by outdated and disconnected financial management information systems as well as poor internet connectivity and little IT support [6]. Small and Medium-sized Enterprises (SMEs) in Zimbabwe, who significantly contribute to the GDP of the country, regularly find it difficult to produce consistent financial reports [44]. This restriction prevents their access to credit facilities resulting from a lack of knowledge and the supposed cost of professional accounting services. Many small and medium-sized businesses either rely on poorly qualified people or neglect to maintain sufficient accounting records, therefore compromising the accuracy of their financial data for important decision-making processes.

Regarding corporate governance, Zimbabwe has seen a lot of company collapses and closures mostly resulting from widespread governance policy violations [45]. The main problems identified are a clear lack of openness, justice, integrity, trust, and honesty inside business systems. Often distinguished by nepotism, political affiliations, and the marginalising of individuals who challenge ineptitude, criminal behaviour, or the theft of stakeholders' resources, the appointment of board members is of great importance [8]. Corruption is still a major problem, made more so by evident shortcomings in proactive regulatory control and insufficient actions taken against offenders by the pertinent authorities [8], [22]. Political meddling, maladministration, militarisation, corruption, and nepotism are among the several negative effects that state-owned companies—parastatals—show great sensitivity to [45]. Unbelievably, managers are increasingly stealing money for their own benefit [8]. Zimbabwe's position as one of the rare countries without a coherent national code of corporate governance aggravates the complexity of the matter. Rather, it functions inside a disconnected regulatory system combining the Companies Act, the Zimbabwe Stock Exchange (ZSE) Act, and several rules from different professional bodies [9, 46].

Against this background, blockchain technology seems to be a revolutionary development able to drastically change financial systems [2]. The transparent, distributed, unchangeable ledger offers a fresh approach for data management and transaction validation. Although the main benefits of blockchain are generally agreed upon, the specific consequences for addressing the ingrained, systemic problems of financial reporting and corporate governance in the unique socio-economic and legal environment of Zimbabwean businesses have yet not been fully investigated. This paper aims to solve this mismatch by providing a sophisticated analysis of blockchain's possibilities inside a developing nation struggling with significant political and economic obstacles.

1.2. Research Objectives

The primary objectives of this study are as follows:

- To analyse the current state and challenges of financial reporting and corporate governance in Zimbabwean firms.
- To explore the core features of blockchain technology and their relevance to financial reporting.
- To identify the potential implications of adopting blockchain-based financial reporting systems for corporate governance in Zimbabwean firms.

1.3. Significance of the Study

This study adds significantly to the present corpus of knowledge by offering a sophisticated analysis of blockchain opportunities in a developing nation confronting significant governance and economic constraints. The outcomes have the ability to affect company plans, policy development, and finally help to create a more safe and effective financial system for Zimbabwe [17].

The general economic crisis in Zimbabwe, marked by ongoing hyperinflation and devaluation of currency, seriously erodes trust in institutions and financial data [5]. Concurrently, public and investor confidence is further eroded by the widespread problems in corporate governance marked by a notable lack in openness, justice, integrity, and honesty. Under this framework, the basic qualities of blockchain—its unchangeable character, clarity, and protective mechanisms—transcend simple efficiency; they are rather important tools for restoring and maintaining confidence in financial data and corporate behaviour [10]. This suggests that in Zimbabwe specifically, blockchain could be a

necessary basis for building investor trust and facilitating a more broad economic recovery. Using blockchain inside this framework transcends simple technical implementation to become a basic socio-economic need for the stability and development of countries.

Furthermore, the difficulties seen in Zimbabwe—inadequate financial transparency, corruption, political intervention, and nepotism in board appointments—are not isolated events but rather very well rooted systematic issues [17]. Often unable to solve these major systemic problems are conventional, gradual changes. Acting as a distributed ledger technology (DLT), blockchain offers a complete solution by means of decentralisation of control, encouragement of transparency across a network, and creation of immutable data [15]. This implies that a thorough and coordinated application of blockchain technology in both public and private sectors could be a major driver for large-scale institutional reform, surpassing only improvements inside individual companies. Given the great likelihood of a significant ripple effect across the whole financial ecosystem, blockchain could help to enable a more basic reform of governance mechanisms.

2. Literature Review

2.1. Understanding Blockchain Technology

At its essence, blockchain technology is a distinct variant of Distributed Ledger Technology (DLT). DLT denotes the technological framework and protocols that enable concurrent access, verification, and modification of records within a networked database [16]. Blockchain systematically arranges data into sequentially connected blocks, each encompassing authenticated transactions, and these blocks are fortified by cryptographic methods [13]. This architecture guarantees that once a block is incorporated into the chain, its information cannot be modified without impacting all following blocks, so rendering it tamper-proof [13].

The effectiveness and revolutionary capacity of blockchain arise from its fundamental characteristics:

- **Decentralisation:** In contrast to conventional centralised systems governed by a singular entity, blockchain disseminates data throughout a network of numerous computers or "nodes" [3]. This eradicates singular points of control and failure, markedly diminishing the possibility of centralised manipulation. Transactions are authenticated by network participants instead of a single authority, promoting a more robust and reliable system [10].
- **Transparency**: All authorised members in a blockchain network possess permitted access to observe the ledger [2]. This guarantees transparency and a collective, accurate perspective of financial data and transactions as they transpire [10]. The capacity for all pertinent stakeholders to access identical information concurrently significantly improves accountability and diminishes the potential for concealed or unethical conduct [4].
- **Immutability**: A fundamental attribute of blockchain is that once a transaction or data is recorded and included into a block, it cannot be modified, tampered with, or removed [2]. This permanence is attained via cryptographic hashes that consecutively connect blocks. Any effort to alter a historical record would nullify the entire chain, rendering tampering evident and obstructing unauthorised modifications [12]. This functionality is essential for maintaining data integrity and preventing fraud [18].
- **Security:** Blockchain utilises sophisticated cryptographic methods to safeguard data, rendering it exceptionally resilient against cyber-attacks and fraudulent actions [3]. The distributed architecture necessitates that an attacker concurrently breach numerous copies of the ledger throughout the network, a computationally demanding and exceedingly unlikely endeavour for extensive, established networks [16].
- **Smart Contracts:** These are self-executing digital agreements recorded on a blockchain that automatically fulfil predetermined conditions without the necessity for middlemen [2]. This automation optimises multiple procedures, including supplier payments, tax calculations, and insurance claims, thereby enhancing efficiency and minimising manual errors and expenses [11].

These elements collectively create a strong technical basis, connecting each fundamental blockchain characteristic to its intrinsic advantages for data integrity, process automation, and trust. This fundamental comprehension is essential for later examining the ramifications of blockchain on financial reporting and corporate governance.

2.2. Financial Reporting and Corporate Governance Landscape in Zimbabwe

The financial system of Zimbabwe possesses a convoluted history. The existing regulatory and supervisory framework was predominantly inherited from the Rhodesian Government upon independence in 1980, with entities such as the

Reserve Bank of Zimbabwe, the Commissioner of Insurance and Pension Funds, and the Zimbabwe Stock Exchange acting as principal regulators [27]. The financial industry maintained relative stability into the 1990s. The Economic Structural Adjustment Programme (ESAP) launched in 1991 facilitated financial liberalisation and deregulation, culminating in a substantial rise in banking institutions from 1993 to 2003 [27]. This phase of swift growth was succeeded by the failure of numerous financial institutions after 2003, underscoring inherent vulnerabilities [27].

The present condition of financial reporting and corporate governance in Zimbabwe endures significant obstacles:

- **Economic Volatility**: Ongoing economic difficulties, including recurrent hyperinflation and the devaluation of the Zimbabwean dollar, have rendered it incredibly challenging to sustain reliable public financial records and appropriately assess assets and obligations [11]. This volatility immediately compromises the credibility of financial reporting and hampers the move to accrual-based accounting procedures, such as IPSAS, which necessitate stable economic conditions for precise measurement [6].
- **Regulatory and Standards Adoption:** Zimbabwe has been especially sluggish in implementing international accounting standards such as IPSAS, which hinders its financial reporting and governance [6]. Notwithstanding certain legislative initiatives, the nation is devoid of a cohesive national corporate governance code, depending instead on a disjointed array of regulations, including the Companies Act, the ZSE Act, and directives from numerous professional organisations [9]. Current regulatory agencies frequently lack the capability and authority to enforce compliance efficiently [6].
- **Capacity and Infrastructure Deficits:** A major obstacle is the acute deficiency of sufficiently skilled accounting professionals knowledgeable in international standards such as IPSAS [6]. The deficiency in human capital affects SMEs, which frequently lack the requisite qualified personnel for adequate financial accounting processes and are unable to finance professional accountants or auditors, resulting in inferior financial reports. Zimbabwe's public sector often utilises obsolete, disjointed financial management information systems, suffers from inadequate internet connectivity, and has restricted IT assistance, rendering it insufficient for contemporary financial reporting standards [6]. The nation also rates poorly in cybersecurity, exacerbating issues related to data integrity and financial management [6, 12].
- **Deficiencies in Governance**: Corruption and political intervention are entrenched problems that compromise good financial management in the public sector and business governance universally [8, 32]. Board nominations are frequently swayed by nepotism and political affiliations, resulting in the dismissal of those who contest misconduct. Widespread criminal abuse of office, misappropriation of stakeholders' finances, and a pervasive deficiency in integrity, trust, and honesty are evident. Parastatals face substantial issues, including maladministration, militarisation, corruption, and nepotism, since administrators sometimes exploit earnings for personal gain [7, 32]. The widespread absence of accountability and transparency fosters a climate in which even well-meaning changes, like the implementation of IPSAS, may be undermined or disregarded [6].

This comprehensive analysis of the Zimbabwean setting establishes a solid basis for comprehending why blockchain technology is not simply a theoretical improvement but a potentially transformative remedy for tackling these entrenched and complex issues.

2.3. Conceptual Framework: Blockchain's Role in Enhancing Corporate Governance through Financial Reporting in Zimbabwe

A conceptual framework is suggested to systematically analyse the transformative impact of blockchain technology on increasing corporate governance via enhanced financial reporting in Zimbabwean enterprises. This framework functions as a guide, depicting the anticipated connections between the intrinsic characteristics of blockchain technology, their direct influence on the quality of financial reporting, and the ensuing effects on several aspects of corporate governance within the distinct context of Zimbabwe [28].

The framework suggests that the fundamental characteristics of blockchain technology serve as independent variables affecting the quality of financial reporting, which subsequently mediates enhancements in corporate governance outcomes. Additionally, various contextual factors unique to Zimbabwe are recognised as moderating variables that may either promote or obstruct this process.

2.3.1. Conceptual Framework: Blockchain's role in corporate governance via financial reporting

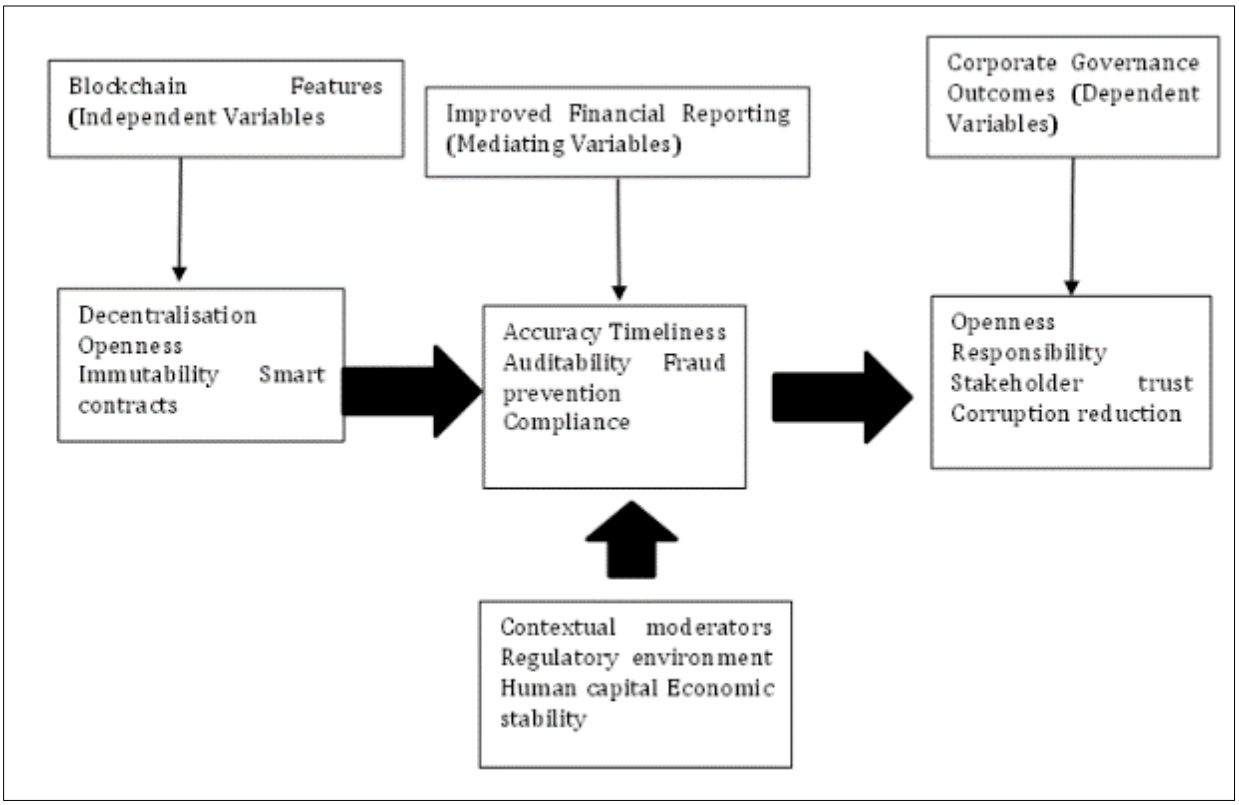

Figure 1 Conceptual Framework linking Blockchain and Corporate Governance

The conceptual framework offers a systematic perspective for examining how blockchain can resolve the difficulties faced by Zimbabwean enterprises, directing the ensuing discourse on implications, obstacles, and solutions. It elucidates the context and substantiates the study's importance by visually or vocally illustrating the anticipated correlations among variables [28].

The capacity of blockchain to diminish or eradicate the necessity for third-party intermediaries in transaction verification and to automate processes through smart contracts has profound consequences for the power dynamics within Zimbabwean enterprises [14]. The widespread problems of corruption and political meddling, frequently involving human agents taking advantage of opacity and discretion, might be directly confronted by blockchain's disintermediating potential [8]. By automating contracts and ensuring transparency inside a dispersed network, blockchain automatically reduces potential for rent-seeking behaviour and manipulation. This suggests that the technological features of blockchain could accidentally challenge established power structures and ingrained interests that flourish on the current opaque and laborious processes, hence generating resistance to its application. Blockchain's disruptive effect changes the relationships of power and responsibility inside companies, not only increases basic efficiency.

A key factor in the implementation of blockchain is the contradiction of immutability. Although immutability is a fundamental advantage that guarantees data integrity and deters fraud, it simultaneously poses a considerable challenge: the difficulty of rectifying errors once data has been inscribed in the blockchain [10]. In the event of an error or malicious entry, rectification becomes intricate, potentially resulting in misstatements in financial reporting that auditors may find challenging to detect and amend [18]. This presents a complex operational and legal problem, especially in a regulatory landscape that is constantly evolving and may lack clear mechanisms for addressing such irrevocable errors [3]. The advantages of improved reliability must be balanced against the complications imposed in mistake management and legal redress, requiring meticulous design and rigorous pre-validation processes for blockchain systems.

Table 1 Key Corporate Governance and Financial Reporting Challenges in Zimbabwean Firms

Category	**Specific Challenge**	**Relevant Information**	**Source Snippets**
Financial Reporting Challenges	Inadequate transparency & accountability mechanisms	Public sector accounting faces significant challenges, including inadequate financial financial openness and responsibility mechanisms.	[6]
	Slow adoption of international standards (e.g., IPSAS)	Zimbabwe has been slow to adopt IPSAS, hampering financial reporting and governance.	[6]
	Capacity building deficits & lack of investment in technology	Challenges implementing IPSAS include capacity building, governance, and investment in technology.	[6]
	Economic volatility (hyperinflation, currency depreciation)	Hyperinflation and depreciation of the Zimbabwean dollar make consistent financial records difficult, undermining reliability.	[5]
	Outdated and fragmented Financial Management Information Systems (FMIS)	Public sector often lacks technological infrastructure; outdated systems, poor internet, limited IT support hinder data management.	[6]
	Low quality of SME financial reporting & credit access issues	Most SMEs fail to produce standard financial reports, hindering credit access; often lack expertise and find preparation costly.	
Corporate Governance Challenges	Lack of transparency, fairness, integrity, trust, and honesty	Major corporate governance problems include lack of transparency, fairness, integrity, trust, and honesty.	
	Nepotism & political interference in board appointments	Appointment of board members characterized by nepotism, political connections, and purging of dissenters.	[8]
	Criminal abuse of office, misuse of stakeholders' funds, and corruption	Instances of criminal abuse of office, misuse of stakeholders' funds, and corruption are prevalent.	[17]
	Lack of action by responsible authorities & weak regulatory enforcement	Responsible authorities often fail to take action against offenders; regulatory bodies lack capacity/authority to enforce standards.	[17]
	Absence of a national corporate governance code	Zimbabwe remains among few countries without a national code of corporate governance.	[9]

Table 2 Blockchain Features and Their Benefits for Financial Reporting and Corporate Governance

Blockchain Feature	Benefit for Financial Reporting	Benefit for Corporate Governance	Source Snippets
Decentralization	Reduced single point of failure; enhanced data resilience; real-time recording.	Distributed control; reduced manipulation risk; fosters trust by enabling multiple stakeholders to access and verify data.	[3]
Transparency	Clear, accessible record of transactions; real-time data visibility; reduced fraud and errors.	Open documentation of decisions; reduced unethical behaviour; empowers stakeholders; ensures accountability.	[2]
Immutability	Tamper-proof records; data integrity; accurate audit trails; ensures reliability.	Permanent record of corporate actions; reduced fraud/manipulation; clear chain of accountability.	[2]
Security (Cryptography)	Protection against fraud/data breaches; secure transaction verification; tamper-proof records.	Safeguarding sensitive data; increased trust; difficult for malicious actors to alter data.	[3]
Smart Contracts	Automation of payments/agreements; reduced manual errors; streamlined processes (e.g., reconciliations, tax calculation).	Automated compliance checks; efficient governance procedures (e.g., shareholder votes, corporate resolutions); reduced human intervention.	[2]

3. Methodology

This paper investigated how blockchain-based financial reporting systems affected corporate governance in Zimbabwean businesses using a qualitative research approach anchored in an interpretivist paradigm. The exploratory nature of the research issue, which seeks to understand systemic governance and financial reporting challenges while evaluating the appropriateness of developing blockchain solutions within a multifarious socio-economic framework, drives the decision to adopt a qualitative methodology. .

3.1. Methodological Research

A multiple case study approach was used to enable a thorough knowledge of how blockchain technology could change governance and financial reporting in many sectors of Zimbabwe. Especially when the differences between the phenomenon and its surroundings are unclear, case studies provide a flexible yet methodical technique to explore events in real-world environments [28]. Given Zimbabwe's varied economic environment, which was marked by legislative fragmentation, infrastructure shortcomings, and different degrees of technological adoption, this design was seen suitable.

3.2. Sampling Techniques

Organisations and individuals with relevant knowledge in blockchain technologies, corporate governance practices, or financial reporting systems were found using purposeful sampling. The selection criteria covered private and public sector Zimbabwean businesses including SMEs, parastatals, and publicly traded companies. Recognised as key informants were senior accountants, IT officers, financial controllers, and corporate governance experts because of their important roles in decision-making on financial technologies and reporting standards [6].

Twelve companies in all were selected, at least one representative from each participating in semi-structured interviews. These companies were chosen because of their participation in IPSAS compliance systems, digital transformation initiatives, or prototype blockchain endeavours as well as their openness to provide insights.

3.3. Techniques for Data Gathering

Due to practical constraints, main data were acquired via semi-structured interviews conducted either in person or virtually. The interviews followed a topic framework with an eye towards blockchain understanding, perceived benefits

and risks, adoption readiness, legal and infrastructure challenges, corporate governance concerns. With permission, each interview was recorded.

Government policy documentation, corporate governance reports, financial records, IPSAS implementation [1] audits, and case studies on public blockchain use made up secondary data. These sources supported the contextual understanding of main responses [2][6] and helped triangulation.

3.4. Data Interpretation

Thematic analysis was used to assess qualitative data, following Braun and Clarke's (2006) six-step framework: familiarisation, coding, theme generation, reviewing themes, defining themes, and final reporting [47]. The NVivo program helped with coding, therefore facilitating effective organisation and pattern recognition across various data sources.

The conceptual framework helped to define the themes—transparent, decentralised, immutable, compliant with regulations, and investor confidence. Integrated were also emerging sub-themes such data privacy concerns and resistance to change. The study sought for consistency, deviations, and contextual elements influencing blockchain applicability and implications for governance.

3.5. Accuracy and Reliability

Data triangulation using numerous data sources and points of view helped to increase believability. Using member checking, first results were shown to a small group of respondents for validation and clarification. By providing thorough contextual information of every instance, to ensure transferability and allowed readers to evaluate relevance to similar environments.

Although the qualitative design limits generalisability, the study stresses depth over breadth to derive important conclusions on the governance change potential of blockchain in resource-limited economies.

3.6. Moral Concerns

Each participant completed informed consent forms outlining the goals of the study, confidentiality policies, and their right to withdraw at any point. Data were anonymised during transcribing and safely kept in encrypted digital formats, only available to the research team.

4. Results

4.1. Implications of Blockchain for Corporate Governance in Zimbabwean Firms

Blockchain technology's unique qualities offer great chances to solve the systematic problems in corporate governance and financial reporting among Zimbabwean companies. Making use of its basic features, blockchain might usher in a transforming era characterised by increased openness, responsibility, and efficiency.

4.1.1. Transparency and Responsibility Improved in Financial Reporting

Blockchain's unchangeable, distributed ledger ensures that every transaction is safely recorded and available to authorised users [2]. This natural architecture creates a "single source of truth," so hiding illegal behaviour or hidden financial situation becomes much more difficult [15]. This immediately addresses the broad problems of "lack of transparency, fairness, integrity, trust, and honesty," as well as the "insufficient financial openness and responsibility mechanisms" that have afflicted both public and commercial sectors in Zimbabwe [8]. By providing a clear, open, and verifiable record of all transactions, blockchain helps to trace financial history with until unheard-of simplicity, therefore building stakeholder confidence [2]. Rebuilding trust among shareholders, staff, and the broader public—who have seen several corporate governance abuses leading to company collapses—dependent on this ability [17]. The constant, shared ledger guarantees open recording of financial data and corporate choices, therefore limiting chances for unethical behaviour and allowing stakeholders to confirm the legality of board actions [20].

4.1.2. Improved Audibility and Crime Prevention

Blockchain's real-time audits help to greatly enhance the auditing process [10]. Auditors could certify and validate the integrity of financial data straight from the immutable ledger, therefore reducing reliance on centralised agencies and middlemen [10]. Preserving a real-time, unchangeable record of all transactions helps to optimise the previously labour-

intensive auditing and reconciliation procedures [13]. PwC's experience shows, for instance, a 90% reduction in manual reconciliation time using blockchain-based tools [31]. In a culture where financial manipulation and corruption are somewhat common, this competency is necessary [8]. Blockchain records' unchangeable features ensure data integrity, therefore greatly lowering the possibility of financial fraud or data leaks [3]. It ensures that business activities like financial transactions and board resolutions are permanently recorded and easily traceable, therefore creating a clear responsibility structure that deters dishonesty and poor management [3]. This shift from reactive fraud detection to proactive prevention and fast anomaly identification fundamentally changes corporate control and might help to reduce the frequency of governance mistakes prior to their escalation.

4.1.3. Effective Control and Compliance of Regulations

Blockchain offers good means to improve regulatory compliance. Smart contracts help to automate compliance inspections, therefore reducing the need for human involvement and the compliance expenses [2]. The solution guarantees that data entered stays unmodified, therefore improving the quality and completeness of compliance records. This function guarantees accurate reporting and helps to remove erroneous entries [23]. This immediately tackles the larger need for more responsibility and openness as well as the difficulties experienced by Zimbabwean officials in implementing international standards such IPSAS [6]. Blockchain improves control by means of a common platform with real-time transparency and transaction information access [12, 33]. This distributed approach helps to monitor and enforce compliance across several stakeholders, therefore reducing the need for thorough manual control [12]. Blockchain's unchangeable audit trails help authorities to have more faith in organisational reporting, so promoting more cooperation between companies using blockchain technologies and regulatory authorities [21]. This could lead to a shift to outcome-based rules using real-time data analytics from permissioned blockchains to evaluate operational fit with legislative goals [23]. Blockchain also improves ESG reporting by enabling real-time, verifiable tracking of sustainability data across supply chains [36]

4.1.4. Improving cost and efficiency Financial Operations Minimisation

Blockchain instantly solves inefficiencies in current financial systems through removing middlemen, automating arduous tasks like reconciliation and providing a safe transaction processing method [14]. Faster clearing and settlement processes follow from the instantaneous documentation and validation of transactions, therefore reducing delays and errors [11]. By starting automatic transactions following the completion of specified conditions, smart contracts can optimise complex processes including lease agreements, insurance claims, and supplier payments [11]. Apart from saving time, this automation reduces administrative load and transaction costs [14, 35]. Zimbabwean businesses operating in a difficult economic environment characterised by limited financial resources, fourteen efficiency gains are absolutely necessary [5]. The reduction in physical effort and associated mistakes can free necessary resources for more strategic projects [23]. Blockchain technology has the potential to automate many operations, so making compliance more affordable and realistic. This is especially helpful for SMEs, who regularly face difficulties with the expenses and knowledge required for the preparation of standard financial statements.

4.1.5. Implications for Investor Confidence and Stakeholder Trust

Blockchain's inherent openness, immutability, and security help greatly inspire confidence among all participants—including legislators and financiers [2]. Investor confidence is significantly shaped by the strength of internal control systems and audit oversight, which are usually poorly executed in Zimbabwean firms [40]. By means of an open view of transaction histories and asset ownership, it offers investors unmatched clarity and security, therefore greatly reducing the danger of fraud and improving investor confidence [12]. This immediately addresses the "lack of trust" acknowledged as a major corporate governance challenge in Zimbabwe and the general national purpose to "attract investment" [17]. Companies with better corporate governance—made possible by the verifiable and reliable qualities of blockchain-based financial reporting—can guarantee higher returns for shareholders and lower investment risk [30]. Studies show that those who follow strict governance standards are likely to pay more for shares of companies [30]. In line with regional studies, blockchain is increasingly seen as a tool for mitigating public sector corruption and improving institutional trust [29, 37]. Therefore, the capacity of blockchain to improve the financial reporting system could be crucial in promoting economic development and luring the foreign direct investment necessary for national rehabilitation. Blockchain thus develops into a strategic tool for national economic regeneration instead of only a means of corporate efficiency improvement.

Table 3 Blockchain's Potential to Address Zimbabwean Corporate Governance Challenges

Zimbabwean Challenge (from Table 1)	Blockchain Solution	Expected Impact on Corporate Governance	Source Snippets
Lack of Transparency & Accountability [8]	Immutable, shared ledger for real-time transaction visibility and decision recording.	Increased corporate transparency; reduced hidden activities; enhanced trust among stakeholders; clear audit trails of decisions.	[2]
Corruption & Misuse of Funds [8]	Tamper-proof records; automated compliance checks via smart contracts; traceable audit trails of all corporate actions.	Significantly reduced opportunities for fraud and mismanagement; clearer accountability; deterrence against illicit activities.	[3]
Outdated Systems & Inefficiency [6]	Automation via smart contracts; streamlined processes by removing intermediaries; real-time recording and verification.	Improved operational efficiency; faster financial reporting; reduced costs; reallocation of resources to strategic activities.	[10]
Low Investor Confidence	Enhanced data security; verifiable records; transparent asset ownership; immutable transaction histories.	Increased investor confidence; improved perception of firm reliability and integrity; potential for increased investment and economic growth.	[2]
Weak Regulatory Enforcement / Lack of National Code [6]	Real-time data for regulators; automated compliance reporting; immutable audit trails for verification.	Streamlined regulatory oversight; increased trust with regulators; potential for more proactive, outcome-based regulations.	[18]

4.2. Challenges and Considerations for Blockchain Adoption in Zimbabwe

Although blockchain technology has great promise, its application in Zimbabwe runs across a complex collection of issues that call for careful analysis and strategic planning. These challenges cover technical, legal, human, and socioeconomic spheres as well as legislative ones.

4.2.1. Infrastructure and Technological Challenges

Implementation of blockchain technology is seriously hampered by Zimbabwe's present technological scene. The country ranks poorly in cybersecurity, indicating a basic weakness in digital security that, if not adequately fixed, might compromise blockchain systems [12]. Furthermore, especially in the public sector, the predominance of outdated systems, poor internet connectivity, and limited IT support points to the mostly lacking modern, integrated financial management information systems required for effective blockchain implementation [34]. Blockchain technology integration into current, often disconnected accounting systems is a difficult chore requiring significant changes and maybe high integration and deployment costs [2]. Fragmentation and inadequate integration of blockchain technologies into public finance systems define Zimbabwe's e-governance changes [24]. Blockchain naturally offers openness, but concerns about data privacy violations and private key security remain [34]. A major technical problem requiring great talents and infrastructure is ensuring the scalability of blockchain systems while balancing transparency and confidentiality, perhaps using hybrid blockchain models. Successful blockchain integration in public sectors requires technical readiness and interagency cooperation [38, 41]

4.2.2. Legal and Regulatory Conflicts

The present legal uncertainty is a major barrier to blockchain acceptance [3]. Lack of a thorough national code of corporate governance in Zimbabwe makes it difficult for blockchain-based governance mechanisms to be incorporated since there is no shared standard for matching new technology architectures [9]. Though beneficial for integrity, the unchangeable nature of blockchain records creates a unique legal problem: it is quite difficult to correct mistakes or malicious entries after recording [18]. This poses possible risks for auditors and creates complex issues about legal remedies in cases of permanently noted misstatements in the ledger [31]. Lack of a comprehensive legal framework for blockchain audits aggravates these weaknesses [31]. Moreover, the different laws across different countries can impede cross-border transactions and the broad use of blockchain technologies for businesses engaged in global trade [11]. This presents a "chicken-or-egg" paradox whereby the absence of a clear regulatory framework may impede innovation

or lead to disconnected, unstandardised, and maybe dangerous blockchain implementations, therefore aggravating current governance problems rather than fixing them [43].

4.2.3. Human Capital and Needs for Development of Capacity

The efficient application of blockchain technology depends mostly on the presence of a qualified staff, which presents a major challenge in Zimbabwe. Along with a general lack of qualified personnel in financial accounting processes, particularly within SMEs, there is a notable dearth of suitably qualified accounting professionals aware about modern international standards including IPSAS [16]. The country's accounting profession still lacks institutional support structures for continuous blockchain and digital finance training [25]. Using blockchain calls not just for learning new technological skills but also a basic change in corporate culture [10]. Auditors are progressively expected to have a strong grasp of basic auditing concepts, sophisticated computer skills, and thorough blockchain knowledge—a skill set lacking most professionals at the moment [31]. Dealing with this skill gap calls for large training current staff member financial commitment as well as hiring new personnel [6]. The limited financial resources of Zimbabwe make it quite difficult to allocate enough money for these necessary developments [6]. Moreover, limited digital finance literacy is a major barrier to blockchain adoption, particularly in Zimbabwe's public sector institutions [26]

4.2.4. Reducing Economic Volatility and Restoring Trust Deficit

Hyperinflation and currency devaluation among other ongoing economic upheavals in Zimbabwe compromise the trustworthiness of financial reporting and impede the shift to new accounting methods [5]. Although blockchain has been suggested as a possible cure for financial crises, its effectiveness in this situation depends on the application of necessary criteria, including strict control and enough infrastructure [34]. Apart from technical and financial challenges, a more major issue is addressing the general lack of faith and trust in the government and institutions resulting from extensive corruption and political intervention [8]. Blockchain can build trust in data, but general adoption and acceptance of the technology may be hampered by existing institutional cynicism regardless of its inherent qualities. This suggests that rather than technological or financial, sociopolitical and cultural factors could be the main challenges to blockchain acceptance in Zimbabwe. Blockchain's inherent openness and immutability could directly challenge established corrupt practices and power systems, therefore generating hostility from those who gain from the current opaque system. Thus, good implementation calls for not only technical answers but also strong political will and a major culture change towards openness and responsibility [42].

5. Recommendations and Future Research Directions

5.1. Suggestions for Governmental and Regulatory Authority

Policymakers and the government must act in concert if we are to take full advantage of blockchain technologies in enhancing corporate governance and financial reporting in Zimbabwe:

Develop a Comprehensive Regulatory Framework: Stress the development of clear, adaptable legal and regulatory frameworks specifically for blockchain technology in corporate governance and financial reporting. While being painstakingly tailored to the particular local environment, this framework must include worldwide best practices and solve issues including data ownership, enforceability of smart contracts, and the legal consequences of immutability [3].

Establish a coherent national corporate governance code: speed its development and application. This legislation would set a consistent benchmark for all businesses, therefore facilitating the seamless integration of blockchain ideas and techniques across the corporate sector [9].

Invest in Digital Infrastructure: Stress major national investments in strong, safe, and generally accessible digital infrastructure. This covers improving internet connectivity, increasing broadband availability, and bolstering cybersecurity policies to create an environment fit for significant blockchain deployment [6].

Support pilot initiatives: Support and enable pilot projects for blockchain application in the public and private sectors actively. These programs can be necessary testbeds to show specific benefits, bring out useful challenges, and support local technological expertise and assurance.

5.2. Practical Recommendations for Zimbabwean Businesses

Zimbabwean companies hoping to use blockchain technology should use a deliberate and gradual approach:

- Strategic Adoption: Companies should methodically find specific areas where blockchain might significantly enhance their present operations. This could call for focussing on supply chain transparency, fraud prevention, audit efficiency improvement, or automated standard financial processes [11].
- Training and Capability Development: Invest in training present staff members aggressively to acquire critical blockchain, cybersecurity, and advanced accounting skills. Companies should simultaneously fill the current skill gap by recruiting fresh talent with specific knowledge in these fields [6].
- Collaboration: Cooperation should include academic institutions, fintech enterprises both domestically and abroad, and aggressive involvement of IT experts. Specialised knowledge may be accessed through partnerships; tailored blockchain solutions can be explored; and technological complexity and integration issues can be helped to be resolved [11].
- Phased Implementation: Rather than going for a total overhaul, companies should integrate blockchains gradually. Starting with simpler procedures or specific departmental responsibilities helps learning, adaptability, and the proving of success before more general application throughout the company.

5.3. Suggestions for Future Academic Research

The analysis of blockchain's consequences in the Zimbabwean setting offers several chances for next academic research.

- Empirical Studies: Perform thorough empirical research to quantitatively evaluate the effect of blockchain adoption on important performance indicators like financial reporting quality, corporate governance measures (e.g., board independence, shareholder involvement), and general business performance in Zimbabwean companies.
- Examining sectors specifically: Research the effects of blockchain technology in Zimbabwe holistically, with an eye towards sectors. Specialised research can provide more thorough and useful insights considering the particular operational and governance difficulties prevalent in sectors as manufacturing, mining, or some financial services.
- Comparative Studies: Perform comparative studies with those countries who have applied blockchain technology in their financial sectors. This study can highlight different difficulties faced in like situations, offer insightful analysis, and point out relevant best practices.
- Socio-Political Impact: Analyse the intricate sociopolitical variables connected to blockchain acceptance in Zimbabwe. This entails looking at possible resistance from established vested interests that benefit from present opaque institutions as well as evaluating blockchain's larger capacity as a driver of institutional reform and changes in power relations.

6. Conclusion

This paper presents a unique, thorough analysis of blockchain's ability to transform corporate governance and financial reporting in an African nation still developing. Though blockchain uses are being explored worldwide, there is a dearth of research offering combined perspectives that take institutional limits and sociopolitical settings into account for countries like Zimbabwe.

Zimbabwean businesses have significant and intricate challenges in financial reporting and corporate governance, characterised by a lack of transparency, accountability, and a pervasive deficit of confidence. These challenges are deeply rooted in economic instability, infrastructural limitations, human capital shortfalls, and systemic governance failures. This study demonstrates that blockchain technology provides a feasible answer to these enduring challenges, establishing a robust foundation for enhanced transparency, accountability, auditability, and efficiency in financial operations. The essential attributes of immutability, decentralisation, and smart contract programmability proficiently resolve several systemic issues, such as fraud, mismanagement, and reporting delays.

The effective execution of blockchain relies on overcoming substantial challenges. This involves addressing legal ambiguity, correcting major infrastructural deficits, developing essential human capital through specialised training, and confronting deep socio-political obstacles stemming from existing power relations and institutional distrust. The analysis underscores that blockchain is not merely a technological improvement but a potential catalyst for substantial institutional transformation. Its execution may re-establish trust among stakeholders, draw vital investment, and foster a more robust, transparent, and accountable business landscape in Zimbabwe. Recognising this potential requires a coordinated, multi-stakeholder endeavour that encompasses proactive policy development, strategic corporate implementation, and continuous academic research to guide the process.

Compliance with ethical standards

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Disclosure of conflict of interest

The authors declare no conflict of interest.

Statement of informed consent

All subjects gave their informed consent for inclusion before they participated in the study.

Author Contributions

Conceptualization, F.F. and F.P. Methodology, F.F. and F.P. Formal Analysis, F.F. and F.P. Investigation. F.F and F.P. Resources, F.F. and F.P. Original Draft Preparation, F.F. Writing, F.F and F.P. Review & Editing, F.F and F.P. Visualization, F.F.

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Data Availability Statement

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