

Exploring Blockchain Technology Adoption for Tax Compliance in Zimbabwean Retail Sector: Opportunities, Challenges and Policy Implications

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ABSTRACT

As technological advancements reshape industries particularly in emerging economies, embracing novel technologies such as blockchain to enhance tax compliance is crucial for national revenue generation. This study sought to explore the potential opportunities and challenges of adopting blockchain technology for tax compliance in Zimbabwe's retail sector. Grounded in the Stakeholder theory and Technology Acceptance Model, the study adopted the interpretivist philosophy. A qualitative research approach and an exploratory research design were used. Semi-structured interviews were conducted with thirteen (13) key participants purposively selected from Harare CBD. The participants included retail managers, internal auditors, IT/data experts and tax officials. The results revealed that current tax compliance practices are perceived as mixed where both manual verifications and automated systems are used. The participants highlighted that they face tax compliance hurdles such as complexity of tax regulations and lack of staff competence in tax matters. Participants expressed optimism about blockchain's potential to improve transparency, enhancing auditing, reduce fraud and streamlining processes. However, challenges such as high implementation costs, regulatory uncertainties and resistance to change were cited as key adoption barriers. A strategic framework for adoption and integration of blockchain technology and artificial intelligence (AI) was developed. Recommendations for the retailers include adopting a phased implementation strategy, fostering collaborations with technology providers and enhancing leadership support to cultivate a culture of compliance.

Key words: Blockchain technology, Tax Compliance, Smart Contracts, Auditing, retail sector, Zimbabwe

INTRODUCTION

The rapid digitalisation of the global economy has fundamentally transformed the landscape of tax administration which necessitates a shift from traditional manual processes to more sophisticated, digital-first models (Post & Cipollini, 2022). Across the globe, tax authorities are struggling to keep pace with the complexities of cross-border transactions, digital payments and decentralised platforms which fuel tax evasion, information asymmetry and high administrative costs (Ariyibi et al., 2024). In response, blockchain technology a decentralised, immutable and transparent ledger system has emerged as a game changer that can significantly enhance tax compliance and accountability (Ariyibi et al., 2024; Moradi, 2025; Sarker, 2025). With the technology providing a secure and immutable transaction record, the chances of tax fraud and mistakes are greatly diminished (Perera & Abeygunasekera, 2022; Lombardi et al., 2022). This is accomplished via sophisticated encryption and the consensus mechanism built into blockchain technology which guarantees that every entry is authenticated and cannot be altered once it has been recorded (Kao & Tsay, 2023).

A growing body of evidence suggests that many countries across the globe are embracing blockchain technology to enhance their tax compliance practices. Nations such as the US and China are leading this technological evolution, pioneering blockchain research and implementation in tax governance (Bernardino et al. 2022; Zhang, 2025). According to Xu and Zhang (2022), China's tax administration uses blockchain since the early 2010s and the technology provides promising solution to tax administration and compliance challenges. Some countries in Europe including Portugal, France, Lithuania, Luxembourg, Norway, Poland and Austria have already implemented the Standard Audit File for Tax (SAF-T). Similarly, the UK Tax Office has been working on using this technology in the tax system since the beginning of 2020 while Italy introduced the e-invoice tax reporting regime in 2017 to speed up reporting and reduce fraud (Yayman, 2021). In Africa, Manani and Mose (2024) submit that the distributed ledger technology is utilised in Kenyan tax administration processes. Research by Celestin and Gidisu (2025) suggests that the technology is used for tax administration in Ghana and it improves tax performance in the country.

Despite the critical role of taxation as the most reliable mechanism for collecting domestic revenue in Zimbabwe, the nation continues to struggle with pervasive tax non-compliance by the retail and informal sectors (Zhou & Madhikeni, 2013). The retail sector is the heartbeat of Zimbabwe's economy, yet it remains one of the most susceptible to tax non-compliance due to the sheer volume of transactions and the complexity of tax regulations (Wadesango et al., 2020; Muposhi, 2020). Other scholars argue that compliance morale is significantly undermined by a lack of trust in the revenue authority and perceptions of the misuse of public funds by authorities (Ngwenya et al., 2014; Zivanai et al., 2016). While the introduction of electronic filing system, the Tax and Revenue Management System (TaRMS) by ZIMRA was intended to streamline processes, its underutilisation combined with weak administrative follow-up and ineffective audit strategies has allowed revenue leakage to persist (Karuma et al., 2023; Sifile et al., 2018). Consequently, this massive compliance gap shrinks the national tax base and severely limits the government's capacity to fund essential public infrastructure and economic development initiatives.

While emerging technologies like blockchain and artificial intelligence offer transformative solutions to tax compliance challenges, their integration into tax administration in Africa remains uneven. Blockchain has the potential to mitigate information asymmetry and tax fraud (Böser et al., 2019; Ali et al., 2020). Nonetheless, a notable paradox exists. Despite the general trend towards global adoption, African tax regimes have been slow to internalise these emerging innovations (Lombardi et al., 2022; Karuma et al., 2023). In the context of Zimbabwe, the impact of blockchain remains significantly under-researched. Existing scholarship in the region has primarily focused on applications within fintech and agriculture, leaving a critical gap regarding tax administration. Apart from research by Karuma et al. (2023) on how blockchain could be used to enhance VAT administration in Zimbabwe, no other scholars have attempted to investigate the potential of a blockchain-based tax compliance system within the Zimbabwean retail fiscal landscape. This study sought to address this empirical gap by exploring the opportunities and challenges of integrating blockchain into retail tax administration systems in Zimbabwe. To accomplish this goal, the study was guided by the following objectives;

- To assess the current state of tax compliance by retailers in Zimbabwe.
- To examine the potential benefits of adopting blockchain technology in enhancing tax compliance in the retail sector in Zimbabwe.
- To explore the challenges of implementing blockchain technology within the retail tax compliance framework.

The study provides context specific solutions to the tax compliance problem, a challenge which persists in the Zimbabwean retail sector. Findings of the study could be vital to the Zimbabwe Revenue Authority (ZIMRA) as it aims to improve tax administration practices in Zimbabwe. For the retailers, the study proffers opportunities to minimise tax administrative burdens and human error through smart contract automation and real-time auditing, which enhances both corporate governance and fiscal transparency. Furthermore, the study offers a critical framework for policymakers to develop regulatory standards for emerging technologies. This study could be a driving force for adoption of cutting-edge technological innovations in governmental organizations to make processes more efficient, strengthen accountability and better serve the citizens of Zimbabwe.

Defining tax compliance

Tax compliance refers to the adherence of taxpayers to tax laws and regulations such as the timely filing of tax returns, payment of taxes owed and maintenance of accurate financial records (Kirchler, 2017). Slemrod (2019) alternatively defined tax compliance as the adherence of individuals and businesses to tax laws and regulations. This includes accurate reporting of income, timely payment of taxes and submission of required tax returns. However, other scholars argue that tax compliance encompasses both voluntary compliances, where taxpayers report their income and pay taxes without prompts from tax authorities and enforced compliance, where compliance is achieved through audits and legal measures (Blumkin, & Margalioth, 2015). In essence, tax compliance is crucial for the functioning of governmental financial systems and ensuring public services are funded. Multiple factors influence tax compliance. Research has shown that improving taxpayers' understanding of their tax obligations, coupled with effective communication from tax authorities can significantly enhance compliance rates (Boon et al., 2021).

Particularly intriguing to note is that technological advancements such as blockchain, electronic filing and automated payment systems have emerged as vital tools for simplifying tax compliance and improving adherence to tax laws (Koh et al., 2022). Blockchain can be used to enhance tax compliance by providing a secure and transparent record of transactions, reducing the risk of evasion and fraud. Blumkin and Margalioth (2015) buttress that the technology can be used to streamline tax collection processes and ensures the integrity of taxpayer information which fosters both voluntary and enforced compliance. Having defined tax compliance, blockchain technology is conceptualised in the section below.

Blockchain Technology

According to Narayanan et al. (2016) blockchain technology is a decentralised digital ledger system that records transactions across multiple computers so that the recorded transactions cannot be altered retroactively. Various scholars concur that the technology uses distributed ledger, a digital record of transactions or data that is shared, replicated and synchronised across a decentralised network of multiple participants, to record and verify transactions for public (Ajibade & Mutula, 2021; Rauchs et al., 2018; Franceschetto, 2022). Each block in the chain contains several transaction records and once added, it cannot be altered without altering all subsequent blocks, which requires consensus from the network majority (Kibet & Karume, 2018). The technology uses smart contracts which Christidis and Devetsikiotis (2016) defined as self-executing protocols with terms directly written into code. This immutability combined with cryptographic security ensures that data is resistant to tampering and fraud (Tapscott & Tapscott, 2016; Yayman, 2021). Danach et al. (2024) argue that the technology was initially recognised as the technology that powered cryptocurrencies such as Bitcoin and has expanded beyond its initial use. The scholars further state that the technology has been deployed to transform operations in areas such as financial reporting, tax compliance and auditing procedures across various industries (Danach et al., 2024). In the context of tax compliance, blockchain provides a plethora of opportunities some of which are discussed in the subsequent section.

Benefits of blockchain technology in taxation

The integration of blockchain technology into tax administration presents a transformative opportunity to enhance the efficiency, transparency and integrity of global tax systems. A primary opportunity lies in the technology's ability to facilitate a single version of the truth. Post and Cipollini (2022) further buttress that the adoption of blockchain can streamline administrative routines by automating tasks and providing legal certainty, thereby making corporate tax compliance more feasible. More so, the decentralised nature of the technology streamlines tax compliance processes, reduces administrative costs and ensures the security of sensitive tax information (Tapscott & Tapscott, 2016; Zhang, 2025). This immutability ensures transparency and security as each transaction is grouped into blocks which are linked in chronological order to form a chain. Zhang (2025) argues that blockchain provides real-time access to transaction data facilitating automatic reporting and verification of income and expenditures, minimising manual entry and reducing the likelihood of errors.

Mbamba (2023) empirically examined the significance of blockchain technology in tax administration in developing countries and found that the technology could enhance the collection of pay as you earn (PAYE) and

Value Added Tax (VAT). Using data from taxpayers who work for the Audit Board of Indonesia, Alviansyah et al. (2025) found that blockchain significantly and favourably affects both the simplicity of digital tax administration and tax compliance. A similar study by Celestin and Gidisu (2025) found that there was a substantial association between technology adoption and better tax performance in Ghana. According to the study, smart contracts increased withholding tax accuracy from 78% to 92%, while blockchain integration decreased fraud instances from 120 to 50 and improved fraud detection from 45% to 80%. These findings highlight the revolutionary synergy between blockchain technology and artificial intelligence in improving public finance systems.

Manani and Mose (2024) discovered that the distributed ledger technology had substantial influence in Kenyan tax administration processes. In fact, the study underscored that Kenya's revenue administration was significantly impacted by data immutability. In addition, Moradi (2025) discovered that the ability of blockchain to provide a transparent and instantaneous audit trail is a powerful advantage for Iranian industries valuing accuracy and security. This shift not only enhances organizational governance but also minimises the risks associated with unauthorised transactions and information asymmetry. Iqbal et al. (2025) theoretically examined blockchain in taxation and found that blockchain ensures that transactions are unchangeable and visible to auditors. Likewise, Oraby (2025) investigated the impact of blockchain in Saudi Arabia and found that the technology's automation reduced human error.

Karuma et al. (2023) empirically explored how blockchain could be used to enhance VAT collection in Zimbabwe. The study found that blockchain has the potential to resolve non-compliance issues that include a lack of transparency and corrupt tendencies whereby value added tax (VAT) would be remitted in real-time. Likewise, Ajibade and Mutula (2021) explored the use of blockchain technology in electronic records management systems in South Africa. The scholars concluded that blockchain had the capability to combat public corruption in South Africa. Elommal and Manita (2022) explored the impact of blockchain on auditing firms in France and found that the audit trail provided by blockchain serves as an invaluable asset in verifying compliance with tax laws. This means that the integration of blockchain technology could significantly enhance compliance strategies, reducing costs, minimise tax evasion and increasing efficiency.

Challenges to implementation of blockchain technology

Despite having many benefits, the integration of blockchain technology is not without its challenges. Research by Akinradewo et al. (2025) found that lack of clarity, risks associated with scalability and a lack of skills were the major challenges in adoption of blockchain technology. In addition, research by Brilliantova and Thurner (2019) in South Africa and Russia found that restrictive regulatory frameworks provide the greatest hurdle for technological adoption in the energy sector. Technological barriers particularly concerning the integration of new technology with existing systems. Logistical challenges can also impede progress, such as the practical difficulties in transitioning to a blockchain-based system and establishing the necessary infrastructure. Literature based research by Sarker (2025) underscored that blockchain adoption faces several challenges including regulatory uncertainty, interoperability issues, scalability limitations, high set up costs and skill gaps. The study further highlights privacy concerns and the difficulty of modifying immutable records as major hurdles that complicate the integration of the technology into existing systems.

Mbamba (2023) discovered that organizational, technological and legal hurdles undermine efforts to put blockchain technology into practice in developing nations. Papadaki and Karamitsos (2021) empirically examined factors influencing adoption of blockchain technology in the UAE, the wider Middle East and North African region. The study found that blockchain adoption is undermined by the lack of regulatory frameworks, collaborative leadership, the difficulty of collaborating across countries and a limited availability of a skilled personnel. On the other hand, research by Chavalala et al. (2024) in South Africa found that the most significant barrier to blockchain technology integration in the cold supply chain was the ineffective leadership style of top management. In essence, top-level management's leadership style can aid in the process of problem-solving. Additionally, organisational resistance is a significant factor since employees or management may be hesitant to adapt to new technology or processes. This implies that companies attempting to integrate sophisticated technologies such as blockchain must invest in human capital and collaborative networks to build necessary expertise.

Theoretical Framework

The study was hinged on two theories namely Stakeholder Theory and Technological Acceptance Model (TAM). These theoretical perspectives are explained below.

Stakeholder Theory

The study was informed by the Stakeholder theory propounded by Freeman (1984). The Stakeholder Theory contests the conventional shareholder primacy model which posits that a company's exclusive obligation is to optimise profits for its owners. Freeman (1984) asserts that an organisation constitutes a complex ecosystem of interrelated relationships among any group or individual capable of influencing or being influenced by the attainment of the organization's objectives. These stakeholders typically include employees, customers, suppliers, investors, government entities and the local community (Moll & Yigitbasioglu, 2019). The theory emphasises the interconnected nature of firms within a broader social framework, asserting that decisions must consider the interests of all stakeholders rather than being made in isolation. This involves fostering open, inclusive relationships with a range of stakeholders such as managers, directors, investors, employees, business partners, service providers, government entities and society (Freeman, 1994; Freeman, 1984).

In this study, the stakeholder theory underscores the need for transparency to satisfy the diverse information needs of various groups which include taxpayers and tax authorities. However, external users of financial information often lack visibility into the actual transactions and accounting processes of a company (Yu et al., 2018). Vasarhelyi (2012) notes that the accounting field has primarily concentrated on how users interpret financial reporting standards and market repercussions, neglecting the diverse information needs of various stakeholders. He advocates for a shift towards a more granular approach in information disclosure, an idea supported by several scholars (Moll & Yigitbasioglu, 2019). A blockchain-enabled tax compliance framework supports this by allowing collaborative verification of transactions and ensuring that data is not only immutable but also accessible to authorised participants like regulators and taxpayers. In this respect, the integration of blockchain technology can provide innovative technological solutions that help mitigate managerial manipulation and enhance monitoring and controlling of tax information thereby reducing information asymmetry.

Technology Acceptance Model (TAM)

The Technology Acceptance Model (TAM), developed by Davis (1989) was also used in this study to explain the adoption of innovative technologies. The theory posits that technology adoption intent hinges on users' perceived usefulness (PU) and Perceived Ease of Use (PEOU) (Davis, 1989). Perceived usefulness explains the degree to which an individual believes that utilising a specific technology will improve their efficiency or effectiveness in completing tasks. Perceived ease of use concerns how effortless the technology is to operate. These constructs shape attitudes and intentions toward technology adoption as argued by various scholars (Schorr, 2023; Ma & Liu, 2004). Scholars further identify internal factors such as user mindset, technical proficiency and external variables such as organizational culture, regulatory frameworks that influence these perceptions (Enu-Kwesi & Opoku, 2020). The current study leveraged this theory to determine factors that influence the adoption of blockchain technology for tax compliance enhancement in Zimbabwean retail sector. Perceived usefulness such as blockchain's ability to enhance efficiency drives acceptance. On the other hand, barriers such as low blockchain literacy and ambiguous regulations moderate adoption (Schorr, 2023; Putra, 2019). The theory provided a strong framework for examining how Zimbabwe's retailers and tax authorities' perceptions of blockchain's usefulness and ease of use influence their readiness to adopt transformative technologies.

METHODOLOGY

The study adopted the interpretivist research philosophy and a qualitative research approach. An exploratory research design was employed (Creswell, 2014). The target population of the study consisted of key decision-makers from the government and retail sector domiciled in Harare CBD. These include retail managers, IT experts, internal auditors and tax officials from ZIMRA. Purposive sampling technique was employed to select

thirteen (13) participants. The participants included three (3) management personnel, three (3) IT/data security experts, three (3) internal auditors and four (4) tax officials. Despite being small, the sample size was deemed adequate to yield unbiased results as smaller qualitative samples allow for in-depth exploration of complex phenomena (Guest et al., 2006). This sample size was deemed adequate for the study as guided by the data saturation principle which states that qualitative data collection should stop at a point at which no new information emerges (Guest et al., 2006). The participants selected were presumed to have relevant expertise and insights regarding blockchain technology and tax compliance.

Data Collection and Analysis

Semi-structured interviews were conducted with key stakeholders, including tax officials, internal auditors, IT/Data experts and retail managers to gain qualitative insights into their perceptions on the potential impact of blockchain technology on tax compliance in Zimbabwe. Semi-structured interviews provided flexibility by ensuring that specific topics were covered (Kvale & Brinkmann, 2009). Each interview session lasted between 25 to 40 minutes. After data collection, qualitative data gleaned from semi-structured interviews were analysed using thematic analysis in accordance with steps recommended by Braun and Clarke (2006). The process initiated with familiarisation with the data, followed by generating initial codes, searched for themes and effectively grouped similar data sources and discarding non-pertinent observations. This was followed by review of potential themes and subsequently, defined and named themes. Finally, the findings were reported by selecting vivid, compelling extracts and verbatim quotations to ensure accuracy in capturing participants’ responses. In addition, to semi structured interviews, document analysis was done to corroborate interview data. The scholars analysed publicly available documents, tax records and compliance documents to assess existing practices. Document analysis is an established method for gaining insights into organizational performance and compliance (Bowen, 2009). Examination of existing records helped to uncover discrepancies between policies and actual practices.

Ethical considerations

Ethical considerations were paramount to ensure the integrity of the study. Prior to data collection, authority was sought from the Confederation of Zimbabwe Retailers (CZR). Informed consent was initially sought before the study was conducted. Written consent was obtained from all participants to ensure that they were fully aware of their participation. Participants were provided with comprehensive information about the study before their involvement. This included the purpose of the research, what their participation entailed, potential risks and their right to withdraw at any time without prejudice. More so, the confidentiality of all participants was guaranteed by assigning unique identifiers to each participant and storing data securely in encrypted files. Personal identifying information was removed from any published reports to maintain anonymity. Care was taken to ensure that any quotes from the interviews did not reveal the identities of the participants. All findings were reported honestly and transparently, including both successful outcomes and limitations of the study.

Research Findings

Interviews with participants from the retail sector and tax officials provided valuable insights regarding the current state of tax compliance and the potential role of blockchain technology in enhancing tax compliance in Zimbabwe. Five overarching themes emerged as presented in tables below.

Theme 1: Current tax compliance practices

Table 1: Current tax compliance practices

Respondent	Response
<i>Management personnel 1</i>	<i>“Our tax compliance practices involve a rigorous internal audit process and consultations with tax consultants regularly. We prepare quarterly tax returns and ensure filing is completed on time.”</i>

Management personnel 2	<i>“We have automated systems in place for tracking transactions, but there can still be delays. We focus mainly on income tax compliance.”</i>
Management personnel 3	<i>“Our practices are evolving, we conduct training sessions for our finance staff. However, we sometimes struggle with accurate record-keeping due to the high volume of transactions.”</i>
IT/Data security expert 1	<i>“The current practices focus on standard software solutions for financial reporting but may lack robust data verification methods, which can lead to discrepancies.”</i>
Internal auditor 1	<i>“From my reviews, I can say the processes meet basic compliance requirements, but there’s a lack of transparency in some areas, like tax and expense reporting.”</i>
Internal auditor 2	<i>“The efficiency is inconsistent. While quarterly returns are filed accurately, we frequently notice errors in supporting documentation during audits.”</i>
Internal auditor 3	<i>“There’s definitely a compliance framework, but it appears reactive rather than proactive, which can lead to surprises during auditing.”</i>
Tax official 1	<i>“We have established a good working relationship. They comply with most regulations, but periodic audits can reveal gaps in their reporting.”</i>
Tax official 2	<i>“Compliance is reasonably satisfactory, but I would encourage more public reporting of tax contributions for increased accountability.”</i>

The responses presented in Table 1 shows that current tax compliance practices are characterised by a procedural adherence to basic regulatory requirements, though they remain hampered by operational inefficiencies and documentation gaps. While management highlights a commitment to quarterly filings and staff training, internal auditors point to a reactive framework that lacks robust data verification methods. Additionally, high transaction volumes frequently overwhelm existing automated systems leading to delays and inconsistent record-keeping. Furthermore, despite a satisfactory working relationship with tax authorities, the findings reveal a deficit in transparency and proactive reporting, suggesting that while the organizations are legally compliant, their internal controls are not yet optimised for high-level accountability and real-time accuracy.

Theme 2: Tax compliance challenges in Zimbabwe

The participants highlighted key tax compliance challenges they faced. Some of the remarkable responses were quoted verbatim as shown in the table below.

Table 2: Tax compliance challenges

Respondent	Response
Management personnel 1	<i>“One main challenge is the complexity of tax regulations, which are constantly changing and can be hard to keep up with.”</i>
Management personnel 2	<i>“We face difficulties with tax incentives and deductions, understanding what we’re eligible for and how to apply them correctly.”</i>
Management personnel 3	<i>“Staff training is a significant challenge; we need to ensure our team is well-informed about tax laws and compliance.”</i>
IT/ Data security expert 1	<i>“Data security and integration are pressing challenges, especially given the sensitive nature of tax data.”</i>

IT/ Data security expert 2	<i>“The lack of a single source of truth for our data complicates things. We need a comprehensive data governance strategy where every stakeholder can have access to data in real time.”</i>
Internal auditor 1	<i>“One challenge is the lack of clarity in certain tax regulations, which sometimes leads to inconsistent reporting.”</i>
Internal auditor 2	<i>“Communication between the finance, accounting, auditing departments and management needs improvement because it currently impacts compliance negatively.”</i>
Internal auditor 3	<i>“I would say a lack of infrastructure to support timely data collection and reporting is a significant issue.”</i>
Tax Official 2	<i>“Issues like tax evasion and underreporting still persist and I see a need for better compliance mechanisms.”</i>
Tax Official 3	<i>“The informal economy in Zimbabwe poses challenges, as we struggle to ensure compliance from all sectors, including retail.”</i>

Participants of the study were asked to air their views regarding challenges they face in tax compliance and revealed a plethora of challenges. The challenges were primarily categorised as regulatory, technical and systemic barriers. Stakeholders identified the inherent complexity and volatility of tax legislation as a primary hurdle, which frequently results in inconsistent reporting and difficulties in accurately utilising fiscal incentives. These legal challenges are compounded by significant technical deficits, including a lack of integrated data governance, inadequate reporting infrastructure and heightened security concerns regarding the handling of sensitive tax data. Furthermore, internal organizational constraints including lack of specialised staff training and fragmented communication between finance departments and executive management impede institutional efficiency. Tax officials highlighted the pervasive influence of the informal economy and persistent evasion as critical inhibitors to comprehensive compliance efforts.

Theme 3: Opportunities of adopting blockchain technology to enhance tax compliance

The participants were asked to offer their perceptions on the potential of integrating blockchain into the tax compliance framework. Notable responses were quoted verbatim as shown in the table below.

Table 3: Opportunities of adopting blockchain technology

Respondent	Responses
Management personnel 1	<i>“I can foresee improved transparency as all transactions would be recorded and visible to stakeholders.”</i>
Management personnel 2	<i>“Automation of reporting processes could reduce errors and enhance efficiency significantly.”</i>
IT/ Data security expert 1	<i>“With blockchain’s encryption and decentralization, tax data could be more secure against fraud.”</i>
IT/ Data security expert 2	<i>“Smart contracts could streamline the tax collection process and automate payments based on compliance triggers.”</i>
Internal auditor 1	<i>“The traceability offered by blockchain could make audits easier and more reliable, benefitting both the company and auditors.”</i>

<i>Internal auditor 3</i>	<i>“The accuracy provided by blockchain ledgers would likely improve confidence in a company's tax filings.”</i>
<i>Tax Official 1</i>	<i>“I think blockchain can lead to enhanced compliance rates as it makes it harder to evade taxes.”</i>
<i>Tax Official 3</i>	<i>“I think this technology might simplify the way we interact with various companies and promoting a more collaborative compliance environment.”</i>

The findings shown in the table reveals a consensus among participants of the study regarding the transformative potential of blockchain technology in enhancing tax compliance. Management and IT experts highlighted the role of smart contracts and decentralized ledgers in driving efficiency and mitigating fraud risk via robust encryption and error reduction. Simultaneously, internal auditors and tax officials noted that the technology’s inherent traceability facilitates more reliable auditing processes and promotes a collaborative compliance environment. Collectively, these findings suggest that blockchain serves as a catalyst for institutional trust, shifting tax administration toward a real-time, accurate and error-resistant system which limits opportunities for tax evasion.

Theme 4: Barriers to adoption and integration of blockchain technology into retail tax compliance framework.

The interviewees were asked to air their views pertaining to barriers that hinder the implementation of blockchain technology for tax compliance. Some remarkable responses were noted as presented in the table below.

Table 4: Barriers to the adoption and integration of blockchain technology

<i>Respondent</i>	<i>Responses</i>
<i>Management personnel 1</i>	<i>“High initial costs and a potential skills gap in our workforce present challenges to implementation.”</i>
<i>Management personnel 2</i>	<i>“Integrating blockchain with our existing systems might be complicated and resource-intensive. There's a need for change management; staff may resist adopting new technologies.”</i>
<i>IT/ Data security expert 1</i>	<i>“Technical issues, particularly with scalability and legacy systems, could hinder implementation.”</i>
<i>IT/ Data security expert 2</i>	<i>“Regulatory challenges are a major challenge as there are currently no clear guidelines for blockchain use in tax compliance.”</i>
<i>Internal auditor 3</i>	<i>“There might be scepticism from regulatory bodies about the security and reliability of blockchain data.”</i>
<i>Tax Official 4</i>	<i>“As regulators, we need time to adjust our own frameworks to accommodate new technologies like blockchain. Another challenge is that implementing the technology in regions with unstable internet connectivity could complicate things for us.”</i>

The findings revealed a multifaceted array of challenges impeding blockchain adoption and integration in Zimbabwe’s tax compliance framework. Chief among the barriers are organizational, technical and regulatory. All participants identified significant organizational hurdles, including prohibitive implementation costs, a specialized skills deficit, and anticipated institutional resistance to technological change. These internal challenges are compounded by technical concerns regarding the scalability of legacy systems and the necessity for robust digital infrastructure in regions with limited connectivity. Furthermore, a critical regulatory vacuum

persists, characterized by a lack of standardised legal frameworks and institutional skepticism regarding the security and reliability of decentralised data.

Theme 5: Strategies to promote adoption of blockchain technology

The participants of the study were asked to suggest possible strategies to enhance adoption of blockchain technology in the retail sector and some of the remarkable responses are presented in the table below.

Table 5: Strategies to promote adoption of blockchain technology

<i>Respondent</i>	<i>Response</i>
<i>Management personnel 1</i>	<i>“We would need considerable training resources for our staff to understand and utilize blockchain effectively.”</i>
<i>Management personnel 2</i>	<i>“Investment in technology upgrades and cyber security measures would also be essential.”</i>
<i>Management personnel 3</i>	<i>“Strategic partnerships with tech companies could provide the expertise we lack internally.”</i>
<i>IT/ Data security expert 1</i>	<i>“I believe developing a clear integration strategy is crucial. We need substantial planning and government support in the form of funding.”</i>
<i>IT/ Data security expert 2</i>	<i>“Resources for continuous technical support post-implementation will be necessary to ensure success.”</i>
<i>Internal auditor 1</i>	<i>“Collaboration with external auditors might be beneficial to help develop processes for audit trails.”</i>
<i>Internal auditor 2</i>	<i>“Frequent training workshops and consultations with blockchain experts would help keep us updated on best practices.”</i>
<i>Internal auditor 3</i>	<i>“In-depth assessments of organisational readiness should be conducted before investing heavily in technology.”</i>
<i>Tax Official 1</i>	<i>“I think we can support adoption initiatives by providing tax incentives to ease the transition.”</i>
<i>Tax Official 2</i>	<i>“Regular interaction between companies and governments could help clarify regulations regarding blockchain use.”</i>

The interview responses shown in the table indicate that a successful transition to blockchain-based tax compliance in Zimbabwean retail sector requires a multi-dimensional strategy centred on human capital development, technical infrastructure and institutional collaboration. Respondents consistently emphasise that considerable training resources and frequent workshops are prerequisites for overcoming internal skill gaps. Technical success hinges on significant investment in technology upgrades and cyber security supported by rigorous readiness assessments. Furthermore, the findings show that retailers cannot implement these systems in isolation. Instead, they require strategic partnerships with technology companies to bridge expertise gaps and external auditors to design compliant audit trails. Finally, the role of the government is viewed as a vital catalyst as participants touted government incentives as an essential driver to promote adoption of blockchain technology.

DISCUSSION OF FINDINGS

The findings of this study reveal that Zimbabwe's tax regime currently operates within a hybrid of automated systems and manual processes. The participants' concerns over documentation errors and discrepancies is consistent with the findings by Mbamba (2023) who found that excessive reliance on manual processes in developing nations chronically undermines the collection of Pay As You Earn (PAYE) and Value Added Tax (VAT). From the perspective of Stakeholder Theory (Freeman, 1984), this finding reflects that operational fragmentation represents a failure to satisfy the diverse information requirements of the firm's broader ecosystem including regulators, taxpayers and the state thereby compromising the interrelated relationships essential for organizational legitimacy and compliance. This finding stands in stark contrast to the more integrated tax compliance systems in developed jurisdictions like France, where Elommal and Manita (2022) found that automation has already shifted the focus from basic data entry to sophisticated blockchain aided auditing. The study also found that the complexity of tax laws in Zimbabwe is a major challenge on retailers, confirming the findings by Muposhi (2020) and Wadesango et al. (2020) who found that regulatory complexity acts as a significant barrier to tax compliance in Zimbabwe. According to the Stakeholder Theory, the operational fragmentation and regulatory complexity identified by participants illustrate a failure to satisfy the diverse information requirements of stakeholders, directly contributing to the information asymmetry noted by Yu et al. (2018). Through facilitating immutable, granular disclosure and collaborative verification, such a system directly addresses the visibility gap and effectively mitigate managerial manipulation and fostering the inclusive, transparent relationships necessitated by a modern stakeholder-centric governance model.

The overwhelming consensus among participants regarding the transformative potential of blockchain aligns with the Perceived Usefulness (PU) construct of the Technology Acceptance Model (TAM). The recognition that smart contracts can execute tax obligations in real-time mirrors findings by Ariyibi et al. (2024) and Oraby (2025) in Saudi Arabia, where it was found that automation reduced human error. This finding is further supported by Celestin and Gidisu (2025) who discovered that blockchain integration improved withholding tax accuracy from 78% to 92% in Ghana. In the Zimbabwean context, this implies that the technology could solve the persistent issue of information asymmetry between retailers and the Zimbabwe Revenue Authority (ZIMRA). Through the provision of an immutable single version of the truth, blockchain addresses the trust deficit that Moradi (2025) identified as a hallmark of traditional, reactive auditing systems in Iran. This implies that Zimbabwe should shift toward a blockchain compliance framework to enjoy the benefits observed by Manani and Mose (2024) in Kenyan revenue administration.

Despite a plethora of opportunities, the study identified significant barriers that diminish the perceived ease of use among stakeholders. The high initial costs and skills gap cited by the participants are not unique as similar findings have been stressed by Sarker (2025). The findings echo the technical hesitation reiterated in research by Akinradewo et al. (2025) in South Africa and Papadaki and Karamitsos (2021) in Middle East and North African region. The studies underscored that the scarcity of specialised expertise acts as a critical deterrent in developing and transitioning economies. This creates a paradox where the technology is perceived as highly useful but too difficult to implement. Furthermore, auditors' skepticism regarding data reliability highlights a persistent information asymmetry that prevents key stakeholders from effectively monitoring and controlling tax information. This skepticism is often rooted in the absence of a clear regulatory framework, a challenge stressed by Brilliantova and Thurner (2019) in their study of South Africa and Russia, where restrictive laws were found to be the greatest hurdle for technological transition. Furthermore, the results indicate that a lack of management support and systemic resistance to change are primary inhibitors of technology adoption. This aligns with the findings of Chavalala et al. (2024) who identified ineffective leadership and organisational resistance as the preeminent barriers to blockchain integration within South Africa's cold supply chain. Such resistance may be rooted in anxieties surrounding job security as automation replaces manual processes. When framed within the Technology Acceptance Model (TAM), management's skepticism likely reflects a deficit in Perceived Usefulness (PU) or concerns regarding the technology's Perceived Ease of Use (PEOU), where the perceived complexity outweighs the anticipated strategic benefits.

To overcome these hurdles, the participants suggested that the existing legislative framework must move beyond its current technological antecedents. While Statutory Instrument 153 of 2011 (Fiscalisation Regulations)

mandated real-time data transmission, it remains hardware-dependent and centralised. Shifting to a decentralised blockchain ledger requires the government through the Ministry of Finance to provide the legal impetus for change. This necessitates an alignment of the Income Tax Act [Chapter 23:06] and the Value Added Tax Act [Chapter 23:12] to explicitly recognise smart contracts as valid legal instruments. Such a move would harmonise the tax regime with the Cyber and Data Protection Act [Chapter 12:07] and ensure that the immutability of the blockchain does not conflict with data privacy rights. Ultimately, as suggested by Sarker (2025), the transition requires the government and ZIMRA to evolve from a passive observers into an active facilitators who provide funding, strategic incentives and technical support to bridge the gap between technological potential and institutional reality.

Proposed Framework for Blockchain-based Tax Compliance

Based on the findings, the study proposes a blockchain-tax integration framework as diagrammatically exposed below.

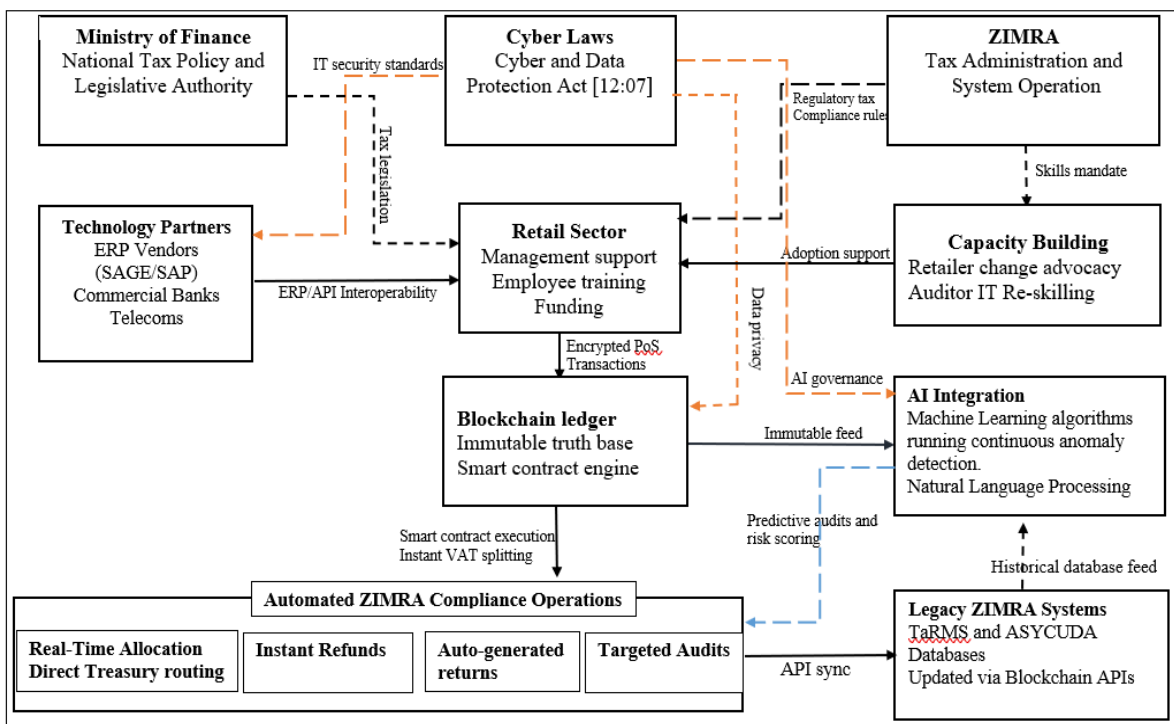


Figure 1: Blockchain integration framework

Source: Author’s creation (2026)

Figure 1 shows the proposed blockchain adoption framework, designed specifically to address the tax compliance challenges faced by the Zimbabwean retail sector. The framework is theoretically anchored in Stakeholder Theory and the Technology Acceptance Model. The framework is operationalised through four interconnected layers as explained below. At the apex, the framework is governed by a Strategic Stakeholders including the Ministry of Finance and the Zimbabwe Revenue Authority (ZIMRA). These entities function not merely as regulators, but as primary stakeholders responsible for establishing the legal mandates and fiscal regulations that govern the system’s integrity. The Ministry of Finance provides the legal mandate required for blockchain adoption. On the same note, ZIMRA establishes the regulatory tax compliance rules. To ensure data privacy and mitigate the risks of digitised financial data, the framework integrates the Cyber and Data Protection Act [12:07]. The law mandates IT security standards for tech partners and requires the blockchain system to utilise privacy-preserving protocols to ensure that retail data is encrypted and processed in a compliant manner.

To overcome the adoption hurdles identified in the study, the framework relies heavily on TAM constructs specifically the perceived ease of use construct. Thus, technology partners such as ERP vendors, commercial banks and telecoms build the API interoperability bridges. This prevents retailers from having to overhaul their

entire IT infrastructure, allowing legacy Point of Sale (PoS) systems to connect to the blockchain seamlessly. In addition, the capacity building acts as the human capital enabler by addressing the change management aspects through providing retail advocacy and IT re-skilling for ZIMRA personnel. This ensures stakeholders possess the requisite competencies before the system is deployed at full scale. Once retailers are on board via the technology bridge, encrypted transaction data flows directly into the blockchain system. The Blockchain Ledger serves as the immutable Single Version of Truth. Within this ledger, Smart Contracts automatically execute tax rules, such as instantly splitting the VAT component from a retail sale and routing it to the treasury. The AI cognitive engine continuously ingests this immutable feed. Utilising machine learning, it conducts real-time anomaly detection and risk profiling, shifting the audit paradigm from retrospective, manual verification to proactive, predictive auditing.

Recognising that enterprise transformations are iterative, the framework does not propose abandoning existing infrastructure. Instead, the framework utilises API synchronisation to update ZIMRA's Legacy Systems. Conversely, these legacy databases feed historical baselines back into the AI engine to improve its pattern recognition capabilities. Ultimately, this integration generates optimised compliance outcomes in the form of instant refunds, real-time revenue allocation and targeted audits. This framework provides a viable roadmap for modernising tax compliance in Zimbabwe's retail sector.

CONCLUSIONS AND RECOMMENDATIONS

The study establishes that while the Zimbabwean tax compliance landscape remains hampered by a fragmented reliance on manual interventions and reactive auditing, the integration of blockchain technology offers a definitive paradigm shift toward a proactive, real-time tax compliance architecture. The findings demonstrate that the utility of decentralised, immutable ledgers is widely recognised by stakeholders as a critical mechanism for reducing human error and building institutional trust. However, the path toward operationalising this technology is currently obstructed by a significant readiness gap, defined by prohibitive technical costs, a deficit in specialised skills and a critical regulatory vacuum. For blockchain to move from a theoretical novelty to a practical administrative tool in Zimbabwe, the state must transition from a passive regulatory posture to an active facilitator of technological adoption. Success depends on a tripartite alignment of policy, technology and human expertise. Without this holistic approach, the transformative potential of blockchain will remain untapped, leaving the tax regime vulnerable to the persistent inefficiencies and transparency deficits that currently characterise the manual framework.

To bridge the prevailing regulatory vacuum, it is recommended that the revenue authority and the Ministry of Finance initiate immediate legislative refinements of extant tax statutes. This requires an evolution of current fiscal regulations beyond their current hardware-dependent requirements toward a decentralised framework that explicitly recognises smart contracts and digital records as valid legal instruments. Such an alignment would provide the necessary legal impetus to drive industry-wide adoption while ensuring that the tax regime remains synchronised with broader data protection and cyber security laws. Furthermore, the state should consider introducing strategic fiscal incentives, such as tax credits or subsidies for technology upgrades to mitigate the high initial setup costs for retailers. Thus, establishing a robust and clear legal environment, can allow the state to transition from a reactive enforcer to a proactive monitor, fostering an institutional culture where compliance by design becomes the national standard thereby enhancing revenue collection capacity while reducing the intrusive nature of traditional audits.

Within the retail sector, management must move beyond passive approval to become active facilitators of technological change by fostering an organisational culture that prioritises innovation and transparency. Leadership must articulate a clear, long-term strategy that mitigates internal resistance and aligns the adoption of blockchain with the broader objectives of financial accountability and operational efficiency. To manage the technical complexities and perceived risks associated with new systems, organisations should adopt a phased, iterative implementation strategy starting with targeted pilot initiatives. These pilots allow for the evaluation of blockchain functionalities in a controlled environment to enable the identification of technical bottlenecks and the refinement of internal processes before full-scale deployment. Furthermore, comprehensive investment in human capital is essential. Organisations must prioritise specialised training programs that provide management and IT personnel with the functional mastery required to operate decentralised ledgers. Forging collaborative

partnerships with technology providers and investing in the necessary internal expertise is essential for retailers to ensure that the transition to blockchain is not merely a technical upgrade but a fundamental evolution in how the sector manages their tax compliance practices.

Limitations and Future Research

The study revealed the potential impact of blockchain in modernising tax compliance systems in Zimbabwe's retail sector. Despite its immense contribution to the existing academic body of knowledge, the research was only limited to retailers in Harare CBD. On the same note, the study relied on a relatively small sample size of thirteen (13) participants which may restrict the generalisability of the findings to the broader Zimbabwean retail landscape. Hence, future research could benefit from employing mixed research methods approach to conduct the same study in other large cities of the country and use a larger sample size. In addition, future researchers are encouraged to research the role of blockchain in curbing tax evasion in the mining sector. Also, future researchers need to focus on the role of the government in promoting blockchain adoption to deal with corruption.

Declaration of interests

The authors declare that there are no financial or non-financial interests that are directly or indirectly related to this work.

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