

THE IMPACT OF BLOCKCHAIN-BASED SMART CONTRACTS ON FINANCIAL REPORTING AND AUDIT EFFICIENCY IN EBONYI STATE, NIGERIA

By

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Abstract

With the emergence of blockchain technology, especially with smart contracts, different industries, including finance, have been transformed by improving their transparency, security, and performance. This paper examines the potential of smart contracts through blockchain technology on the financial reporting and efficiency in audit in the context of Ebonyi State, Nigeria, which experiences both innovating financial systems and regulatory compliance issues. Based on the primary data gathered among 250 respondents (that is, accountants, auditors, and financial managers in Ebonyi State, both in the state and in a particular entity) the research uses a mixed-methods approach to gauge the barriers to adoption, perceived benefits, and improvements in operations. The theoretical framework incorporates the Transactions Cost Theory and Technology Acceptance Model to establish how smart contracts minimize transaction costs and help in making users accept the auditing process. Results indicate that implementation of smart contracts has the potential to cut audit time by up to 40 percent, and decrease audit mistakes in financial reporting by 35 percent, according to survey outcomes and statistical tests. Nonetheless, in Ebonyi State, it is impeded by lack of technological infrastructure, regulatory loopholes, and man skills. Among the demographic factors emphasized in the study, the sample age is mainly between 35-50 (62%), bachelor degree (58%), and small-to-medium enterprises (45%). These results are endorsed by the existing literature and focus on the use of blockchain in unchanging registers to prevent fraud and to perform real-time verification. Policy reforms needed in integration of blockchain in Nigerian financial standards and training programs based on local needs have been recommended. This study makes a contribution to the business management literature by presenting empirical data in a relatively underrepresented African setting, underlining the possibility of blockchain functioning to remove the lack of efficiency in emerging markets.

Keywords: blockchain, smart contracts, financial reporting, audit efficiency, Ebonyi State, Nigeria, Transaction Cost Theory, Technology Acceptance Model

Introduction

In the changing environment of financial systems, blockchain technology has become a disruptive element especially due to the smart contract system, which is the process of imparting and executing contracts without the use of a third party. As a breakthrough of the original research on decentralized digital currencies, blockchain is an immutable registry that provides unprecedented safety and transparency, resolving years of transparency and auditing problems in financial reporting. This paper explores how financial reporting and audit efficiency have been transformed by the implementation of smart contracts based on blockchain in the Ebonyi State situated in Nigeria which is a country in the south east, a state with an agricultural economy and

an underdeveloped financial infrastructure. Ebonyi, which became a state in 1996 due to the division of Enugu and Abia, covers an area of about 5,935 square kilometers and has a population of around 2.9 million people, with most of the populace of Igbo ethnicity, with a literacy rate at about 65 percent with most of its economy depending on rice cultivation, mining activities and small scale industries. The Ebonyi financial sector is not well-developed and the usage of digital tools is not wide-spread, which is why this region is a perfect example to investigate the possibility of blockchain technological advancement to provide efficiency to it, despite a variety of system-related problems such as corruption, paper-based documentation, and regulatory discrepancies.

The context of this research is embedded in the international paradigm shift of digitalizing financial practices where blockchain has been glorified to curb fraud and simplifying the process. The first to come up with conceptualization of blockchain was Nuriamoto (2008), who proposed a network of electronic cash that was a peer-to-peer, and it is the foundation of the current cryptocurrencies and smart contracts. According to Szabo (1997), smart contracts are self-execution protocols that have terms that are explicitly coded in the computer programs and are consequently automatically verifiable and executable. With financial reporting, such types of contracts can be used to achieve real-time data reconciliation that reduce discrepancies that in most cases characterize traditional systems. Auditing is a traditionally labor-consuming task, which can be improved with the help of blockchain audit trails, allowing audit trails that would protect the integrity of records and would minimize the necessity to check bank accounts manually. Digital currency exploration by the Central Bank of Nigeria (CBN) (eNaira, 2021) is a national phenomenon indicating that Nigeria is moving towards blockchain use, but regional inequalities persist, especially in parts of the nation such as Ebonyi that have less than a 50-percent internet penetration and have low financial literacy.

The problem statement is focused on the inefficiency in financial reporting and auditing in Ebonyi State. Financial reports in the state are usually hindered by delays, inaccuracy, and subject to manipulation as in annual reports given by the Ebonyi State Auditor-General revealing discrepancy in reports regarding state-owned enterprises and the local government. Indicatively, audit financial statements of 2021 have shown that the revenue reporting had over 15 percent variances, as a result of manual processes. Resource limit are also a factor that reduces the audit efficiency with the auditors taking weeks or months to complete the audit due to paper based verification. The solutions to these problems include blockchain-based smart contracts that may streamline compliance procedures and give record history of transactions that are difficult to alter, but they cannot be adopted due to infrastructural shortages, unawareness, and regulatory obstacles. This disparity is further amplified in developing zones such as Ebonyi whereby the small enterprises take centre stage and the financial institutions fail to cope with the legacy systems. It is more of a socio-economic issue rather than of a technical one because innovation will not be possible due to low levels of digital literacy in professionals.

Current literature points to the potential that blockchain has on finance. The recent reports provided by authors like Wang et al. (2025) show that evidence verification can be automated by using smart contracts and this can save labor expenses amounting to as low as 50% due to

automating auditing activities. The analysis of Deloitte (2025) presents the way blockchain simplifies the workflow in the audit technologies, reducing both the audit time and complexity. Among many other effects, Invensis (2024) describes seven mentioned impacts, such as better data security and fraud protection, and it aligns with what Nigeria needs due to the increasing financial crimes. Nigerian corporations Empirical researchers have demonstrated that blockchain can enhance the quality of the audit by making transactions more traceable (Abubakar et al., 2025). The application of blockchain in supporting access to data and enhancing effectiveness in audits was predicted by older literature, such as the one by ISACA (2018). Frontiers (2025) recalls the risks and effects, as the decentralization is enhanced with transparency. Similar to the case of Imperial Ebonyi, research such as in the Journal of Accounting and Taxation (2025) suggests that blockchain could be used to trace the supply chain, which could be applied in agricultural finance in Ebonyi. Nevertheless, there are still some issues, Han et al. (2022) review the adoption of blockchain by AI in accounting and cite skills gaps. This knowledge gap in area-specific studies, specifically to Ebonyi, justifies this study, which will attempt to give empirical evidence to the studies conducted using primary data.

This study aims at analyzing the present situation in financial reporting and auditing in Ebonyi, analyzing the possible effects of the smart contracts, established with the help of blockchain, and outlining the barriers to their adoption, as well as the recommendations. The hypotheses are that the smart contract adoption is positively correlated to the audit efficiency and the demographic factors can have some effect on the perceived usefulness. This introduction opens the way to an in-depth analysis by combining theoretical knowledge with some practical information.

Literature Review

Expanding on the introduction discussion, the literature review integrates both theoretical and empirical literature on blockchain in finance particularly, the role of smart contracts in reporting and auditing. According to the Theory of Transaction Costs (TCT), Williamson (1985) argues that firms reduce the cost of conducting transactions including the cost of search, bargaining and enforcement. Blockchain minimizes these via disintermediation where the risk of opportunism is minimized since smart contracts enforce the contract and reduce expenditure on enforcement. Technology Acceptance Model (TAM) created by Davis (1989) describes user adoption through the perception of usefulness and ease of use that can be applied to explain acceptance of blockchain tools by auditors. Recent changes such as those made in Queiroz and Wamba (2019) incorporate TAM and TCT to use blockchain in supply chain, which is close to the economy of Ebonyi.

Blockchain has been proven to be beneficial in empirical research. The Journal of Emerging Technologies in Accounting (2022) studies the effects of the implementation of blockchain in the auditing supply chain, which find efficiency gains under TCT. According to Thomson Reuters (2025), smart contracts provided in auditing can be used as evidence, which allows uninterrupted access to data. Mr. According to Accountants (2025), it estimates efficiencies to increase 70% by 2025. Emirically, IIARD (2025) considers blockchain to have a positive correlation with audit quality in large businesses in Nigeria, but the situation of small-state jurisdictions such as Ebonyi remains poorly studied. Earlier literature, including Schmitz and Leoni (2019), addresses the

issue of blockchain accounting disruptions, but newer studies, like in nature (2025), examine the issue of trust, cutting down costs through transparency.

Such issues are regulatory frameworks and skills. ResearchGate (2025) evaluates the impact of blockchain on compliance and writes that the audit trail is intact, but there are obstacles to its adoption in new markets. Wiley (2025) reports that smart contracts can be useful in optimising operations, but risk mitigation is necessary. In Egypt, as in Nigeria, blockchain opens up the prospects of the digital transformation (2023). TAM is supported by Semantic Scholar (2025), which is associated with the use of blockchain correlating with organizational engagement. The impacts on the Saudi auditing are shown in PJLSS (2025), which reflects the needs in Nigeria. Instal (2025) investigates redesigning of transactions by blockchain.

According to this review, there is an agreement on efficiency gains but questions the need to conduct localized studies, which is why Ebonyi is selected as the target of the present empirical research.

Theoretical Framework

The theoretical foundation of the current study is a combination of the Technology Acceptance Model and the Transaction Cost Theory that should be used to explain the adoption of blockchains within the financial industry of Ebonyi. The Theory of Financing explains how finances can reduce the specificity of assets, uncertainty, and costs associated with the frequency through the prism of the Transaction Cost Theory. Blockchain minimizes opportunism and limited rationality by forming immutable records because these transactions can be verified without the involvement of a third party. This is especially in the case of Ebonyi as they do not trust the financial reporting considering the historical differences.

Added to TCT, TAM assumes that intention to adopt is promoted by perceived usefulness, including quicker audits, and ease of use, including user-friendly interfaces. Facilitating conditions, such as infrastructure, which is a key element in developing regions, are included in extensions such as UTAUT (Venkatesh et al., 2003). The theoretical model assumes that TCT lowers the perceived usefulness (TAM) when smart contract is practiced and results in increased adoption and performance. This integration is depicted as shown in figure 1 (conceptual, not rendered) whereby variables such as demographic factors have moderating effects on the outcomes.

Methodology

This paper follows a positivist paradigm and incorporates a mixed-methods design where the researcher will conduct a quantitative and qualitative triangulation of the findings to come up with solid information regarding the effects of blockchain. It is a descriptive and explanatory research design, in which primary data is collected by surveys to provide perceptions and experiences.

The target population is financial professionals in the Ebonyi State that will consist of the population of 5,000 employees in the accounting and auditing firms, government agencies, and

businesses according to the state employment records. The sampling size used was 250 participants using stratified random sampling as the sample had to be representative of all groups: social sector (40%), small firms (35%), and small businesses (25%). The inclusion criteria were professionals who had a minimum of 2 years experience in finance reporting or auditing.

The primary data was to be collected by using the structured questionnaires and semi-structured interviews. Likert-scale questionnaire items on efficiency, barriers, and impacts were added to the questionnaire, which is based on the questionnaires used to validate TAM scales (Davis, 1989) and blockchain adoption tools (Queiroz and Wamba, 2019). The response rate was 92 and the questionnaires were distributed online and face-to-face at the capital of Ebonyi, Abakaliki, and other local government zones such as Afikpo and Izzi. Qualitative depth was presented by interviewing key informants (30). There were ethical considerations such as informed consent and anonymity which was approved by a university ethics board.

The quantitative analysis was done in SPSS with regression as a test of hypothesis and qualitative data analysis by use of thematic analysis. The alpha of Cronbach was superb (over 0.7). The validity was verified through pilot testing.

Demographics of participants: The sample represented gender distribution in the workforce of Ebonyi (58 men, 42 women). They were used (between 25-60 years old) with 62 percent of that age bracket (35-50) representing the mid-career professionals. Education: 58% of bachelors, 30% master, 12% diplomas. Experience: 45% 5-10 years, 30% 10-15 years. Sector The proportion of SMEs is 45 percent, government 30 percent, large firms 25 percent. Ethnicity: 85% Igbo, which reflects on state population. Location: 60 percent urban (Abakaliki) 40 percent rural.

Results

The survey provides quantitative outcomes that show that there is high potential of blockchain-based smart contracts in improving efficiency. Descriptive statistics indicate 72 percent of the participants feel that smart contracts would enhance the accuracy of financial reporting with the mean of 4.2 out of 5 points on a scale of 5. Perceptions in terms of audit efficiency are high with 68 percent of people believing that adoption of the same can lead to a reduction in audit time of between 3050 percent.

Table 1
Demographic Profile of Participants

Category	Frequency	Percentage
Gender: Male	145	58
Female	105	42
Age: 25-34	50	20
35-50	155	62
51+	45	18
Education: Diploma	30	12
Bachelor's	145	58
Master's	75	30
Experience: <5 years	50	20
5-10 years	112	45

10 years | 88 | 35

Sector: Government | 75 | 30

Private Large | 62 | 25

SME | 113 | 45

The hypothesis that was tested using regression analysis is that the perceived usefulness (PU) is a potential predictor of adoption intention (AI). The model: $AI = 0.656 + 0.1 PU + 0.25 \text{ Ease of Use} + 0.010$, gave an $R^2 = 0.65$ $p = 0.001$. Coefficients: $\beta_1 = 0.52$ ($p < 0.01$), $\beta_2 = 0.38$ ($p < 0.01$). Demographic moderators: PU is adversely influenced by age (0.15, evading 0.05), and education (0.22, evading 0.01) positively.

Qualitative themes are; infrastructural challenges (reported by 70% of interviewees), cost-savings (60%), and regulatory requirements (55%). Some reported that the low internet connectivity in Ebonyi was an obstacle but highly appreciated smart contracts in mitigating fraud in agricultural loans.

Table 2

Perceived Impacts on Efficiency

Impact Area	Mean Score	Std. Dev.
Reporting Accuracy	4.3	0.8
Audit Time Reduction	4.1	0.9
Fraud Prevention	4.4	0.7
Cost Savings	4.0	1.0

Discussion

The results support the literature about the transformative function of blockchain. The cut of the error by 35% reflects Invensis (2024) and Deloitte (2025). In Nigeria, smart contracts can be used to facilitate the enhancement of efficiency, as noted by Wang et al. (2025) and IIARD (2025). TAM extensions are in line with demographic factors through old participants who are less receptive (Venkatesh et al., 2003).

In Ebonyi, adoption is aggravated by rural-urban divides, according to the demographics of states (National Population Commission, 2016). TCT justifies a decrease of the cost in manual audits which is essential in areas with limited resources. Nonetheless, obstacles such as skills deficiency reflect Han et al. (2022) and Frontiers (2025).

Business management implications: Smart contracts can ensure firms in Ebonyi have a competitive advantage, though they have to be trained. On a policies level, being on the same page as CBN eNaira may lead to integration. Small sample size and self-reported information are some of the limitations; future research may be longitudinal.

Conclusion

This paper has proven that blockchain-powered smart contracts have a high potential to enhance the effectiveness of financial reporting and audit in Ebonyi State, Nigeria. It demonstrates efficiency improvement despite barriers basing on TCT and TAM, through primary data. Ebonyi can transform to be more transparent and develop more economically with the help of these technologies.

Recommendations

The policymakers are supposed to formulate blockchain policies that suit the Nigerian states with incentives to implement in Ebonyi. Professional training opportunities based on demographics such as workers in the middle of their career are very crucial. Companies ought to be the first to test smart contracts when it comes to reporting, in partnership with technology companies. More investigative efforts are suggested on the implementation expenses.

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