

Blockchain Technology and Profitability in Nigerian Money Deposits Bank

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Abstract

This study examined the effect of blockchain technology on the profitability of Nigerian deposit money banks, with specific emphasis on the effects of blockchain integration and blockchain based accounting systems on firm profitability. The study adopted a cross sectional survey research design and focused on employees of five selected deposit money banks in Nigeria. The study population comprised 1,305 employees, while a sample size of 306 respondents was determined using Taro Yamane's formula and selected through proportionate stratified sampling. Primary data were collected through a structured questionnaire, and descriptive statistics such as frequency and mean were used for data presentation and analysis. The hypotheses were tested using Multiple Linear Regression Analysis at the 5 percent level of significance. The findings revealed that blockchain integration had a positive and significant effect on firm profitability ($\beta = 0.466$, $p = 0.000$), while blockchain based accounting systems also exerted a positive and significant effect on firm profitability ($\beta = 0.380$, $p = 0.000$). The study concluded that blockchain technology enhances the profitability of Nigerian deposit money banks and recommended that bank management should increase investment in blockchain integration and strengthen the adoption of blockchain based accounting systems to improve profitability.

Keywords: Blockchain Technology, Blockchain Integration, Blockchain Based Accounting Systems, Firm Profitability

1.0 Introduction

The banking industry has continued to experience significant transformation as a result of rapid technological advancement and the growing demand for efficient financial services. In recent years, financial institutions across the world have increasingly adopted digital technologies to improve service delivery, enhance transparency, reduce operational costs, and strengthen their competitive position. Among the emerging technological innovations influencing the financial sector is blockchain technology, which has attracted considerable attention from academics, practitioners, regulators, and investors (Ahmed, 2026). Blockchain technology is a distributed digital ledger that enables secure, transparent, and tamper resistant recording of transactions

across multiple participants without the need for a central authority. Its capacity to facilitate real time verification and secure data sharing has made it attractive to industries where trust, accountability, and accuracy are essential. Within the banking sector, blockchain technology is increasingly being considered as a solution to challenges associated with transaction delays, record manipulation, operational inefficiencies, and information asymmetry (Ajayi et al., 2022). Nigerian deposit money banks operate in an environment characterized by intense competition, increasing customer expectations, regulatory pressure, and the need for continuous innovation. Consequently, financial institutions are exploring technological solutions capable of improving their overall performance and long term sustainability. This growing interest in technological innovation has generated concerns regarding the extent to which blockchain technology can contribute to improving the financial outcomes of banks operating within the Nigerian financial system.

Firm profitability remains one of the most important indicators used to assess the performance, growth, and sustainability of business organizations. Profitability reflects the ability of a firm to generate returns from its resources and serves as a measure of operational effectiveness and managerial efficiency (Muomaife et al., 2026). For deposit money banks, profitability is particularly important because it determines their ability to meet obligations to shareholders, attract investors, expand operations, and remain competitive within the financial market. High profitability strengthens investor confidence and enables banks to withstand economic uncertainties and regulatory challenges. At the same time, blockchain technology has emerged as one of the most influential innovations shaping modern business operations. The technology provides a decentralized platform for recording, storing, and verifying transactions in a secure and transparent manner (Islam et al., 2026). Organizations across various sectors have increasingly invested in blockchain applications because of their potential to reduce operational costs, improve information accuracy, and enhance security. In the banking sector, blockchain technology supports faster transaction processing, improved audit trails, enhanced compliance procedures, and greater transparency in financial reporting. Two important dimensions of blockchain technology relevant to banking operations are blockchain integration and blockchain based accounting systems. Blockchain integration involves the incorporation of blockchain applications into existing business and banking processes to improve operational efficiency and information management. Blockchain based accounting systems involve the use of blockchain platforms to record, process, and verify accounting transactions in a secure and transparent manner. As financial institutions continue to embrace digital transformation, the adoption of blockchain technology has become increasingly relevant to discussions concerning organizational efficiency, financial performance, and profitability. Evidence from recent studies suggests that blockchain technology can enhance operational efficiency and transparency within banking institutions (Mohammed, 2025; Inaku & Effiong, 2026).

The effect of blockchain technology on firm profitability has become an important concern among researchers and financial practitioners because profitability depends significantly on a firm's ability to manage costs, improve efficiency, and maximize revenue generation. Blockchain integration can influence profitability by streamlining operational processes and reducing costs associated with transaction verification, reconciliation, record keeping, and data management. Traditional banking operations often involve multiple intermediaries and extensive documentation, which can increase processing time and operational expenses (Kumar et al., 2026). The adoption of blockchain integration enables transactions to be verified through a shared digital network, thereby reducing administrative burdens and minimizing costs. Lower operating costs can improve profit margins and enhance overall financial performance. Furthermore, blockchain integration improves transparency and security, reducing the likelihood of fraud, data duplication, and transaction disputes that may result in financial losses for banks. Similarly, blockchain based accounting systems can affect

profitability by improving the accuracy and reliability of financial information. Conventional accounting systems are vulnerable to errors, delays, and unauthorized alterations that may undermine decision making and financial reporting quality. In contrast, blockchain based accounting systems provide a permanent and verifiable record of transactions, thereby improving accountability and reducing the costs associated with auditing and compliance activities. Accurate accounting information enables management to make better financial decisions that support profitability and business growth. Studies have shown that firms adopting blockchain technology often record improvements in operational efficiency, financial performance, and transparency (Hasan et al., 2020; Tseng et al., 2023; Inaku & Effiong, 2026). For Nigerian deposit money banks, the adoption of blockchain integration and blockchain based accounting systems may contribute to improved operational efficiency, better resource utilization, stronger internal controls, and enhanced customer confidence. These outcomes can collectively translate into increased profitability.

The Nigerian banking sector operates in an environment where profitability remains a major indicator of financial strength, operational efficiency, and long term sustainability. Deposit money banks are expected to generate adequate returns through efficient utilization of resources, effective cost management, accurate financial reporting, and timely delivery of banking services (Nwafor & Nworie, 2025). With the emergence of blockchain technology, banks now have access to advanced digital systems capable of improving transaction processing, strengthening data security, reducing operational errors, and enhancing transparency in accounting and financial reporting. Blockchain integration and blockchain based accounting systems are expected to support better decision making, improve service quality, reduce operational costs, and ultimately contribute to higher levels of profitability among deposit money banks.

Despite continuous investments in technology, many Nigerian deposit money banks still encounter challenges relating to operational inefficiencies, increasing transaction costs, fraud related risks, delays in transaction processing, and weaknesses in information management. These challenges have continued to affect the ability of some banks to maximize returns and sustain competitive performance within the financial sector. Although blockchain technology has gained global recognition for its capacity to improve financial operations and accounting practices, the extent to which Nigerian deposit money banks have benefited from blockchain integration and blockchain based accounting systems in terms of profitability remains uncertain. Furthermore, available empirical studies have produced mixed findings regarding the contribution of blockchain technology to organizational performance (Ata et al., 2023; Gyimah et al., 2023; Tseng et al., 2023), thereby creating uncertainty within the literature.

The persistence of these challenges may lead to reduced profitability, increased operating costs, lower investor confidence, and weakened competitiveness among deposit money banks. Where banks are unable to fully exploit the benefits associated with blockchain technology, opportunities for improving efficiency, strengthening financial reporting, and enhancing revenue generation may be lost. This situation may also affect shareholders' returns and limit the ability of banks to contribute effectively to economic development. This situation provided the motivation for examining the effect of blockchain technology, using blockchain integration and blockchain based accounting systems as proxies, on the profitability of Nigerian deposit money banks.

1.1 Objective of the study

The main objective of this study is to examine the effect of blockchain technology on the profitability of Nigerian deposit money banks. The specific objectives are as follows:

1. To determine the effect of blockchain integration on the profitability of Nigerian deposit money banks.

2. To assess the effect of blockchain-based accounting systems on the profitability of Nigerian deposit money banks.

2.0 Literature Review

2.1 Conceptual Review

Blockchain Technology

Blockchain technology refers to a digital system that records, stores, and validates transactions across a network of interconnected users without relying on a central authority (Ajayi et al., 2022). It is also viewed as a decentralized ledger through which transaction information is permanently documented and shared among authorized participants. In addition, blockchain technology can be regarded as a secure electronic infrastructure that facilitates transparency, accountability, and verification of business transactions. It is further described as an innovative technological framework that enables the creation of reliable records which are difficult to alter or manipulate. Within business and financial environments, blockchain technology provides a platform for recording information in a manner that promotes trust, strengthens security, and improves the reliability of organizational data.

Blockchain technology is equally regarded as a technological arrangement that allows information to be distributed across multiple locations while maintaining consistency in records (Ogege, 2026). It may also be viewed as a system that supports direct transaction processing between parties without excessive dependence on intermediaries. Another perspective considers it a digital record keeping mechanism designed to improve efficiency and accuracy in information management. Furthermore, blockchain technology represents a modern approach to handling financial and nonfinancial transactions through the use of encrypted and verifiable records. Its growing application across industries reflects its capacity to support reliable information sharing, transaction validation, and improved operational processes in organizations.

Blockchain Integration

Blockchain integration refers to the incorporation of blockchain technology into existing organizational operations, processes, and technological structures to enhance business activities (Tseng et al., 2023). It is also described as the process through which organizations embed blockchain applications into their routine operations and information systems. In another sense, blockchain integration represents the connection of blockchain infrastructure with existing business procedures for the purpose of improving effectiveness and coordination. It can further be viewed as the adoption of blockchain enabled processes within organizational functions to facilitate transaction processing and information management. Through integration, firms combine traditional operational systems with blockchain capabilities to improve the quality of business activities. Blockchain integration may also be regarded as the alignment of organizational processes with blockchain enabled platforms to support more efficient service delivery (Mohammed, 2025). It is further seen as the application of blockchain tools within an existing business environment to improve workflow and operational effectiveness. Another view presents it as the gradual incorporation of blockchain features into organizational structures, procedures, and transaction systems. In addition, blockchain integration involves the utilization of blockchain based solutions alongside conventional technologies to create a more efficient and secure operating environment. Within business organizations, it reflects the extent to which blockchain applications have become part of daily operational activities and decision-making processes.

Blockchain Based Accounting System

A blockchain based accounting system refers to an accounting arrangement that records, stores, processes, and verifies financial transactions through blockchain technology (Inaku & Effiong, 2026). It is also viewed as an accounting framework in which financial information is maintained on a distributed ledger that is accessible to authorized users. Another perspective describes it as a digital accounting structure that provides secure and verifiable records of financial transactions. It may further be regarded as an accounting mechanism that relies on blockchain networks to enhance the reliability and integrity of recorded financial data. Such systems are designed to maintain permanent transaction records that can be verified whenever required. A blockchain based accounting system is equally considered a technology driven accounting environment where transaction records are continuously validated and preserved through blockchain networks (Inaku & Effiong, 2026). It can also be described as a modern accounting arrangement that promotes transparency and accountability in financial reporting. Another view sees it as an accounting information system that utilizes blockchain infrastructure to improve record accuracy and transaction traceability. Furthermore, it represents an accounting approach that minimizes the possibility of unauthorized modifications to financial records by ensuring that transactions remain securely documented. This makes it a valuable tool for maintaining dependable accounting information within organizations.

Firm Profitability

Firm profitability refers to the ability of a business organization to generate earnings from its operations, resources, and investments over a given period (Ata et al., 2023). It is also seen as a measure of the financial returns realized after considering the costs incurred in business activities. In another sense, firm profitability represents the capacity of an organization to convert available resources into financial gains. It may further be described as the level of income remaining after all operational and financial obligations have been met. The profitability of a firm reflects the extent to which management is able to utilize organizational assets and resources to achieve favourable financial outcomes.

Firm profitability is equally regarded as an indicator of financial success and organizational performance (Hasan et al., 2020). It can also be viewed as the degree to which a business is capable of producing revenue in excess of its expenses. Another perspective considers profitability as evidence of efficient resource utilization and effective managerial decision making. Furthermore, firm profitability represents the financial reward obtained from the successful execution of business activities and strategic objectives. For business organizations, particularly banks, profitability serves as an important reflection of sustainability, growth potential, and overall financial health.

2.2 Theoretical Framework

This study was anchored on the Technology Acceptance Model (TAM). The Technology Acceptance Model was developed by Fred Davis in 1989 to explain and predict users' acceptance of information technology. The theory originated from the Theory of Reasoned Action and was designed to provide a framework for understanding the factors that influence individuals' decisions to adopt and use technological systems. Since its introduction, TAM has become one of the most widely applied theories in information systems and technology adoption studies due to its ability to explain users' behavioural responses to emerging technologies. Recent scholarly works have continued to acknowledge TAM as a leading framework for examining technology adoption across various sectors, including banking and digital finance (Awoniyi, 2022; Gbongli, 2022; Bazine, 2025).

The central argument of the Technology Acceptance Model is that an individual's decision to adopt and use a technology is primarily influenced by perceived usefulness and perceived ease

of use. Perceived usefulness refers to the degree to which a person believes that a particular technology will improve job performance, while perceived ease of use refers to the extent to which the technology is considered easy to learn and operate. The theory posits that when users believe that a technology is beneficial and simple to utilize, they are more likely to develop a favourable attitude towards it, which subsequently increases their intention to adopt and use the technology. Over the years, studies have consistently validated these propositions across different technological environments and financial systems (Davis & Granić, 2024; Or, 2024; Badda, 2025). The Technology Acceptance Model is relevant to this study because blockchain technology represents a digital innovation whose successful implementation depends largely on users' willingness to adopt and utilize it within banking operations. Blockchain integration and blockchain based accounting systems can only contribute to firm profitability when employees, managers, and other stakeholders perceive them as useful in improving operational processes and easy to incorporate into existing banking activities. When these technologies are accepted and effectively utilized, banks are more likely to achieve greater operational efficiency, improved transaction processing, enhanced financial reporting, and lower operating costs, which may contribute to higher profitability. The theory therefore provides a suitable explanation for how the acceptance and utilization of blockchain technology can influence the profitability of Nigerian deposit money banks (Mohammed, 2025; Awoniyi, 2022; Aliza et al., 2025). In line with the above, we hypothesise that:

H₁: Blockchain integration has a significant effect on the profitability of Nigerian deposit money banks.

H₂: Blockchain-based accounting systems have a significant effect on the profitability of Nigerian deposit money banks.

2.3 Empirical Review

Inaku and Effiong (2026) investigated the effect of blockchain accounting on the financial performance of Nigerian deposit money banks between 2014 and 2023. The study specifically examined the effect of blockchain accounting on return on assets, return on equity, operational efficiency, and transparency in financial reporting. An ex post facto research design was adopted, while secondary data were obtained from the annual reports and audited financial statements of the 23 licensed deposit money banks in Nigeria. Data covering the period from 2014 to 2023 were analysed using descriptive statistics and simple linear regression with the aid of SPSS Version 27. The findings showed that blockchain accounting exerted a significant positive effect on financial performance, operational efficiency, and transparency in financial reporting within the Nigerian banking industry. The study concluded that blockchain accounting enhanced profitability, strengthened operational processes, improved transaction verification, and promoted more reliable financial reporting among Nigerian deposit money banks. Ogege (2026) examined the impact of blockchain technology on the banking and financial systems in Nigeria. The study employed a descriptive survey research design and collected data from 235 purposively selected bankers and fintech experts through a structured questionnaire. Descriptive statistics, Pearson Product Moment Correlation, and multiple regression analysis were used to analyse the data. The findings revealed strong positive and statistically significant associations between blockchain adoption and the disruption of traditional banking models, enhancement of financial inclusion, and improvement of transaction security and privacy. The results further showed that blockchain technology simplified loan processing, removed intermediaries in cross border payments, and provided stronger transaction security through advanced encryption. Regression analysis demonstrated that transparency and automation significantly reduced banking operational costs and explained a considerable proportion of the observed variation. The study concluded that blockchain technology possesses substantial potential to transform banking operations in

Nigeria, although practical implementation remained constrained by existing institutional and regulatory barriers.

Mohammed (2025) investigated the effect of blockchain technology adoption on the operational efficiency of quoted money deposit banks in Nigeria. The study sought to determine how perceived usefulness, ease of use, attitude towards use, and behavioural intention to use blockchain technology influenced operational efficiency. A quantitative survey design was adopted, and data were obtained from 205 management staff selected through Taro Yamane's sampling technique. The data were analysed using descriptive statistics, percentages, correlation analysis, and multiple regression. The findings indicated that usefulness, ease of use, attitude towards use, and behavioural intention significantly predicted blockchain technology adoption. The results further revealed that these factors exerted significant positive effects on operational efficiency within the banking sector. The study concluded that blockchain technology adoption contributes significantly to improving operational efficiency and provides a better understanding of the factors encouraging blockchain implementation in Nigerian banks. Ajayi et al. (2022) examined the impact of blockchain technology on financial technology in Nigeria. The study adopted a systematic review approach through the identification and examination of relevant materials obtained from digital libraries and online sources. Following the screening process, six scholarly studies were selected and reviewed. Information extracted from the selected studies was organised into four major themes comprising the concept, importance, impact, and challenges of blockchain technology in Nigeria's financial technology sector. The findings revealed that blockchain technology possessed significant potential to improve the efficiency of several financial services. Specifically, it enhanced cross border payments, trade finance, capital markets, financial reporting, regulatory compliance, and customer verification processes. The study concluded that blockchain technology offers substantial opportunities for transforming financial technology operations in Nigeria. Biriuk et al. (2024) explored the relationship between blockchain technology development and financial inclusion across countries with varying levels of development. The study employed descriptive statistics, correlation analysis, and regression analysis to evaluate the effects of blockchain technology on access to financial services. The findings revealed that the blockchain market was projected to experience substantial growth and that blockchain adoption contributed significantly to improving financial inclusion. The results further showed that countries with lower levels of financial inclusion recorded higher utilisation of blockchain based cryptocurrencies as alternative sources of financial services and credit access. The study also found that changes in the proportion of the unbanked population explained a meaningful proportion of the variation in cryptocurrency ownership. The study concluded that blockchain technology serves as an important mechanism for expanding financial inclusion, particularly in countries with limited access to conventional banking services. Qizi (2023) examined the influence of blockchain technology on liquidity management within banking institutions. The study adopted a comparative analytical approach that evaluated traditional liquidity management practices alongside blockchain integrated models. Case studies of banks that adopted blockchain technology were reviewed, while financial performance indicators were utilised to assess practical outcomes. The findings demonstrated that blockchain adoption improved transaction speed, reduced counterparty risks, and enhanced transparency in liquidity management activities. The study also identified challenges associated with blockchain implementation, including regulatory obstacles and infrastructural requirements. The study concluded that blockchain technology possesses considerable potential to improve liquidity management and strengthen banking efficiency, provided that implementation barriers are adequately addressed. Gyimah et al. (2023) examined the opportunities and challenges associated with the adoption of blockchain technology in Ghana's banking sector. The study employed a qualitative research

approach and gathered data through interviews conducted with representatives of the Central Bank of Ghana and commercial banks. The findings revealed that blockchain technology offers significant opportunities for innovation and efficiency improvement within the banking industry. However, the study also identified several barriers to adoption, including the absence of international standards and regulations, high energy costs, limited intermediary participation, poverty, corruption, inadequate infrastructure, and insufficient technical support. The study concluded that although blockchain technology presents valuable opportunities for the banking sector, several structural and institutional challenges must be addressed before widespread implementation can occur. Ata et al. (2023) examined the effect of blockchain technology utilisation on the financial performance of investment projects developed by the Ministry of Sports. The study adopted a descriptive survey design and collected data from 300 participants comprising ministry officials, sports investment experts, members of sports federations, sports clubs, youth centres, and the Olympic Committee. Data were gathered through questionnaires and analysed using appropriate descriptive techniques. The findings revealed a low level of blockchain technology utilisation and a correspondingly low level of financial performance within the Ministry. The results further showed a significant association between blockchain technology utilisation and financial performance, indicating that improvements in blockchain adoption could enhance the financial performance of investment projects. The study concluded that blockchain technology serves as a significant predictor of financial performance and possesses the capacity to improve investment outcomes.

Tseng et al. (2023) investigated the effect of blockchain technology adoption on corporate operating performance among Fortune 500 companies in the United States and China. The study employed the resource-based view and analysed secondary data obtained from companies between 2012 and 2019. The findings showed that firm size and research and development investment significantly influenced blockchain adoption. The results further revealed that investment in innovation and blockchain technology adoption improved business performance, while the positive performance effect was stronger among United States firms than Chinese firms. The study concluded that blockchain technology adoption contributes significantly to enhanced corporate performance and that firm characteristics play a major role in determining adoption levels. Hasan et al. (2020) evaluated the effect of blockchain technology on the operational efficiency of firms in China. The study utilised panel data obtained from blockchain based companies listed on stock exchanges in Shanghai, Shenzhen, and Hong Kong between 2014 and 2018. Ordinary Least Squares, System Generalised Method of Moments, and stochastic frontier estimation techniques were employed for data analysis. The findings indicated that firms recorded better operational performance after adopting blockchain technology compared with previous years. The study further found that firms with higher financial leverage and return on assets derived greater benefits from blockchain adoption, while larger and older firms benefited less from implementation. The study concluded that blockchain technology significantly improved operational efficiency and contributed to enhanced performance among firms operating in China.

2.4 Gap in Literature

A review of existing empirical studies reveals that substantial scholarly attention has been devoted to blockchain technology and organizational performance. For instance, Inaku and Effiong (2026) examined blockchain accounting and financial performance among Nigerian deposit money banks, while Ogege (2026) focused on blockchain technology and the Nigerian banking and financial system. Mohammed (2025) investigated blockchain technology adoption and operational efficiency in Nigerian banks, whereas Ajayi et al. (2022) explored the broader implications of blockchain technology in Nigeria's financial technology sector. Similarly, Biriuk et al. (2024) concentrated on blockchain technology and financial inclusion, Qizi (2023)

examined blockchain technology and liquidity management in banking institutions, and Gyimah et al. (2023) focused on opportunities and challenges associated with blockchain adoption in Ghana's banking sector. Outside the banking industry, Ata et al. (2023) examined blockchain technology and financial performance in investment projects, while Tseng et al. (2023) investigated blockchain adoption and corporate operating performance among Fortune 500 firms. Hasan et al. (2020) also assessed blockchain technology and operational efficiency among Chinese firms. Although these studies established that blockchain technology influences organizational outcomes such as operational efficiency, financial inclusion, liquidity management, transparency, and financial performance, most of them did not specifically examine blockchain integration and blockchain based accounting systems as distinct dimensions of blockchain technology. Furthermore, while some studies focused on financial performance generally, limited attention was given to firm profitability as the specific performance measure. In addition, several studies were conducted outside the Nigerian banking industry or outside Nigeria altogether, thereby limiting their applicability to Nigerian deposit money banks. This conceptual, contextual, and measurement gap provided the justification for examining the effect of blockchain technology, using blockchain integration and blockchain based accounting systems as proxies, on the profitability of Nigerian deposit money banks.

3.0 Methodology

This study adopted a cross-sectional survey research design to examine the effect of blockchain technology on the profitability of Nigerian deposit money banks. The cross-sectional survey design was considered appropriate because it enabled the researcher to collect primary data from respondents at a single point in time without manipulating the study variables (Ikwuo et al., 2024; Meshack et al., 2022; Onochie & Nworie, 2025). The design facilitated the collection of information regarding blockchain integration, blockchain based accounting systems, and firm profitability from employees of selected deposit money banks in Nigeria. It also provided an opportunity to examine the effects of the independent variables on the dependent variable using quantitative data obtained through structured questionnaires. Furthermore, the design enabled the researcher to obtain responses from a relatively large number of banking professionals within a short period, thereby making the findings representative of the selected population. The population of the study comprised 1,305 employees drawn from Nigeria's five largest internationally authorised deposit money banks, namely United Bank for Africa Plc, Zenith Bank Plc, Access Bank Plc, First Bank of Nigeria Limited, and Guaranty Trust Bank Plc. The population consisted of information technology professionals, accountants, internal auditors, operations personnel, compliance officers, risk management officers, and senior management employees. These categories of employees were considered suitable respondents because of their knowledge and experience regarding technological innovation, blockchain applications, accounting systems, and banking operations.

Table 3.1: Population of the Study

Deposit Money Bank	Population
United Bank for Africa Plc	275
Zenith Bank Plc	290
Access Bank Plc	310
First Bank of Nigeria Limited	260
Guaranty Trust Bank Plc	170
Total	1,305

Source: Field Survey (2026).

The sample size for the study was determined using Taro Yamane's (1967) sample size determination formula for finite populations. The formula is expressed as:

$$n = \frac{N}{1 + N(e)^2}$$

Where:

n = Sample size

N = Population size (1,305)

e = Level of precision (0.05)

Substituting the values into the formula:

$$\begin{aligned} n &= \frac{1305}{1 + 1305(0.05)^2} \\ n &= \frac{1305}{4.2625} \\ n &= 306 \end{aligned}$$

Therefore, the sample size for the study was 306 respondents. The study adopted the proportionate stratified sampling technique. This sampling technique was considered appropriate because the population consisted of employees from five different deposit money banks, each representing a distinct stratum. The technique ensured that each bank was fairly represented in the sample according to its proportion of the total population.

The study made use of primary data collected through the administration of a structured electronic questionnaire. The questionnaire was designed to obtain information on blockchain integration, blockchain based accounting systems, and firm profitability among Nigerian deposit money banks. The use of a questionnaire was considered appropriate because it enabled the researcher to collect standardized responses from a relatively large number of respondents within a short period. It also facilitated quantitative analysis since the responses were coded and analysed using the Statistical Package for the Social Sciences (SPSS).

The research instrument for this study was a structured questionnaire developed based on the objectives of the study and relevant literature on blockchain technology and firm profitability. The questionnaire consisted of two sections. The questionnaire contained statements relating to blockchain integration, blockchain based accounting systems, and firm profitability. Respondents indicated their level of agreement using a five-point Likert scale.

The study adapted and modified the model of Inaku and Effiong (2026), which examined blockchain accounting and financial performance in the Nigerian banking sector.

The functional model for this study was specified as:

$$FP = f(B, IBAS)$$

Where:

FP = Firm Profitability

BI = Blockchain Integration

BAS = Blockchain Based Accounting System

The econometric model was expressed as:

$$FP = \beta_0 + \beta_1 BI + \beta_2 BAS + \varepsilon$$

Where:

FP = Firm Profitability

β_0 = Constant term

$\beta_1 - \beta_2$ = Regression coefficients

BI = Blockchain Integration

BAS = Blockchain Based Accounting System

ε = Error term representing variables not included in the model.

Data collected through the completed questionnaires were coded, edited, and analysed using the Statistical Package for the Social Sciences (SPSS). The completed questionnaires were screened to identify coding errors, incomplete responses, and inconsistencies before analysis. Descriptive statistics including frequencies and mean scores were used to summarise respondents' responses to questionnaire items. These statistics provided a general overview of the respondents' perceptions regarding blockchain technology and profitability. To test the hypotheses of the study, Multiple Linear Regression Analysis was employed at the 5 percent level of significance. Multiple linear regression was considered appropriate because the study examined the effects of two independent variables, namely blockchain integration and blockchain based accounting systems, on one dependent variable, firm profitability. The technique provided information regarding the direction, magnitude, and significance of the effects of the explanatory variables on profitability.

The decision rule was that if the probability value (p-value) was less than 0.05, the null hypothesis was rejected, indicating that the respective blockchain technology variable had a significant effect on the profitability of Nigerian deposit money banks. However, if the probability value (p-value) was greater than 0.05, the null hypothesis was not rejected, indicating that the respective blockchain technology variable had no significant effect on the profitability of Nigerian deposit money banks.

4.0 Data Analysis

4.1 Descriptive Analysis

Table 4.1: Descriptive Statistics on Blockchain Technology and Firm Profitability (N = 306)

S/N	Items on Blockchain Integration	SA	A	U	D	SD	Mean	Decision
1	Blockchain technology has been integrated into major operational activities within my bank.	116	63	82	37	8	3.79	Accept
2	Blockchain integration has improved transaction processing efficiency in my bank.	136	48	63	39	20	3.79	Accept
3	Blockchain integration has enhanced transparency in banking operations.	101	45	90	47	23	3.50	Accept
4	Blockchain integration has reduced operational bottlenecks in my bank.	114	50	58	51	33	3.53	Accept
S/N	Items on Blockchain-Based Accounting System	SA	A	U	D	SD	Mean	Decision
5	Blockchain-based accounting systems improve the accuracy of accounting records.	128	51	69	31	27	3.73	Accept
6	Blockchain-based accounting systems enhance the reliability of financial information.	136	55	74	32	9	3.91	Accept
7	Blockchain-based accounting systems improve transparency in financial reporting.	126	61	57	45	17	3.76	Accept

8	Blockchain-based accounting systems reduce errors in accounting processes.	114	37	63	61	31	3.46	Accept
S/N	Items on Firm Profitability	SA	A	U	D	SD	Mean	Decision
9	My bank has experienced steady growth in profitability in recent years.	125	58	35	76	12	3.68	Accept
10	The bank consistently generates satisfactory returns from its operations.	123	70	47	32	34	3.71	Accept
11	The bank's revenue growth has contributed positively to its profitability.	115	62	81	29	19	3.74	Accept
12	The overall financial performance of the bank reflects a high level of profitability.	142	53	66	30	15	3.91	Accept

Source: Researcher's Field Survey (2026).

Table 4.1 shows that 116 respondents strongly agreed and 63 agreed that blockchain technology has been integrated into major operational activities within their banks, while 82 respondents were undecided, 37 disagreed, and 8 strongly disagreed. The mean score of 3.79 exceeded the benchmark value of 3.00, leading to the acceptance of the statement. This suggests that blockchain technology has been integrated into major operational activities within the selected banks.

Table 4.1 further reveals that 136 respondents strongly agreed and 48 agreed that blockchain integration has improved transaction processing efficiency in their banks. While 63 respondents were undecided, 39 disagreed and 20 strongly disagreed. The mean score of 3.79 resulted in acceptance of the statement. The result indicates that respondents perceived blockchain integration as contributing to improved transaction processing efficiency.

The table also shows that 101 respondents strongly agreed and 45 agreed that blockchain integration has enhanced transparency in banking operations. However, 90 respondents remained undecided, while 47 disagreed and 23 strongly disagreed. With a mean score of 3.50, the statement was accepted. The outcome suggests that blockchain integration contributes to greater transparency in banking operations.

Similarly, 114 respondents strongly agreed and 50 agreed that blockchain integration has reduced operational bottlenecks in their banks. In comparison, 58 respondents were undecided, while 51 disagreed and 33 strongly disagreed. Since the mean score of 3.53 exceeded the criterion mean, the statement was accepted. This implies that blockchain integration assists in minimizing operational challenges within the banking sector.

Regarding blockchain based accounting systems, Table 4.1 indicates that 128 respondents strongly agreed and 51 agreed that blockchain based accounting systems improve the accuracy of accounting records. Meanwhile, 69 respondents were undecided, 31 disagreed, and 27 strongly disagreed. The mean score of 3.73 led to the acceptance of the statement, indicating that blockchain based accounting systems improve record accuracy.

The table further reveals that 136 respondents strongly agreed and 55 agreed that blockchain based accounting systems enhance the reliability of financial information. While 74 respondents were undecided, 32 disagreed and 9 strongly disagreed. The mean score of 3.91 exceeded the benchmark value, resulting in acceptance of the statement. This suggests that blockchain based accounting systems improve the reliability of financial information in banks. Table 4.1 also shows that 126 respondents strongly agreed and 61 agreed that blockchain based accounting systems improve transparency in financial reporting. In contrast, 57 respondents were undecided, while 45 disagreed and 17 strongly disagreed. The mean score of 3.76 resulted in acceptance of the statement. The result indicates that blockchain based accounting systems contribute to transparent financial reporting practices.

Furthermore, 114 respondents strongly agreed and 37 agreed that blockchain based accounting systems reduce errors in accounting processes. However, 63 respondents were undecided, while 61 disagreed and 31 strongly disagreed. The mean score of 3.46 led to acceptance of the statement, suggesting that blockchain based accounting systems help reduce accounting errors. On firm profitability, Table 4.1 reveals that 125 respondents strongly agreed and 58 agreed that their banks have experienced steady growth in profitability in recent years. Meanwhile, 35 respondents were undecided, 76 disagreed, and 12 strongly disagreed. The mean score of 3.68 exceeded the criterion mean, resulting in acceptance of the statement.

The table also shows that 123 respondents strongly agreed and 70 agreed that their banks consistently generate satisfactory returns from operations. While 47 respondents were undecided, 32 disagreed and 34 strongly disagreed. The mean score of 3.71 led to acceptance of the statement, indicating that the banks generate satisfactory returns.

Similarly, 115 respondents strongly agreed and 62 agreed that their banks' revenue growth has contributed positively to profitability. In contrast, 81 respondents were undecided, 29 disagreed, and 19 strongly disagreed. The mean score of 3.74 supported acceptance of the statement.

Finally, Table 4.1 indicates that 142 respondents strongly agreed and 53 agreed that the overall financial performance of their banks reflects a high level of profitability. While 66 respondents were undecided, 30 disagreed and 15 strongly disagreed. The mean score of 3.91 led to acceptance of the statement, suggesting that respondents generally considered their banks as highly profitable.

4.2 Test of Hypotheses

H₁: Blockchain integration has a significant effect on the profitability of Nigerian deposit money banks.

H₂: Blockchain-based accounting systems have a significant effect on the profitability of Nigerian deposit money banks.

Table 4.2 Test of Hypotheses

Model Summary

Model	R	R Square	Adjusted Square	R	Std. Error of the Estimate
1	.792 ^a	.627	.625		2.328

a. Predictors: (Constant), Blockchain-Based Accounting System, Blockchain Integration

ANOVA^a

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	2763.476	2	1381.738	254.925	.000 ^b
	Residual	1642.315	303	5.420		
	Total	4405.791	305			

a. Dependent Variable: Firm Profitability

b. Predictors: (Constant), Blockchain-Based Accounting System, Blockchain Integration

Coefficients^a

Model		Unstandardized Coefficients B	Std. Error	Standardized Coefficients Beta	t	Sig.
1	(Constant)	2.573	.570		4.511	.000

Blockchain Integration	.466	.051	.473	9.098	.000
Blockchain-Based Accounting System	.380	.053	.375	7.211	.000

a. Dependent Variable: Firm Profitability

Source: Researcher's Compilation (2026)

Table 4.2 presents the results of the multiple linear regression analysis conducted to examine the effect of blockchain integration and blockchain based accounting systems on the profitability of Nigerian deposit money banks.

The model summary shows an R^2 value of 0.627 and an adjusted R^2 value of 0.625. This indicates that blockchain integration and blockchain based accounting systems jointly explained 62.7 percent of the variations in firm profitability, while the remaining 37.3 percent was accounted for by factors not included in the model. This suggests that the explanatory variables provided substantial explanatory power in predicting firm profitability.

The ANOVA result produced an F-statistic of 254.925 with a probability value of 0.000. Since the p-value is less than 0.05, the regression model was statistically significant at the 5 percent level. This indicates that the model was valid and appropriate for examining the effects of blockchain technology variables on firm profitability.

The constant coefficient was 2.573 with a p-value of 0.000. This implies that when blockchain integration and blockchain based accounting systems are held constant, firm profitability would increase by 2.573 units. Since the p-value is less than 0.05, the constant term was statistically significant at the 5 percent level.

Test of Hypothesis One

Table 4.2 shows that blockchain integration recorded a coefficient of 0.466 with a probability value of 0.000. The coefficient means that a one unit increase in blockchain integration would lead to a 0.466 unit increase in firm profitability while other variables remain constant. This positive marginal effect indicates that greater integration of blockchain technology into banking operations contributes to increased profitability. Since the p-value of 0.000 is less than 0.05, the effect was statistically significant at the 5 percent level. Therefore, the hypothesis stating that blockchain integration has a significant effect on the profitability of Nigerian deposit money banks is accepted. The study concludes that blockchain integration exerts a significant positive effect on firm profitability.

Test of Hypothesis Two

Table 4.2 further reveals that blockchain based accounting systems recorded a coefficient of 0.380 with a probability value of 0.000. This coefficient implies that a one-unit improvement in blockchain based accounting systems would increase firm profitability by 0.380 units, holding other variables constant. The positive marginal effect suggests that improvements in blockchain based accounting systems enhance profitability by strengthening accounting processes and financial information quality. Since the probability value is less than 0.05, the effect was statistically significant at the 5 percent level. Therefore, the hypothesis stating that blockchain based accounting systems have a significant effect on the profitability of Nigerian deposit money banks is accepted. The study concludes that blockchain based accounting systems exert a significant positive effect on firm profitability.

4.3 Discussion of Findings

The study found that blockchain integration exerted a positive and significant effect on the profitability of Nigerian deposit money banks. This finding suggests that the incorporation of blockchain technology into banking operations contributes to improved profitability through

enhanced transaction efficiency, reduced processing costs, improved transparency, and stronger operational control. The finding may be attributed to the ability of blockchain integration to simplify banking processes and reduce inefficiencies associated with conventional systems. This result is consistent with Ogege (2026), who found that blockchain technology reduced operational costs and improved banking operations. The finding also agrees with Mohammed (2025), who reported that blockchain technology adoption significantly improved operational efficiency in Nigerian banks. Similarly, Qizi (2023) found that blockchain technology enhanced liquidity management and transaction efficiency within banking institutions. The finding is further supported by Tseng et al. (2023), who reported that blockchain technology adoption improved corporate operating performance, and Hasan et al. (2020), who found that blockchain technology significantly enhanced operational efficiency among firms. Ajayi et al. (2022) also noted that blockchain technology possesses substantial potential for improving financial service operations in Nigeria.

The study further revealed that blockchain based accounting systems had a positive and significant effect on the profitability of Nigerian deposit money banks. This finding implies that blockchain enabled accounting systems contribute to profitability through improved accounting accuracy, transparency, reliability of financial information, and reduction of accounting errors. The result may be explained by the fact that better accounting records enhance decision making and improve resource allocation within organizations. The finding agrees with Inaku and Effiong (2026), who reported that blockchain accounting significantly improved financial performance and transparency among Nigerian deposit money banks. The result is also consistent with Ajayi et al. (2022), who observed that blockchain technology improves financial reporting and regulatory compliance. Likewise, Ata et al. (2023) found that blockchain technology significantly influenced financial performance. The finding also aligns with Tseng et al. (2023), who established that blockchain adoption improved business performance among firms, and Hasan et al. (2020), who reported significant improvements in firm performance following blockchain adoption. However, the practical adoption challenges identified by Gyimah et al. (2023) suggest that the full benefits of blockchain based accounting systems may depend on successful implementation.

5.0 Conclusion and Recommendation

The results of this study demonstrate that technological innovations continue to play an important role in shaping the financial outcomes of deposit money banks in Nigeria. The findings show that the integration of blockchain technology into banking operations and accounting systems contributes to stronger organizational performance and more favourable financial outcomes. The results suggest that banks that effectively utilize advanced digital systems are better positioned to improve operational efficiency, enhance transparency, strengthen information reliability, and reduce process related costs. The study further highlights the growing importance of technology driven financial management practices in the modern banking environment where competition, regulatory demands, and customer expectations continue to increase. The outcome also reinforces the view that profitability is influenced not only by traditional financial and managerial factors but also by the quality of technological infrastructure supporting banking operations. The evidence generated from the study expands the understanding of how emerging technologies can contribute to sustainable financial performance within the banking industry and provides useful evidence for stakeholders interested in improving banking efficiency and competitiveness in Nigeria. The study recommended that:

1. Management of Nigerian deposit money banks should increase the integration of blockchain technology into operational processes to improve efficiency and enhance profitability.

2. Accounting departments and financial managers of deposit money banks should strengthen the adoption and utilization of blockchain based accounting systems to improve financial reporting quality and increase profitability.

5.1 Contribution to Knowledge

This study contributed to the literature by providing empirical evidence on the effect of blockchain technology on the profitability of Nigerian deposit money banks using blockchain integration and blockchain based accounting systems as specific dimensions of blockchain technology. Unlike many previous studies that focused on blockchain technology broadly or emphasized organizational performance, operational efficiency, financial inclusion, liquidity management, and financial performance, this study specifically examined firm profitability as the outcome variable. The study also extended existing knowledge by evaluating blockchain integration and blockchain based accounting systems separately within a single model, thereby providing clearer evidence on their individual contributions to profitability. Furthermore, the study enriched empirical literature within the Nigerian banking sector by providing evidence from deposit money banks, thereby addressing existing conceptual, contextual, and measurement gaps identified in previous studies.

5.2 Limitations of the Study and Suggestion for Further studies

This study relied on primary data collected through questionnaires administered to employees of selected deposit money banks. As such, the findings depended on the honesty, understanding, and perceptions of the respondents. The study also focused on five selected deposit money banks, which may limit the generalization of the findings to all banks operating in Nigeria. In addition, the study examined only blockchain integration and blockchain based accounting systems as measures of blockchain technology and did not consider other dimensions that may influence profitability. Time and financial constraints also limited the coverage of a larger number of banks and respondents across different regions of the country. Future studies should investigate other dimensions of blockchain technology that may influence the profitability and performance of deposit money banks in Nigeria. Researchers may also expand the scope of the study by covering more banks and different categories of financial institutions across the country. In addition, future studies can adopt secondary data and longitudinal research designs to examine the long-term effect of blockchain technology on profitability. Further research may also compare blockchain technology adoption and profitability across different sectors of the economy to provide broader evidence on the role of blockchain technology in improving organizational performance and financial outcomes.

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