Blockchain Technology and Fraud Mitigation in Supply Chain Management in Nigeria

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Abstract
This work empirically investigated the effect of blockchain technology on fraud mitigation in supply chain management in Nigeria. The study is vital as it portrays the extent to the advent of blockchain technologies mitigates fraud and fraudulent practices in supply chain management in Nigeria. In order to determine the relationship between blockchain technology and fraud mitigation, blockchain technology was proxy using; blockchain technological adaptability and blockchain technological agility while the dependent variable was fraud mitigation. Two hypotheses were formulated to guide the investigation and the statistical test of parameter estimates was conducted using least squares regression model. Survey design was adopted and data for the study was obtained through e-questionnaire survey sent to the group wathsApp platform of the staff of AfriHealth Limited and RachamHub Limited that is into supply chain businesses in Nigeria. Using Least Squares Regression Model, the findings of the study indicate that blockchain technological adaptability and blockchain technological agility have positive and significant effect on fraud mitigation in supply chain management in Nigeria. Based on this, the study concludes that blockchain technology ensure fraud mitigation in supply chain management in Nigeria. In lieu of the findings of the study, it was recommended that the managers of firms in supply chain management should be familiar with the regulatory practices and procedures of blockchain technology in order to achieve good performance in fraud and fraudulent practices. Also, the management of firms in supply chain management should move with speed and discuss the issues of blockchain technology to their employees and other stakeholders as this will enable them to have a controlling share to such disruptive technology as blockchain technology is capable mitigating fraud in supply chain management in Nigeria.

Keywords: Blockchain Technology; Blockchain Technological Adaptability; Blockchain Technological Agility; Fraud Mitigation

1. Introduction

Many companies and organizations have been coming up with strategies that would allow them to safeguard the massive amount of transactions and enormous data they generate. Important tools and technology for managing business processes and methods of data distribution in an organization have been introduced because of the current digitalization. Blockchain technology as one of the disrupting Fintech, uses distributed ledger technology to prevent fraud and hacking and transform the way data is transferred (Grace & Mandella, 2022). Blockchain technology is a distributed ledger that distributes all network transactions across its users to ensure data security, transaction speed and transparency, and user trust. Blockchain technology is at the heart of a huge impending digital transformation. It's a decentralized internet in which people have control over their data. As blockchain allows fast and easy data synchronization globally and ensures transparency and easily achievable oversight when managing multi-stakeholder processes, this technology plays an important role in managing new classes of digital assets (Harrison, 2024).

On the same vein, an effective balance between the internal and external environment, and strategic planning, has become an indispensable prerequisite of the supply chain management (SCM) system, which blockchain can support. Blockchain is an evolving and aggressive massive data technology, which can contribute to managing the supply chain and checking scams (Ramos & Queiroz, 2022). The study notes that a secure data sharing and transaction transparency could optimize the daily routine and avoid fraud. BCT ensures transparency, with distributed network technology, where data can be assigned on a peer-to-peer basis with certified and verified transactions among the community. According to Kiu, Lai, Chia and Wong (2022), blockchain can make improvements in data security, trust ability, and accountability. The blockchain technology maintains a sequence of transactions, and links securely that avoids any block being altered/inserted between two existing blocks, in which all the transactions are maintained through an irreversible chain. It is trustable since it prevents malicious actors. The study reported that it maintains greater trust, security, and efficiency. With an extensively secured network, the blockchain technology may support supply chain management. The detailed planning of the supply chain and operations remains a challenge, which requires flexibility, adaptability, responsiveness, and agility for higher operational efficiency. Thus this study seeks to examine if blockchain technology could mitigate fraud in supply chain management.

Also, from the literature, blockchain (BCT) is not yet mainstreamed in academic literature as the current literature is in the normative stage. No known study had examined the effect of blockchain technology on fraud mitigation in supply chain management in Nigeria. Hence, the study seeks to examine the effect of blockchain technology on fraud mitigation in supply chain management using AfriHealth Limited and RachamHub Limited that are into supply chain businesses as a reference point since the blockchain characteristics contain clarity, traceability, and protection in real-time data distribution which can support the supply chain for its excellence.

To achieve this purpose, we formulated the following hypotheses:

H_{01}: Blockchain technological adaptability does not have significant effect on fraud mitigation in supply chain management in Nigeria.

H_{02}: Blockchain technological agility does not have significant effect on fraud mitigation in supply chain management in Nigeria.

This study includes several sections. Therefore, the remainder of this study is structured as follows: Section 2 addresses the business rationale (an overview of the current state of the relevant literature). This is followed by Section 3, which deals with the methodology. Section 4 presents and discusses the results, while Section 5 deals with conclusion and recommendations.

2. Review of Related Literature

2.1. Blockchain Technology

International Business Machines (IBM) defines blockchain technology (BCT) as a shared, immutable ledger that facilitates the process of recording transactions and tracking assets in a business network, which can be tangible, or intangible to reduce risk and minimize costs. BCT provides immediate, shared, and completely transparent information to authorized networks that can track production, accounts, purchase orders, and payment status with end-to-end details of a transaction with efficiencies and opportunities (Hesham, Mohammed & Saurav, 2023).

According Iveline (2024), blockchain is the first native digital medium of exchanging values on a peer-to-peer basis. A blockchain protocol operates under certain rules, using globally distributed computations and strong encryption, which ensures the integrity of data transmitted between billions of devices without needing a trusted third party. Trust is "hard-coded" in the platform itself. That's why blockchain is called the Trust Protocol. This technology acts simultaneously as a ledger of accounts, database, notary, sentry and clearing house and all of these are in consensus. Bajar, Kamat, Shanker and Barve (2022) opine that technology and IT systems and operational efficiency are the most significant factors of BCT. Since it can trace back the events that occurred in the network, the security of a blockchain is based on digital identities and cryptography. Therefore, BCT can contribute to key supply chain objectives.

In technical terms, blockchain refers to a distributed ledger composed of a series of data blocks that are linked through cryptographic methods. Each block records a batch of network transaction information (Zachariadis, Hileman & Scott, 2019).

2.1.1 Blockchain Technological Adaptability and Agility

According to Hesham, Mohammad and Saurav (2023), adaptability in blockchain goes beyond tech. Blockchain technology adaptability is seen as a sustainability of an immutable ledger which permits transactions to occur in a decentralized ways. Applications based on blockchain are

numerous for instance industrial and supply chain services, financial services, legal and healthcare services, IoT and blockchain integration, Bigdata analytics, and so on.

Blockchain technological agility on the other hand centered on how blockchain technology can improve supply chain alignment which collectively enhances the competitive advantage which in turn influences firm performance (Kouhizadeh, Zhu & Sarkis, 2022). According to Kiu et al (2022), blockchain technological agility is how effective a blockchain technology could be utilized in supply chain technology, facilitating inter-organizational integration and delivering benefits to the supply chain. Through the integration of business processes among supply chain participants, blockchain technology agility helps a an organization to optimize operations and enhance overall performance

2.1.2 Blockchain Characteristics

According to Hesham, Mohammead and Saurav (2023), the blockchain features that set it apart and make it appealing for operations, logistics, and supply chain applications are as follows:

a. **Transparency**: Data that has been documented and accumulated on a network with agreement from the network and is always traceable and observable.

b. **Autonomy**: Every single point on the blockchain can independently retrieve, transmit, store, and update data while remaining protected from any third-party interference.

c. **Unalterable**: To ensure immutability, BCT offers timestamps and controls.

d. **Open source**: With a clear structure, blockchain gives everybody in the network access to its code.

e. **Ownership and distinctiveness**: Each document shared on the BCT records its owners and uniquely identifies each document with a hash code.

f. **Privacy**: The individuality of the person remains hidden when data is sent between nodes.

g. **Irretrievable**: Every single blockchain maintains an accurate and supportable record of each transaction ever made.

h. **Decentralized**: The system's data can be viewed, tracked, saved, and updated on several different systems.

i. **Origin**: Each product on the blockchain is accompanied by a digital record attesting to its authenticity and place of origin.

2.1.3 Supply Chain Management

According to Fernandez-Vazquez, Rosillo, de la Fuente and Puente (2022), supply chain management (SCM) is the monitoring and optimization of the production and distribution of a company's products and services. It seeks to improve and make more efficient all processes involved in turning raw materials and components into final products and getting them to the ultimate customer. Effective SCM can help streamline a company's activities to eliminate waste, maximize customer value, and gain a competitive advantage in the marketplace. Thus, the members of the supply chain cooperate to add value to the material flow with the essential objective of satisfying end-customer needs.

Kouhizadeh, Zhu and Sarkis (2022), conceded supply chain management (SCM) as a management of the flow of goods, data, and finances related to a product or service, from the procurement of raw materials to the delivery of the product at its final destination. Smart supply chain contributes to green performance by managing green relationships. These supply chains are supported by multiple participants mostly not owned by the same entity, in other words, they are legally independent (Lerman, Benitez, Müller, de Sousa & Frank, 2022).

2.1.4 Blockchain Technology and Supply Chain Relationship

The three major aspects of blockchain technologies that create value for supply chain management include but not limited to shareability, security and smart capabilities.

2.1.4.1 Shareability

Blockchain uses a P2P network model, which means that the resources and services are distributed across all nodes, allowing each node to obtain a copy of the same distributed ledger achieving the data sharing. This mechanism guarantees that a transaction conducted by any node requires all nodes to jointly verify the transaction, thus ensuring the integrity of the data in the entire network. At the same time, this distribute system can better prevent hackers from attacking, and it does not affect the operation of the entire system even if individual nodes are attacked ((Drljevic, Aranda & Stantchev, 2020).

Azzi, Chamoun and Sokhn (2019) pointed out that blockchain technology can prevent data fraud caused by data centralization in a traditional supply chain because it uses a distributed system that eliminates intermediaries. This process also occurs for supply chain finance, which allows parties in supply chains to directly carry out activities, such as transfers, payments and stock transactions in a secure manner without financial service providers. Furthermore, Toennissen and Teuteberg (2020) claimed that the elimination of intermediaries reduces the time and cost of transactions. In a traditional supply chain, another issue that needs attention is information fragmentation between participants, and blockchain is regarded as a promising technology that can solve this problem (Chen & Wang, 2020).

Nayak and Dhaigude (2019) concluded that data sharing through blockchain technology helped upstream enterprises gain a deeper understanding of the needs of downstream customers, which

helped enterprises make better decisions. At the same time, the ability to obtain timely data can improve procurement management, production management, transportation management, inventory management and many other links in a supply chain, thereby improving the overall level of supply chain management. In addition, the study notes that the mode of common recording across the entire network allows each permitted modification to be observed in real time, which shortens the response time.

2.1.4.2 Security

The security of the blockchain system is protected at three levels. First, decentralization eliminates the possibility of data tampering. Secondly, the use of cryptographic technology guarantees data security and ensures that information cannot be modified without authorization. Finally, the consensus mechanism provides protection for the entire network by requiring all nodes on the network to adhere to consistent protocols (Lim, Li, Wang & Tseng, 2021).

Behnke and Janssen (2020) claimed that information and product security are improved through blockchain-based supply chain management. From the perspective of information security, trust among participants is not high due to the lack of transparency in traditional supply chain. Di Vaio and Varriale (2020) pointed out that blockchain technology prevents information from being changed, which reduces the risk of the supply chain and thus improves trust between the supply chain participants. Blockchain guarantees data integrity by ensuring fixed information (on raw materials, processes and operators), item flow information (changes in different locations) and changes in ownership information.

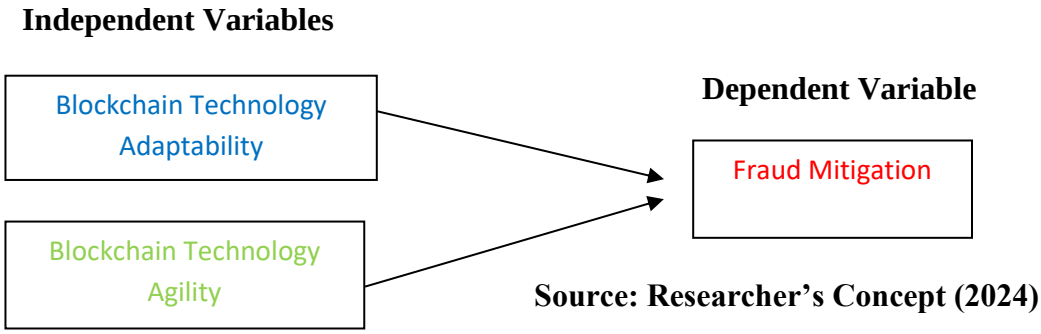
2.1.4.3 Smart capabilities

The smart capabilities of blockchain are reflected in smart contracts, which are considered a revolutionary application. Singh and Kim (2020) introduced smart contracts embedded in a blockchain network; contract terms can be automatically executed to achieve internal interaction between participants when the execution conditions are triggered. Smart contracts are executed quickly, which improves operational efficiency, and the rights and interests of the participants are protected through the contract terms. Liu and Li (2020) proposed that smart contracts reduce paperwork and labour by eliminating contract registration and monitoring processes, which reduce operating costs and improve the efficiency of supply chains.

The contract terms agreed upon by supply chain participants are fixed in the coding used for smart contracts, which define the statement obligations, benefits, and penalties, and the terms are enforced when the conditions for execution are met (Dolgui, Ivanov, Potryasaev, Sokolov, Ivanova & Werner, 2020). For example, in a cash-on-delivery smart contract, the stakeholders realize automatic settlement when the goods are successfully stored in the warehouse. This high degree of automation makes blockchain technology particularly suitable for multi-tier supplier networks with complex relationships; in this context, it is difficult to track the status of the business and settle payments.

Smart contracts can be used to organize the financial situation of the entire supply chain network and establish connections for transactions between different currencies so that each participant is paid (Pournader, Shi, Seuring & Koh, 2020). At the same time, the use of smart contracts can prevent the risk of default and ensure that the trading parties fulfill their obligations. Transactions are carried out within a safe and controllable range, as the clearing of the funds of both parties is solidified (Dolgui, Ivanov, Potryasaev, Sokolov, Ivanova & Werner, 2020).

Figure 1: The Conceptual Model for the Study



Source: Researcher's Concept (2024)

The figure 1 above shows the conceptual model of this study which focuses on an in depth assessment of existing literature on impact of blockchain technology on fraud mitigation. Specifically, the conceptual review covers the related issues which include: scholarly definitions of concepts like blockchain technological adaptability and blockchain technological agility as it relates to fraud mitigation as shown in the diagram.

2.2 Theoretical Framework

2.2.1 Technological Acceptance Model Theory

Technology acceptance model was developed by Davis in 1989 from the Massachusetts Institute of Technology (MIT). The theory gives an emphasis on the reason why users accept or reject the information technology and how to improve on the acceptance by offering a way to support and foresee the acceptance more so in the financial markets (Wright, Brown, Thase & Basco, 2017).

This study incorporates Technology Acceptance Model (TAM) to relate on the study's blockchain usefulness and the simplicity pegged on to the two main factors in describing user's acceptance or rejection of blockchain related services in supply chain management. The usage of technology is described as the extent to which an individual think that the adoption of a certain system will boost his/ her individual performances in the supply chain management and other business related services. The TAM model states that the adoption of technology is a decision reached by the user's motivational behavior to utilize and also impacted by the attitude of the users when adopted.

Attitude of the users is impacted by the opinions about technology, which are made up of the perceived ease of use and the perceived usefulness making it relevance in blockchain technology. The TAM model is therefore grouped in the list of very influential and analyzed theories in stating the behavior of the final users of the technology (Fitriyani, Sfenrianto, Wang & Susanto, 2016).

Thus, the study was anchored on Technological Acceptance Model Theory. The justification for using this theory to underpin the study stem from the fact that literature review has demonstrated the existence of relationship between technological usefulness, acceptance and fraudulent practices in supply chain management.

2.3 Empirical Review

Harrison (2024) examined the relationship between the adoption of blockchain technology and environmental efficiency using a sample of U.S. firms over the 2015-2019 period. The results of their study showed that the adoption of blockchain technology is positively and significantly associated with environmental efficiency, suggesting that the use of blockchain improves environmental sustainability. In further analyses, the study found that the relationship between blockchain and environmental efficiency is more pronounced for firms in the financial and technological industries.

Hesham, Mohammead and Saurav (2023) examined the impact of blockchain technology on operations and supply chain management performance. The study revealed that blockchain has been widely applied in the logistics and supply chain of various industries resulting in better operations and performances. The study also found that usage of blockchain technology in daily business operations can provide operations and supply chain managers with several advantages starting from increased response times, safe and secured data, proper visibility across nodes, transparent transactions, and supply chain members' trust.

Sobhi, Ahmed, Hossam, Badry, Hussien and Abeer (2023) demonstrated the impact of the use of blockchain technology on the financial performance of investment projects developed by the Ministry of Sports. The study used descriptive approach (survey study method) as an appropriate method to achieve the objectives of the study due to the suitability of its procedures. The participants in the study included some leaders of the Ministry of Sports and experts in the field of sports investment, as well as some leaders working in the directorates of youth and sports, and some members of the board of directors of the Olympic Committee, sports federations, sports clubs, and youth centers. The study sample was selected in a deliberate way based on the categories of the study population. There were 300 participants in the study, and the researchers used two questionnaires as tools to collect the data. The results revealed a lack of the use of blockchain technology at the Ministry of Sports and a low level of financial performance at the Ministry of Sports. With a correlation between the level of financial performance and the use of blockchain technology, the level of the financial performance of the investment projects developed by the Ministry of Sports could be predicted based on the use of blockchain technology.

Grace and Mandella (2022) investigated the effects of blockchain technology on corporate governance of financial institutions in Nigeria. The study used multiple regression over 121 responses. Samples were collected using a random sampling method. Results indicate that blockchain technology has positive impact on corporate governance suggesting the removal of agents as intermediaries in corporate governance through code, peers' connectivity, and collaboration. Thus, the results of the study help managers transform the regulatory, financial, and entire governance structure of financial institutions

Lim, Li, Wang and Tseng (2021) carried out a literature review of blockchain technology applications in supply chains in China, United States, Italy, United Kingdom, India, France, United Arab Emirates and South Korea. A descriptive and content analysis was carried out to review publications related to blockchain-based supply chains between 2017 and 2020 inclusive. The results revealed that there is growing interest in applying blockchain technology to supply chain operations. A detailed analysis of findings is provided to identify the future opportunities of blockchain-based supply chains, including prospects for tertiary industries and concerted efforts that are necessary to explore sustainability themes. This study also provides valuable information to help scholars and practitioners better determine the relevant research topics to accelerate the development of blockchain-based supply chains.

Sarah, Felix and Bernard (2021) investigated the effects of blockchain technology on the performance of financial markets in Kenya. The study adopted an explanatory research design. The study target population was drawn from the commercial banks located in Nairobi County, Kenya. The study targeted 84 bank managers in the IT and finance department of the 42 commercial banks in Kenya. A sample size of a sample size of 50 respondents was arrived at. Data was collected using a structured questionnaire. The data collected was cleaned and coded, quantified and analyzed quantitatively. Quantitative data were analyzed using SPSS 24 where descriptive and inferential statistics were used to capture the data in order to understand the pattern and nature of relationships. Results were presented using tables. The study findings showed that the correlation analysis showed that the adoption of blockchain technology had a positive and significant correlation to government policy. Adoption of blockchain technology had a positive and significant correlation to internet infrastructure by. Adoption of blockchain technology had a positive and significant correlation to transaction cost. Lastly, adoption of blockchain technology had a positive and significant correlation to risk analysis.

3. Methodology

The study adopted a survey design in order to examine the effect of blockchain technology on fraud mitigation in supply chain management in Nigeria using AfriHealth Limited and RachamHub Limited as a reference point. It is a design that incorporates personal interview, observation, and questionnaire to ensure corroboration of facts, thus ensuring the validity and reliability of the data collected. Data for the study was collected through the use of e-questionnaire survey. The e-questionnaire survey was designed where respondents were asked to assess the

effect of blockchain technology on fraud mitigation in supply chain management in Nigeria using Likert five point scales referred as: (1) To a Very High Extent (THE), (2) To a High Extent (HE), (3) Neutral (N), (4) To a Very Low Extent (TLE) and (5) To a Low Extent (LE).

E-questionnaire (Google Form) was sent to the respondents (staff of AfriHealth Limited and RachamHub Limited) through their employees WhatsApp group platform out of which 52 responses were recorded and received and were used in the data analysis. The collected data was transformed to scale measurement using Likert five point scale and the hypotheses were statistically tested using Least Squares Regression Model with the aid of E-Views 12.

3.1 Model Specification

In line with the previous researches, the study designed a model to determine the effect of blockchain technology on fraud mitigation in supply chain management in Nigeria. The functional model for the study is shown below as thus:

FRM = F (BTAD, BTA)

The econometric form of the regression modified for the study is expressed as thus:

$FRM = B_0 + B_1 + BTAD + B_2\ BTA + \mu$

Where:
FRM = Fraud Mitigation
BTAD = Blockchain Technological Adaptability
BTA = Blockchain Technological Agility
μ = Stochastic Term
$\beta_1 - \beta_2$ = Coefficient of Regression Equation
β_0 = Constant coefficient (intercept) of the model
'*A Priori*' is given as: $\beta_0, \beta_1 > 0$
Decision Rule: accept Ho if P-value > 1-5% significant level otherwise reject Ho

4. Data Analysis and Results

Table 1: Descriptive Statistics

	FRM	BTAD	BTA
Mean	4.520000	4.520000	4.340000
Median	4.500000	4.500000	4.400000
Maximum	4.700000	4.700000	4.600000
Minimum	4.400000	4.400000	3.900000
Std. Dev.	0.109545	0.130384	0.296648
Skewness	0.867528	0.363173	-0.562764
Kurtosis	2.729167	1.628028	1.897340
Jarque-Bera	0.642452	0.502060	0.517224
Probability	0.725259	0.777999	0.772123

Sum	22.60000	22.60000	21.70000
Sum Sq. Dev.	0.048000	0.068000	0.352000
Observations	5	5	5

Source: E-View 12 Computational Results (2024)

From Table 1 above, the mean (average), maximum values, minimum values, standard deviation and Jarque-Bera Statistics (Normality Test) were shown. First, it can be observed that fraud mitigation (FRM) was characterized by a positive value of 0.17. This implies that blockchain technology ensures fraud mitigation among the sampled firms. Thus, blockchain technology reduces fraud mitigation in supply chain management in Nigeria. The distribution is platykurtic since the kurtosis (2.73) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.73 is greater than 0.05, which means that the distribution of fraud mitigation comes from a normal distribution. The average value of blockchain technological adaptability (BTAD) for the sampled firms in supply in management was 4.52 with a standard deviation value of 0.13. This means that blockchain technological adaptability mitigates fraud in supply chain management. The maximum value of BTAD was 4.70 and the minimum value of BTAD was 4.40 reflects a narrow range suggesting that the sampled firms in supply chain management have blockchain technological adaptability. The distribution for the study is platykurtic since the kurtosis (1.62) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.78 is greater than 0.05, which means that the distribution of blockchain technological adaptability is not different from a normal distribution.

Also, the mean value of blockchain technological agility (BTA) for the sampled firms in supply chain management was 4.34 with a standard deviation value of 0.29. This means that blockchain technological agility mitigates fraud in supply chain management. The maximum value of BTA was 4.60 indicating a high variation in blockchain technological agility among the sampled firms in supply chain management in Nigeria while the minimum value of BTA was 3.90 also indicate a significant variation in blockchain technological agility among the sampled firms in supply chain management in Nigeria. The distribution of BTA for the study is platykurtic since the kurtosis (1.89) is less than 3, implying that the outliers are few. The Jarque-Bera probability of 0.77 is greater than 0.05, which means that the distribution of blockchain technological agility comes from a normal distribution.

4.1: Test of Hypothesis

Table 2: Result on Effect of Blockchain Technology on Fraud Mitigation in Supply Chain Management in Nigeria.

Dependent Variable: FRM
Method: Least Squares
Date: 09/09/24 Time: 18:20
Sample: 1-5

Included observations: 5

Variable	Coefficient	Std. Error	t-Statistic	Prob.
BTAD	0.408994	0.105913	3.861603	0.0424
BTA	0.336601	0.045133	7.457979	0.0000
C	8.366768	1.464375	5.713542	0.0293
R-squared	0.906631	Mean dependent var		4.520000
Adjusted R-squared	0.813262	S.D. dependent var		3.015098
S.E. of regression	0.047338	Akaike info criterion		5.006985
Sum squared resid	0.004482	Schwarz criterion		5.050753
Log likelihood	10.44828	Hannan-Quinn criter.		5.024624
F-statistic	9.710204	Durbin-Watson stat		2.000972
Prob(F-statistic)	0.000958			

Source: E-View 12 Computational Results (2024).

4.2: Discussion of Findings.

The coefficient of determination R^2 shows 0.91 indicating that the overall model explained 91percent of the total variations in the dependent variable. Thus shows that these variables (BTAD & BTA) can only explain 91 percent of variation in fraud mitigation leaving 9 percent unexplained. This is to say that there are other factors that could lead to fraud mitigation in supply chain management other than blockchain technology. The sig. (or p-value) is .0000 which is below the .01 level; hence, we conclude that the overall model is statistically significant, or that the variables have a significant combined or joint effect on the dependent variable. With this, the researcher affirms the validity of the regression model adopted in this study.

The results of the regression are therefore slated below as follows:

H_{01}: Blockchain technological adaptability does not have significant effect on fraud mitigation in supply chain management in Nigeria.

This hypothesis was tested and the result of this regression as exposited on table 2 indicates that the relationship between BTAD and FRM is positive and significant; this can be justified with the

P-value (significance) of 0.0424 which is less than the 5% level of significance adopted. Likewise the result of positive coefficient of 0.409 indicates that an increase in blockchain technological adaptability increases fraud mitigation in supply chain management in Nigeria. We therefore accepted the alternate hypothesis which contends that blockchain technological adaptability has significant effect on fraud mitigation in supply chain management in Nigeria. This observation is in tandem with the a priori expectations of Grace and Mandella (2022) and Hensham, Mohammed and Saurav (2023) and Harrison (2024) who found a positive and significant association between blockchain technology and organizational performance.

Accordingly, the study is opinion in-line with the a priori expectations that blockchain technological adaptability ensures fraud mitigation in supply chain management.

H_{02}: Blockchain technological agility does not have significant effect on fraud mitigation in supply chain management in Nigeria

This hypothesis was tested and the result of this regression as exposited on table 2 indicates that the relationship between BTA and FRM is positive and significant; this can be justified with the P-value (significance) of 0.0000 which is less than the 1% level of significance adopted. Likewise the result of positive coefficient of 0.337 indicates that the blockchain technological agility ensures fraud mitigation in supply chain management in Nigeria. We consequently accepted the alternate hypothesis which contends that blockchain technological agility has significant effect on fraud mitigation in supply chain management in Nigeria. This seems agreeable with the a priori expectations of Lim, Li, Wang and Tseng (2021), Sarah, Felix and Bernard (2021) and Sobhi, Ahmed, Hossam, Badry, Hussien and Abeer (2023) who found a positive and significant association between blockchain technology and organizational performance.

Accordingly, the study is opinion in-line with the a priori expectations that blockchain technological agility ensures fraud mitigation in supply chain management.

5. Conclusion

This study examined the connection between blockchain technology and fraud mitigation in supply chain management in Nigeria using evidence from AfriHealth Limited and RachamHub Limited that are into supply chain businesses in Nigeria. Thus, the findings revealed directional connection between blockchain technology and fraud mitigation in supply chain management in in Nigeria. This empirical conclusion is ground-breaking, as it shows that the adoption of blockchain technology in supply chain management has the potential to improve regulatory systems, create transparency, enable the identification and prevention of data manipulation and other fraudulent practices and also, provide a better framework for good governance.

Thus, the study concludes that blockchain technology ensure fraud mitigation in supply chain management in Nigeria.

5.1 Recommendation

In lieu of the findings of the study, the following recommendations were made:

1. Managers of firms in supply chain management should be familiar with the regulatory practices and procedures of blockchain technology in order to achieve good performance in fraud and fraudulent practices.

2. Also, the management of firms in supply chain management should move with speed and discuss the issues of blockchain technology to their employees and other stakeholders as this will enable them to have a controlling share to such disruptive technology as blockchain technology is capable mitigating fraud in supply chain management in Nigeria.

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