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BLOCKCHAIN TECHNOLOGY APPLICATIONS AND INFORMATION PROTECTION OF SOAP MANUFACTURING FIRMS IN RIVERS STATE

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Abstract **Original Research Article**

This study explored the relationship between blockchain technology applications and information protection in selected soap manufacturing firms in Rivers State, Nigeria. The application of blockchain technology was implemented as the independent variable through transaction initiation, transaction verification and cryptography while information protection represented the dependent variable. Correlational Research Design For the study. The population consisted of ten (10) registered soap manufacturing companies in the Rivers State, a total of 100 staff were sampled from the selected firms. Structured questionnaire Data were collected using the Blockchain Technology Applications and Information Protection Questionnaire (BTAIPQ). During the development of the instrument, two Measurement and Evaluation experts performed face and content validation, whilst to guarantee reliability Cronbach's alpha was used which provided a coefficient of 0.85 which is greater than the designated benchmark of 0.71 thus confirming that a reliable instrument had been achieved. Out of 100 questionnaires distributed, 95 (95%) were filled completely by students and returned, which were used for analysis. The data answering the research questions were analysed using mean and standard deviation rated against an average mean of 2.50 while the hypotheses were tested through Pearson Product-Moment Correlation (PPMC) at a level of significance set at 0.05. The results indicate that there is a very strong positive correlation between the application of blockchain technology and information security among soap manufacturing firms in Rivers State. From this, the study therefore estimated that the use blockchain technology brought a much higher level of protection of information, improved competitive advantage and trust with customers while promoting proper starting and validation of financial transactions. Among other recommendations, it suggested that soap manufacturing firms management in Rivers State should embrace blockchain technology for transaction initiating as information protection.

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Introduction

Azubuike (2020) identified block chain dimensions to include initiation of transactions, broadcasting, accountability, verification and crypting of data to safeguard company information asset. Soap firms generate large volume of data in terms of sales, storage, production, customer base and general administrative correspondence. Blockchain technology, according to Ila-la (2023) refers to a decentralized, distributed, and immutable digital ledger that records transactions across a network of computers, ensuring data security and transparency without a central authority. It uses cryptographic linking to create a chronological chain of data blocks, making it nearly impossible to alter historical records.

Generally speaking, blockchain technology exists in the dimensions of decision rights in which the administrator decides the most appropriate time to disseminate the information. It also involves the use of such saved data. Accountability in block chain technology, according to Ress, Rossi (2024) the safe keeping of captured data for report purposes. Data protection appears to be one of the major fulcrums of the application of blockchain technology in soap making firms.

Blockchain is a decentralized distributed ledger technology with tamper-resistance, transparency and traceability features, hence showing great potential in enhancing the information security of communication systems. Blockchain provides support for data integrity and availability (Liu, 2023) while avoiding the bottleneck of single point failure because it distributes data across different nodes. System security is also strengthened with its consensus mechanism, which makes it much harder to change or destroy data that has been compromised in a malicious manner or without authorization. As such, blockchain has become a significant research area for safeguarding sensitive information. Due to its stringent requirements on data security and privacy protection, the customer information system of a well-established financial institution was selected as the experimental environment, which is a suitable and representative context for this study. Additionally, real-time monitoring of data traffic and abnormal activities make this system suitable for other data-sensitive fields such as Internet of Things, healthcare, intelligent manufacturing and e-commerce. This allows extending the results to those sectors. Besides confirming the efficiency of using Bi-LSTM model for this financial area, the interesting point in this study is also practical implications to many other areas require strong security solutions hence make its results be more generalizable.

In addition, the study aims to offer complementary advantages with integrating blockchain in Multi-Access Edge Computing (MEC). With transaction-based functions, blockchain can enhance data security and privacy protection abilities alongside the efficiency of device management processes while facilitating more decentralized governance in resource markets. In addition, its decentralized architecture can also minimize dependency on centralized cloud computing infrastructures which further addresses a few limitations of traditional cloud-based models. In addition, blockchain allows smart contracts user-controlled key management and access control from devices, therefore reducing the need for centralized cloud service centres. The proposed framework contains both a decentralized resource-leasing mechanism for independent allocation of resources and an enhanced flexibility and operational efficiency of the system (Ramah & Paul, 2023).

Blockchain technology is relatively new technology. However, some scholars have done research in some industries, including aviation, banking, telecom such as the works of (Sun & Liu, 2024) and that of Zhang, (2022) but there has not been any study on the application of blockchain technology in soap firms, especially in Rivers State. This research will therefore close the gap in the identified research area.

Statement of the Problem

Blockchain technology has been proven to be a veritable technology that provides audit for data transmission, utilization and its safety. Blockchain technology appears a technology asset to be adopted by soap firms operating in Rivers State. There have been cases of transaction initiation crises in the trace of highly sensitive products such as soaps, according to (NAFDAC, 2022). There seems to be a lacuna in the way soap industries management decision in terms of broadcast of new products or innovations using blockchain. Blockchain is also very viable in the verification and tracking of products and services, in this case the final leg of customer that buys the soap product. Crypting of data has to do with the security of information and keeping away from tampering. There are strong suspicion soap firms in Rivers State that do nothing about cryptography. Data protection, which ensures the privacy rights of both the customers and company, does not seem to have been adopted by soap firms in Rivers State. This study will therefore investigate the relationship between information protection of soap manufacturing companies in Rivers State.

Conceptual Framework

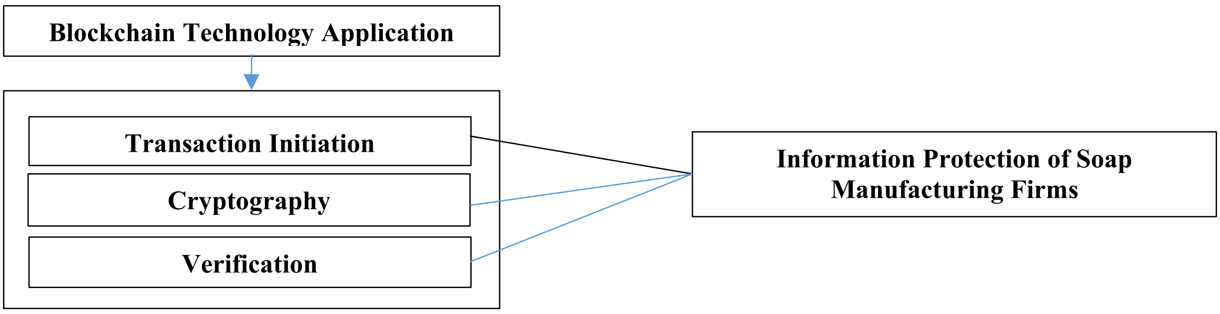

Fig. 1: Researchers' Conceptual Framework, 2026

Purpose of the Study

The purpose of the study to examine how blockchain technology applications enhance information protection of soap manufacturing firms in Rivers State. The specific objectives are stated as follows:

i. To examine how blockchain transaction initiation, enhances information protection of soap manufacturing firms in Rivers State, Nigeria.
ii. To how blockchain verification application improves customer trust of soap manufacturing firms in Rivers State.
iii. To how blockchain cryptography enhances competitive advantage of soap firms in Rivers State.

Research Questions

The following research questions guided the study as follows:

i. To what extent does blockchain transaction initiation, enhance information protection of soap manufacturing firms in Rivers State, Nigeria?
ii. To what extent does blockchain verification application improve customer trust of soap manufacturing firms in Rivers State?
iii. To what extent does blockchain cryptography enhance competitive advantage of soap firms in Rivers State?

Hypotheses

The following hypotheses guided the study as follows:

H01: There is no significant relationship between blockchain transaction initiation and information protection of soap manufacturing firms in Rivers State, Nigeria.

H03: There is no significant relationship between blockchain cryptography and customer trust of soap manufacturing firms in Rivers State, Nigeria

H03: There is no significant positive relationship between blockchain cryptography and competitive advantage of soap manufacturing firms in Rivers State, Nigeria

Literature Review

Theoretical Framework

This study is anchored on Skills Acquisition Theory by Robert Dekeyser (2007). It is linked to the study in the principle that block chain technology is a largely emerging leadership input that requires skill acquisition before implementation by soap manufacturing firms in Rivers State, Nigeria. The Skills Acquisition Theory follows a procedural knowledge which block chain technology adopts and therefore makes the theory relevant to the present study.

The Concept of Block-Chain Technology Application

Hajji and Essem (2019) characterized blockchain as a new trend in technology and identified it as the 'Internet of Value'. It works by a stream of connected blocks; each one contains an information that is digitally registered and the prior block and current block are added to a distributed database architecture right after it's approved which cannot be changed as it also gaining some new non-removable blocks. In contrast to traditional transaction systems which are mostly reliant on intermediaries, blockchain allows for a more direct and transparent communication/transactions between end-users and service providers. The technology has garnered considerable interest owing to its decentralized nature and ability to preserve immutable records and has become one of the most heavily discussed innovations in information technology over the years.

Blockchain technology has grown over a wide spectrum of corporate and commercial applications such as asset management, retail operations, financial services like digital currencies and electronic contracts, decentralized exchanges among other potential use cases (Farah 2023). While blockchain has seen considerable use and versatility, it is still not without limitation. However, its implementation in practice may be limited by a range of challenges relating to design, operationalisation and maintenance. Such barriers can have an impact on the successful implementation, management, scaling and ongoing upkeep of blockchain-centric systems – indicating that responses to these challenges need to be integrated into organizational processes as solutions for continued use of the technology within organizations.

Transaction Initiation

A Blockchain can be interpreted as the append-only, chained-list of blocks and is replicated and shared among interested peers in a distributed system. Blocks, meanwhile, consist of a group of transactions and associated metadata, when in a transaction works over with the similar ledger replicated through the network. Satoshi Nakamoto (2008) introduced the blockchain as a peer-to-peer system for electronic cash for the exchange of digital goods, [Iceland. The technology also received enormous publicity due to its in-built immutability; once a block is verified and enters into the chain, it is nearly impossible to change or 'roll-back' any of the content that was recorded. The architecture the original proposal by Nakamoto (2008) represented a big step in distributed systems research, which helped to create a paradigm shift for decentralized digital transactions. In a blockchain environment transaction initiation is the first step in the process of settling transactions and it refers to writing an entry into required ledgers with a primary aim of ensuring immutability (state read protection) against unauthorized change.

The structure of the blockchain also contributes to its inherent security and lack of centralization. Because every block created is cryptographically related to the previous block, it creates an unbroken tight link between the blocks that can be checked at any time (Gupta Brian, 2019, 2020). Blockchain is therefore widely considered as immutable, since changing information held in one block would require you to also amend the subsequent blocks and the copies maintained throughout the network. Every block contains more than just the transactions: it also has metadata relating to those transactions, and this entire ledger is shared amongst many nodes who are all participating — meaning there isn't a single point of failure. In addition, once in sequence and consensus by the participating node regarding contents of that block is also needed for it to be incorporated into chain as such, if a block is accepted, this means that the transactions contained within are executed and confirmed throughout the network. Blockchain reinforcing its pivotal attributes (including transparency, participation, and distributed decision-making) through these tenets of confirmation and recordkeeping that are fiscally decentralized (Farah, 2023).

Cryptography

The idea of the bitcoin as a decentrally-enforced virtual currency was presented in 2008 by Satoshi Nakamato, in her seminal paper Bitcoin: A Peer-to-Peer Electronic Money System (Mounnam, Boubchir, & Manad, 2025). By definition, blockchain is a type of distributed data structure that stores information in blocks that are chronologically connected. The technology uses cryptographic methods to allow data to be reliably and securely recorded, verified and traced, but still providing secure storage for the stored data that would protect the information from being tampered with or altered by an unauthorised party. Digital transaction signature, consensus protocols and cross-chain technologies provide benefits for data consistency on the blockchain network (Fang et al., 2024). Background The decentralized architecture, traceability properties, tamper resistance, completeness and openness, and transparency of blockchain have attracted great attention from researchers and industry practitioners (Yang 2025). Besides its technical functions, blockchain also is increasingly seen as a transformative technology for tackling the trust issues coming to dominate new digital societies, allowing — but not requiring — transactions and information exchanges between parties with little or no dependence on centralized intermediaries.

As data protection, anonymity and untraceable of several misconduct areas are also being in high demand with the continued evolution of blockchain areas (Yang, 2025). While originally linked mainly to virtual currencies, technology has evolved greatly beyond those applications into healthcare, copyright management, financial services and other environments with vast amounts of data. Specifically, blockchain could drive some strong protections around personal information by giving users more control over who accesses their data and facilitating the integrity of records that are shared. With the latest emerging architecture called "Internet-of-Things" (IoT), IoT produces more than 2.5 e-byte big data every day by allowing things to connect to the internet, therefore triggering very high demand of secure for any instrument between device-based recorded information to be exchanged securely and reliably. Although primarily a crypto technology, blockchain has the potential to become an integral part of future digital ecosystems by enabling trust less management and exchange of information generated by the IoT.

Verification

Blockchain is a new technology paradigm that continues to generate significant research interest but still harbors ample technical and security challenges. These challenges originate from some constraints in existing computing systems and network architecture, the generic mechanisms of blockchain operation, and the increasingly stringent data privacy requirements (Rahman et al., 2023; Yang, 2025). With blockchain technology developing hand in hand with the emergence of 5G networks and its utilization integrating across numerous sectors including healthcare and financial services. While it, however, gave rise to a host of security and privacy concerns related to the wider adoption of blockchain technology. Digital currencies that run on blockchain networks are especially vulnerable to multiple threats, such as attacks against cryptocurrency trading platforms and malicious or dubious actors, as well as the need for better security mechanisms (i.e. Smart Cards) that ensure reliability, confidentiality and integrity of block chain-based systems [2].

In today's digital world, verifying a person's identity securely and efficiently has become a critical concern for governments and business organizations. Routine identity verification methods often depend on centralized systems that are vulnerable to hacking, data breaches, and unauthorized access. As data privacy becomes more important, there is a growing need for a more secure and user-centric approach to identity management. Blockchain technology has emerged as a promising solution to these challenges. With its decentralized, transparent, and tamper-resistant nature, blockchain can provide a robust foundation for digital identity systems. Unlike centralized systems, blockchain enables users to control their own data and share it only when necessary, reducing the risk of identity theft and misuse

Methodology

A quantitative method in the form of a correlational research design was applied to analyse how S1 integration conforms with the blockchain technology application and information protection. The population consisted of one hundred (100) staff from the ten (10) registered soap manufacturing firms in Rivers State, Nigeria. The data were obtained by means of a structured questionnaire named the Blockchain Technology Applications and Information Protection Questionnaire (BTAIPQ). Face and content validation was established by two experts out of Measurement and Evaluation, and the Cronbach's alpha score used to assess reliability indicated a high reliability (≥ 0.71) of the instrument (Cronbach's alpha coefficient = 0.85). Out of 100 disseminated questionnaires, 95 (95%) were filled correctly, submitted and analysed. Descriptive statistics using mean and standard deviation based on a benchmark mean of 2.50 were utilized to answer the research questions while the Pearson Product-Moment correlation (PPMC) at 0.05 level of significance was employed to test the hypotheses. The study revealed a strong positive relationship between the use of blockchain technology and information security among soap manufacturers in Rivers State.

Table 1: Population Distribution

S/No	Institutions	Manufacturing Firms
1.	Extreme Manufacturing Nig Ltd	10
2.	Evans Industry Nig Ltd	10
3.	Vinon Multipurpose Soap	10
4.	Soap Brian	10
5.	Golden Soap Industry Global Soap and Detergents	10
6.	Greeny Soap Ltd	10
7.	Evant and Evans Detergents	10
8	Jenny and Co Soaps	10
9.	Klin	10
10	Crispy Soap Ltd	10
	Total	**100**

Source: Payroll Unit, January 2026

Sample and Sampling Technique

Table 2: Sample

S/No	Firms	Research & Dev.	Manufacturing Dept.	Sales	Advert Dept.	Accountant	Total
1.	Extreme Manufacturing Nig Ltd	2	1	3	3	1	10
2.	Evans Industry Nig Ltd	2	1	3	3	1	10
3.	Vinon Multipurpose Soap	2	1	3	3	1	10
4.	Soap Brian	2	1	3	3	1	10
5.	Golden Soap Industry Global Soap and Detergents	2	1	3	3	1	10
6.	Greeny Soap Ltd	2	1	3	3	1	10
7.	Evant and Evans Detergents	2	1	3	3	1	10
8	Jenny and Co Soaps	2	1	3	3	1	10
9.	Klin	2	1	3	3	1	10
10	Crispy Soap Ltd	2	1	3	3	1	10
	Total	**20**	**10**	**30**	**30**	**10**	**100**

Results

Questionnaire Responses

S/No	Firms	Research & Dev.	Manufacturing Dept.	Sales	Advert Dept.	Accountant	Total
1.	Extreme Manufacturing Nig Ltd	2	1	3	3	1	10
2.	Evans Industry Nig Ltd	2	1	3	3	1	10
3.	Vinon Multipurpose Soap	1	1	1	1	1	5
4.	Soap Brian	2	1	3	3	1	10
5.	Golden Soap Industry Global Soap and Detergents	2	1	3	3	1	10
6.	Greeny Soap Ltd	2	1	3	3	1	10
7.	Evant and Evans Detergents	2	1	3	3	1	10
8	Jenny and Co Soaps	2	1	3	3	1	10
9.	Klin	2	1	3	3	1	10
10	Crispy Soap Ltd	2	1	3	3	1	10
	Total	**20**	**10**	**30**	**30**	**10**	**95**

Demographic Presentation of Respondents

Table 4.1: Gender of Respondents					
Gender		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	male	42	44.2	44.2	44.2
	female	53	55.8	55.8	100.0
	Total	**95**	**100.0**	**100.0**	

Source: Survey Research, 2026

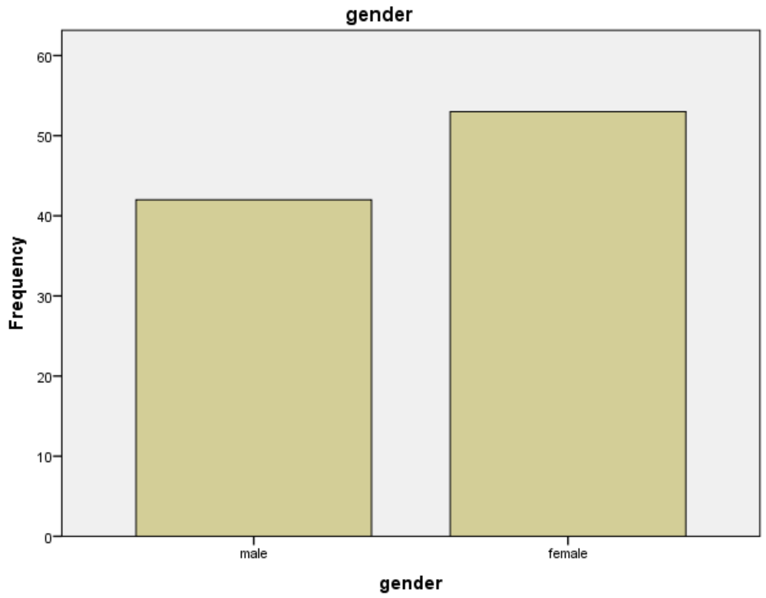

Table 4.1 above showed that there were 42 male respondents representing 33.2% and 53 females representing 55.8%. there were more female respondents of the soap firm companies.

Table 4.2: Educational qualification of Respondents					
Educational Qualification of Respondents		**Frequency**	**Percent**	**Valid Percent**	**Cumulative Percent**
	PhD	3	3.2	3.2	3.2
	Masters	8	8.4	8.4	11.6
	B.Sc/HND	63	66.3	66.3	77.9
	Professional Diploma/ND/Certificates	21	22.1	22.1	100.0
	Total	**95**	**100.0**	**100.0**	

Source: Survey Research, 2026

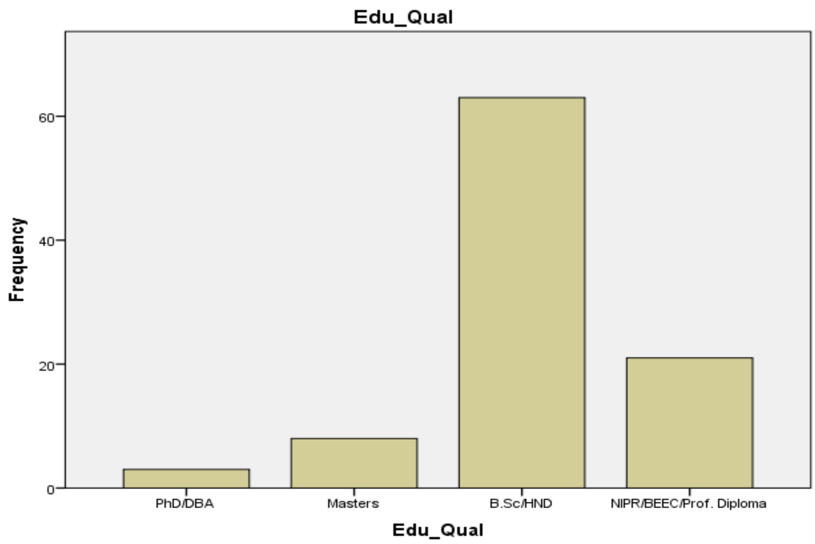

Table 4.2 above showed that there were 3 PhD holders representing 3.2% of the total respondents. There were 8 masters degree holders or 8.4%, B.Sc/HND holders were 63 representing 66.3% while 21 or 22.1% have OND and professional diploma or certifications. There were more B.Sc/HND holder respondents.

Table 4.3: Soap_Companies

Soap firms		Frequency	Percent	Valid Percent	Cumulative Percent
	Extreme Manufacturing	4	4.2	4.2	4.2
	Evans Industry Nig Ltd	8	8.4	8.4	12.6
	Vinon Multipurpose Soap	4	4.2	4.2	16.8
	Soap Brian	13	13.7	13.7	30.5
	Golden Soap Industry Global Soap and Detergents	8	8.4	8.4	38.9
	Greeny Soap Ltd	12	12.6	12.6	51.6
	Evant and Evans Detergents	14	14.7	14.7	66.3
	Jenny and Co Soaps	14	14.7	14.7	81.1
	Klin	8	8.4	8.4	89.5
	Crispy Soap Ltd	10	10.5	10.5	100.0
	Total	**95**	**100.0**	**100.0**	

Source: Survey Research, 2026

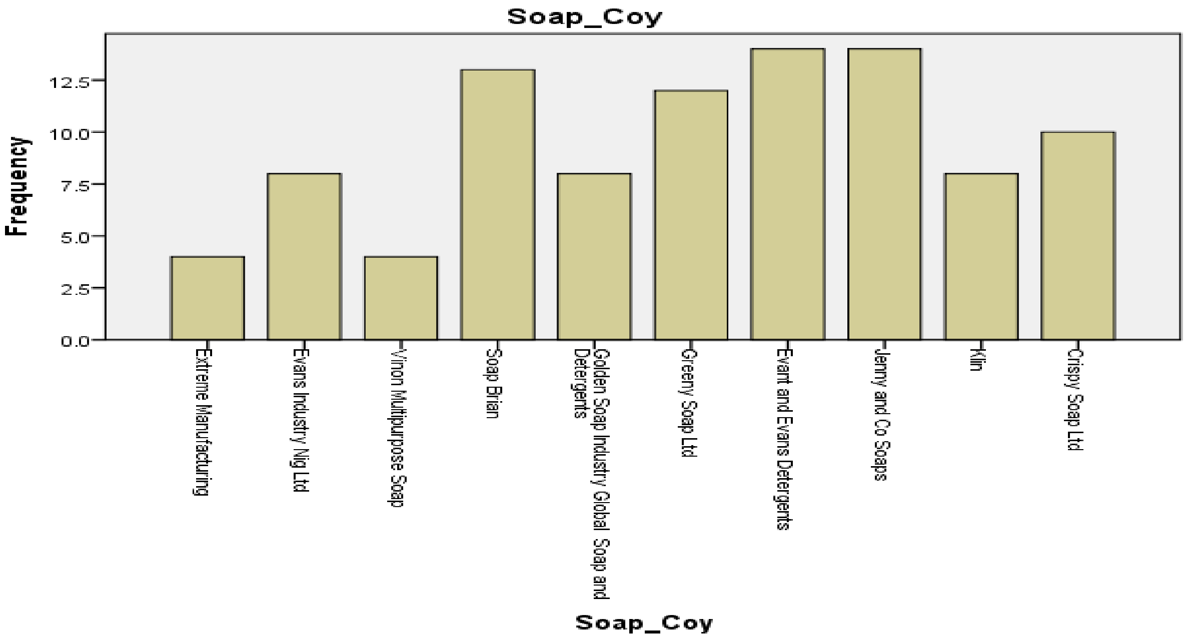

Table 4.3 above showed that respondents from Extreme Manufacturing were 4 representing 4.2%. Evans Industry Nig. Ltd were 8 or 8.4%, Vinon Multipurpose Soap, 4 or 4.2%. Soap Brian, 13 representing 13.7%, Golden Soap Industry Global, 8 or 8.4%, Soap and Detergents, 8 or 8.4%. Greeny Soap Ltd were 12 representing 12.6%, Evant and Evans Detergents 14 or 14.7%, Jenny and Co Soaps were 14 or 14.7%. Klin were 8 or 8.4% while Crispy Soap Ltd were 10 representing 10.5%. Evant and Evans Detergents had the highest respondents.

Table 4.4: Respondents rate of blockchain transaction initiation, and information protection of soap manufacturing firms in Rivers State, Nigeria

Items	N	Minimum	Maximum	Mean	Std. Deviation	Remark
1. There is validation line to every transaction	95	1.00	4.00	1.94	1.355	Low Extent
2. Management adopts consensus mechanism for information protection	95	1.00	4.00	2.85	1.57	High Extent

3. There are modes to confirm legitimate transactions	95	1.00	4.00	1.81	1.11	Low Extent
4. Process relies on cryptographic technique for verification	95	1.00	4.00	2.16	1.12	Low Extent
Grand Mean	**95**					

Source: Survey Research, 2026

As shown in Table 4.4, Item 1 had the lowest extent to which a validation line is associated with every transaction, with mean, SD = 1.94 :1.35 Item 2 had a mean of 2.85 and standard deviation of 1.52 indicating high level of extent to which management adopts consensus mechanisms vis-a-vis information protection. Item 3 has a mean score of 1.81 with standard deviation 1.11 showing that there are mechanisms to validate transactions in less extent (M = 1.81, SD = 1.11). Likewise, Item 4 which states that the process relies on cryptographic techniques to verify transactions received a mean score of 2.16 and a standard deviation of 1.12 suggesting little use of this feature in practice.

Table 4.5: Respondents rate of blockchain verification application on information protection of soap manufacturing firms in Rivers State

Items	N	Minimum	Maximum	Mean	Std. Deviation	Remark
5. The system is built to enhance trust between customers and soap firms	95	1.00	4.00	1.76	1.20	Very Low Extent
6. System is able to track faulty returned goods	95	1.00	4.00	1.81	1.438	Very Low Extent
7. The system prevents staff from advancing fraud	95	1.00	4.00	2.82	1.25	High Extent
8. System tracks supply chain failures	95	1.00	4.00	2.11	1.42	Low Extent
Grand Mean	**95**					

Source: Survey Research, 2026

Table 4.5 showed the mean score of 1.76 and STD 1.20 in item 5 which implied extremely low extent that the system is created to promote trust between customers and soap firms. Item 6 with mean score of 1.81 and STD 1.43 revealed very limited extent to which the system is able to trace returned damaged goods. Item 7 with mean score of 2.82 and STD 1.25 revealed high extent that the system inhibits staffs from progressing fraud. Item 8 with mean score 2.11 and STD 1.42 indicates limited extent to which system tracks supply chain breakdowns.

Table 4.6 Respondents rate of blockchain cryptography and information protection of soap firms in Rivers State

Items	N	Minimum	Maximum	Mean	Std. Deviation	Remark
9. Management ensures adopted system protects quality of goods	95	1.00	4.00	2.7053	1.46646	High Extent
10. Quality of goods are tracked to consumer point without compromise	95	1.00	2.00	1.3474	.47866	Very Low Extent
11. There is increased transparency,	95	1.00	4.00	1.8737	1.20497	Low Extent
12. Digital transformation of sales and profitability is guaranteed by the system	95	1.00	2.00	1.2211	.41716	Very Low Extent
Grand Mean	**95**					

Source: Survey Research, 2026

Table 4.6 item 9 showed mean score of 2.70 and STD 1.46 showing high extent that Management ensures chosen system safeguards quality of goods. Item 10 mean score was 1.34 and STD.47 that quality of items is tracked to consumer point without compromise.

Item 11 had a mean score of 1.87 and STD of 1.20 which meant extremely low extent there is enhanced transparency; Item 12 had a mean score of 1.22 and STD.41 means very low extent. The technology ensures digital transformation of sales and profitability.

Bivariate Analysis

According to Neuman (2000) and cited in Ike (2024), stating that scatter graph is used to establish the relationship between dependent and independent variables of a study.

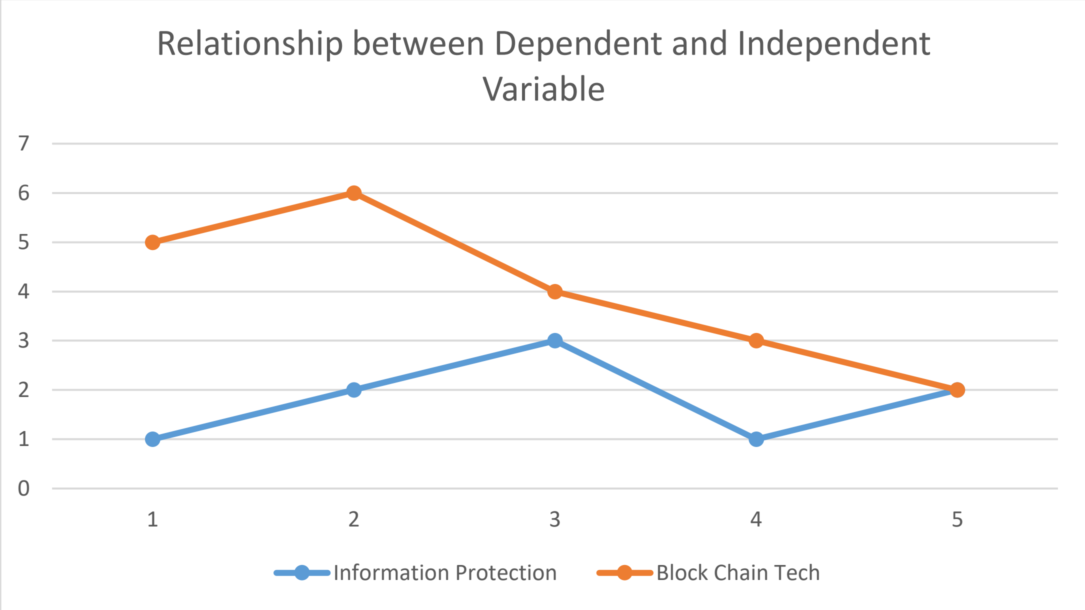

Fig. 2 Researcher's Scattered Chart 2026

Fig. 2 above showed that relationship exists between the dependent variable of information protection and the independent or predictor variable of application of block chain technology at point 3.

Table 6. Bivariate Analysis of relationship between blockchain transaction initiation and information protection of soap manufacturing firms in Rivers State, Nigeria

Correlations			
		Blockchain transaction initiation	Information protection
Information protection	Pearson Correlation	1	-.151**
	Sig. (2-tailed)		.000
	N	95	95
	Pearson Correlation	.083**	.600**
	Sig. (2-tailed)	.002	.000
Blockchain transaction initiation	N	95	95
	Pearson Correlation	-.151**	1
	Sig. (2-tailed)	.000	
	N	95	95

Source: Survey Data (2026)

Based on the results in Table 6 above, for N-value of 95 and correlation coefficient (Spearman rho) value of. 039, p-value of. 002<. 05 (F(2, 17)=9.370; alpha0.15), which certified that there is positive relationship between blockchain transaction initiation and protection of information in soap manufacturing firms in Rivers State, Nigeria. The null hypothesis is thus rejected while the positive hypothesis stands accepted.

Table 7 Bivariate relationship between blockchain cryptography and Information Protection of manufacturing firms in Rivers State, Nigeria

Correlations			
		Blockchain cryptography	Information Protection
Information Protection	Pearson Correlation	1	-.151**

	Sig. (2-tailed)		.000
	N	95	95
	Pearson Correlation	.083**	.600**
Blockchain cryptography	Sig. (2-tailed)	.002	.000
	N	95	95
	Pearson Correlation	-.151**	1
	Sig. (2-tailed)	.000	
	N	95	95

Source: Survey Data (2026)

Table 4.2.3 shows n=95, coefficient=.298, p=.000<.05 which proved that there is a positive significant association between blockchain encryption and information protection of soap manufacturing enterprises in Rivers State, Nigeria. So the null hypothesis is rejected and the positive hypothesis is accepted.

Table 7: Bivariate Relationship between blockchain cryptography and information protection of soap manufacturing firms in Rivers State, Nigeria

Correlations			
		Blockchain cryptography	**Information protection**
	Pearson Correlation	1	-.151**
	Sig. (2-tailed)		.000
Information Protection	N	95	95
	Pearson Correlation	.083**	.600**
	Sig. (2-tailed)	.002	.000
	N	95	95
Blockchain cryptogrpahy	Pearson Correlation	-.151**	1
	Sig. (2-tailed)	.000	
	N	95	95

Source: Survey Data (2026)

Table 7 above showed N-value of 95, coefficient value of .805, p-value of .001<.05 which showed that there is a positive significant relationship between blockchain cryptography and information protection of soap manufacturing firms in Rivers State, Nigeria. The null hypothesis is therefore rejected, while the positive hypothesis is accepted.

4.3 Findings of the Study

The following are the major findings of the study based on tested hypotheses:

i. There is a positive significant relationship between blockchain transaction initiation and information protection of soap manufacturing firms in Rivers State, Nigeria.

ii. There is a positive significant relationship between blockchain cryptography and information protection of soap manufacturing firms in Rivers State, Nigeria

iii. There is a positive significant positive relationship between blockchain verification and information protection of soap manufacturing firms in Rivers State, Nigeria

Discussion of the Study

The study discussed its findings based on the objectives of the study, thus:

Blockchain transaction initiation, and information protection

Results of the study prove that initiated transactions through blockchain provide better security of information among soap manufacturing companies in Rivers State, Nigeria. Hajji and Essem (2019) describes that blockchain is an emergent technology namely called as the "Internet of Value" which align with this finding. It works via an ever-growing chain of linked data blocks and relies upon a database distributed. Since the way in which it functions is decentralized, it allows a transparent kind of communication and transaction processing between them, and thus users & service providers can communicate directly as opposed to having to depend too much on intermediaries. Consequently, blockchain recently has garnered significant interest among IT organizations and is now transitioning from a theoretical invention to enterprise deployment with majors' firms using the technology on a progressively larger industrial scale.

Verification application and Information Protection

Thus, the results of the study established that blockchain-based transaction verification enhances customer trust amongst soap making companies. This finding is consistent with Rahman, Paul and Satta (2023) that mentioned on the role of network architecture and blockchain-based consensus mechanisms in fulfilling information security need which Koepke et al. As blockchain technology continues to evolve and more 5G networks are available, blockchain use is spreading beyond the realm of cryptocurrency into other sectors such as healthcare and financial services. However, its increasing utilization has brought substantial security and privacy issues along the way. Digital currencies, for example, reputation has been under threat in diverse ways such as attacks on trading platforms, theft of coins and unethical behavior by hackers and other cybercriminals who take advantage of the anonymity linked with blockchain-based foundation. At the same time, privacy violations in blockchain environments might erode public trust and induce doubts about the technology (Sun & Liu, 2025). Over such security and privacy challenges in the blockchain and motivate its further development, adoption and innovation, which may thus demand viable verification or protection mechanisms ensuring the ownership stakeholders trust over their keying materials.

Blockchain cryptography and Information Protection

The findings of the study revealed that blockchain cryptography enhances competitive advantage. This is in line with the findings of Jerome, (2021) emphasizing that blockchain based solutions in crypts such that enhances competitive advantage among rival companies.

Andre, (2018) argued that understanding the multifaceted aspects of blockchain technology and its potential benefits for financial services is critical to examining the transformative shift it presents for the industry. At its core, blockchain technology, with its distributed ledger technology (DLT), offers a secure, transparent, and tamper-proof method for recording transactions across a network of computers. This innovative approach stands in stark contrast to the traditional, centralized model of financial services, where a single entity controls data and validates transactions.

Conclusion

The study examined application of block chain technology and information protection of soap manufacturing companies in Rivers State. They conclude that block chain technology enhances information protection of soap manufacturing companies in Rivers State. That the application of block chain technology in soap firms in Rivers State enhances competitive advantage among rivals, improves customer trust and aids in financial initiation and verification of customer transactions.

Recommendations

Based on the findings of the study, the following recommendations have been made:

i. Management of soap manufacturing companies in Rivers State should adopt the use block chain technology for the transaction initiation, to enhance information protection.

ii. Management of soap firms in Rivers State should embark on urgent training and retraining of its staff on the use of block chain technology for information protections

iii. Management of soap manufacturing firms in Rivers State should procure block chain technologies to enhance information protection across supply value of its businesses.

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