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Enhancing Evidence Integrity in Nigeria's Criminal Justice System: A Doctrinal Analysis of Blockchain Technology Adoption

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Abstract

Blockchain technology offers a revolutionary solution to Nigeria's criminal justice system's enduring problems with evidence integrity. Weak chain-of-custody protocols, human error, and the increasing use of digital evidence all pose threats to Nigeria's legal system. The potential of blockchain as a governance and procedural tool is examined in this paper, with an emphasis on how it might improve accountability, transparency, auditability, and procedural reliability. It examines current academic literature and legislation provisions, such as the Evidence Act of 2023 and the Administration of Criminal Justice Act of 2015, which have decided Nigerian cases involving electronic evidence using a qualitative doctrinal approach. While propositions assess blockchain's potential to enhance evidence integrity and court confidence, research questions look at its operational viability, institutional preparedness, and legal compatibility. Comparative insights from China, the European Union, and the United States inform lessons for Nigeria. The paper makes a theoretical contribution by characterising blockchain as a socio-technical governance infrastructure, a doctrinal contribution by incorporating it with evidence law, and a practical contribution by providing policy recommendations for the transformation of the justice sector. Studies have shown that using blockchain technology can greatly improve evidence management, reduce procedural errors, and boost trust while bringing up ethical and human rights issues. Doctrinal restrictions and the quick advancement of technology are among the limitations, pilot testing and the integration of AI and blockchain are suggested.

Keywords: Nigeria, Digital evidence, Criminal justice system, Blockchain technology, Evidence integrity

INTRODUCTION

Background to the Study

Evidentiary procedures in modern criminal justice systems have been profoundly altered by the development of digital technologies. Legal procedures have always relied on oral testimony and tangible exhibits, but the rise of data-driven platforms, surveillance technology, and electronic communication systems has changed the landscape of evidence to include digital evidence. As part of a larger worldwide trend toward digitalisation, Nigerian courts now depend more on computer-generated evidence, which includes emails, call logs, CCTV footage, and digital signatures (Dada, 2025).

The integrity of digital evidence is still a major worry in spite of these developments. Because digital data is intrinsically vulnerable to manipulation, unauthorised alteration, and cyber intervention, concerns about its validity and dependability are raised. Inadequate forensic infrastructure and shoddy chain of custody procedures also make these

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vulnerabilities worse. Although legal frameworks acknowledge electronic evidence, scholars have noted that Nigerian courts continue to face practical difficulties include technical complexity, a lack of experience, and uneven application (Dada, 2025). As a result, maintaining the validity, integrity, and admissibility of digital evidence continues to be a critical concern for Nigeria's criminal justice system.

Contemporary Policy and Legal Context

In response to the challenges posed by technological advancement, Nigeria has undertaken significant legal reforms aimed at modernising its evidentiary framework. A major milestone is the enactment of the Evidence Act 2023, which amends earlier legislation to accommodate emerging forms of digital evidence. The Act builds upon the foundation established by the Evidence Act 2011, particularly in relation to the admissibility of computer-generated evidence, by refining provisions on authentication, certification, and electronic documentation (Eze, 2023). The 2023 amendment reflects a broader policy shift towards digital justice transformation, aligning Nigeria's legal system with global technological developments. It introduces innovations designed to enhance efficiency, reduce procedural delays, and facilitate the use of electronic evidence in judicial proceedings. However, while the legislative framework has evolved, concerns remain regarding its practical implementation, particularly in relation to emerging technologies such as artificial intelligence and blockchain, which introduce new complexities into evidentiary processes (Orji, 2024).

Statement of the Problem

Nigeria's criminal justice system nevertheless faces ongoing difficulties in guaranteeing the accuracy and dependability of digital evidence, notwithstanding recent revisions. Although, the Evidence Act of 2023 offers a modernised legal framework, there is still a big disconnect between the laws and the state of technology. Digital evidence is still susceptible to manipulation, illegal access, and inadequate chain of custody control. Effective implementation is also hampered by institutional constraints, such as a lack of forensic infrastructure and technological know-how. These difficulties underscore the pressing need for cutting-edge technical solutions that can improve evidence integrity inside the legal system by raising questions regarding procedural justice and evidential credibility.

Research Questions and Objectives

The following research questions serve as the basis for this investigation:

1. How much can blockchain technology improve the integrity of evidence in criminal justice systems?
2. To what extent do Nigeria's current evidentiary rules align with blockchain-based evidence management?
3. What technological, legal, and institutional obstacles would prevent Nigeria from implementing blockchain technology?

The aim of this study is to evaluate how blockchain technology enhances Nigeria's criminal justice system's accountability, transparency, and evidence integrity. In addition, it examines how well blockchain technologies interact with current legal frameworks and make policy recommendations for successful implementation in Nigeria.

Research Propositions

The following claims are advanced by this study:

1. Because blockchain technology is decentralised and immutable, it improves evidence integrity.
2. Blockchain-based technologies can be included into Nigerian evidentiary laws.
3. The use of blockchain in criminal judicial procedures is heavily influenced by institutional, legal, and technological limitations.

Scope and Structure of the Study

This paper takes a doctrinal and analytical approach, concentrating on the use of blockchain technology and Nigeria's legal system managing digital evidence. It looks at academic literature, statutes, and judicial interpretations. Conceptual, legal, analytical, comparative, and policy-oriented aspects make up the paper's structure.

CONTRIBUTION TO KNOWLEDGE

By rethinking blockchain technology as a governance infrastructure rather than just a technical instrument, this work significantly contributes to the expanding corpus of research at the nexus of digital technology, criminology, and evidentiary law. This research advances a broader theoretical perspective by showing how blockchain can directly incorporate procedural safeguards, accountability mechanisms, and evidentiary standards into the architecture of criminal justice systems, whereas previous studies frequently frame blockchain within specific technological or cybersecurity contexts (Casino, Dasaklis, & Patsakis, 2024). By critically analysing how blockchain-based evidence management fits into Nigeria's evidentiary framework specifically, the Evidence Act 2023 the study makes a doctrinal contribution. It provides a comprehensive understanding of how new technologies might be incorporated into established legal doctrines, bridging the gap between abstract legal requirements determining admissibility and the actual reality of managing digital evidence (Orji, 2024). From a policy standpoint, the report offers context-specific information pertinent to Nigeria's justice sector reform. It also provides a practical road map for improving evidence integrity, bolstering public confidence, and advancing procedural justice in an increasingly digitalised legal system by putting forth a structured implementation framework that integrates institutional capacity building, legal reform, and technological infrastructure.

CONCEPTUAL CLARIFICATIONS AND THEORETICAL FRAMEWORK

Blockchain Technology

A decentralised, distributed ledger system that securely, transparently, and unchangeably records transactions across numerous nodes is known as blockchain technology. Every transaction is organised into blocks, which are cryptographically connected to earlier blocks to create an unchangeable chronological chain. Decentralisation, immutability, transparency, and consensus-based validation are among the fundamental features of blockchain technology (Casino et al., 2024). Depending on access control and governance frameworks, blockchain systems can be classified as public, private, or permissioned. In the context of criminal justice, blockchain offers a secure mechanism for recording, verifying, and preserving digital evidence without reliance on a single central authority.

Evidence Integrity

The guarantee that evidence is accurate, full, and unchanged from the time it is gathered until it is presented in court is known as evidence integrity. It includes essential qualities like continuity, sincerity, and dependability. Maintaining the integrity of the evidence is crucial in criminal procedures to guarantee fair trial standards and prevent erroneous verdicts. Because digital data is intrinsically susceptible to manipulation, duplication, and unauthorised access, the growing reliance on digital evidence has increased the significance of strong integrity safeguards (Orji, 2024).

Chain of Custody (CoC)

A procedural framework known as the chain of custody (CoC) records how evidence is handled, transferred, analysed, and stored chronologically from the time it is collected until it is presented in court. It guarantees that evidence can be tracked down and confirmed at every turn, protecting its admissibility and integrity. Any disruption or irregularity in the chain of custody could jeopardise the value of evidence in forensic and legal proceedings. Effective custody management is frequently hampered in Nigeria by issues including inadequate documentation procedures and a lack of digital tracking tools (Dada, 2025).

Core Legal Concepts

The legal acceptance of evidence in court, as established by statutes like the Evidence Act 2023, is referred to as admissibility. Admissibility of digital evidence frequently depends on adherence to certification and authenticity-related procedural standards. The question of authenticity pertains to the veracity and reliability of the evidence's source. The burden of proof, which requires the prosecution in criminal trials to prove guilt beyond a reasonable doubt using reliable and verifiable

evidence, is closely connected. Conversely, the weight of evidence refers to the probative value that the court assigns after assessing the evidence's relevancy and dependability. These ideas collectively provide the theoretical framework for evaluating digital evidence in criminal proceedings.

Theoretical Framework

This study is anchored on Routine Activity Theory and Socio-technical Systems Theory. According to Routine Activity Theory, crime happens when a suitable target, a motivated criminal, and the lack of capable guardians come together (Cohen & Felson, 1979). Inadequate safeguards and insufficient evidentiary mechanisms in the context of digital evidence make it possible for manipulation, which undermines the results of justice. By improving security, traceability, and openness in evidence management procedures, blockchain technology can serve as a "capable guardian." The interconnection between social institutions and technological systems is emphasised by socio-technical systems theory. It emphasises that any technical innovation's efficacy is contingent upon its compatibility with human actors, organisational structures, and legal frameworks (Bostrom & Heinen, 1977). According to this viewpoint, institutional adaptation, legal change, and capacity building are all necessary for the effective incorporation of blockchain technology into Nigeria's criminal justice system. This dual-theoretical method offers a thorough perspective for examining the systemic effects and technological capabilities of blockchain adoption.

LEGAL AND INSTITUTIONAL FRAMEWORK

Evidentiary Laws in Nigeria

The Evidence Act 2011, as revised by the Evidence Act 2023, serves as the primary foundation for Nigeria's legislative framework governing the admissibility and assessment of evidence. By legally acknowledging the acceptance of computer-generated evidence under Section 84, subject to certain certification and reliability requirements, the 2011 Act represented a substantial change. This clause was created to account for the increasing use of electronic records in court cases. By improving procedural requirements and broadening the range of admissible digital evidence, the Evidence Act 2023 builds on this basis. While preserving protections to guarantee evidentiary integrity, it adds more flexibility to electronic record authentication (Eze, 2024). The Act, in particular, indicates a growing awareness of digital technologies and how they affect evidentiary procedures. Nevertheless, practical difficulties still exist in spite of these legislative developments, especially with regard to adherence to technical specifications and court interpretation of admissibility standards. Researchers have noted that the admissibility of electronic evidence is still unclear due to inconsistent application of Section 84 (Dada, 2025).

Criminal Procedure Laws

The Administration of Criminal Justice Act 2015 (ACJA) and related state legislation like the Administration of Criminal Justice Law (ACJL) control criminal process in Nigeria. The ACJA is a comprehensive reform that aims to improve the criminal justice system's effectiveness, fairness, and transparency. It contains rules pertaining to the management of evidence as well as procedural standards for the investigation, prosecution, and decision-making in criminal cases. The ACJL modifies these principles to fit local circumstances at the state level, which causes differences in how they are applied in different jurisdictions. Although these rules permit the use of electronic evidence, they do not offer comprehensive procedures for handling digital evidence over the course of its existence. This disparity is especially noticeable in areas like documentation, transfer, and evidence retention. Consequently, the absence of technologically integrated procedures within criminal justice processes limits the effectiveness of existing legal frameworks in addressing contemporary evidentiary challenges (Orji, 2024).

Data Protection and Privacy Framework

The Nigeria Data Protection Act 2023, which establishes a comprehensive legal framework for the protection of personal data, including principles of data minimisation, purpose limitation, and accountability, has significant implications for the collection, storage, and processing of digital evidence in the context of criminal justice. Although the Act permits lawful processing of data for law

enforcement purposes, it also imposes obligations to ensure data security and prevent unauthorised access, creating a delicate balance between evidentiary transparency and privacy protection (Ibrahim & Salisu, 2024).

Institutional Capacity and Operational Constraints

Operational realities and institutional capabilities have a major impact on Nigeria's evidentiary framework's efficacy. Inadequate financing, insufficient technical skills, and inadequate technology infrastructure are common problems for law enforcement agencies, courts, and forensic units. These limitations make it more difficult to properly gather, store, and examine digital evidence. For example, judicial officials may have little exposure to new technology, and many investigating agencies lack the sophisticated digital forensic tools needed to handle complicated electronic evidence. Inconsistencies in practice are also exacerbated by the lack of established procedures for managing digital evidence. The whole integrity of the criminal justice system is impacted by these institutional flaws, which compromise the validity and admissibility of evidence (Dada, 2025). Targeted investments in infrastructure development, institutional reform, and capacity creation are necessary to address these issues.

Judicial Interpretation and Case Law

Through judicial interpretation, Nigerian courts have significantly influenced the admissibility and assessment of electronic evidence. The Supreme Court highlighted strict adherence to Section 84 of the Evidence Act 2011 in Kubor v. Dickson, ruling that computer-generated evidence is inadmissible if certification standards are not met. In a similar vein, the Court emphasised the significance of procedural compliance in Dickson v. Sylva by reiterating the requirement of meeting statutory requirements for admissibility. Courts have taken a more practical stance in more recent times. The court's adaptability in assessing electronic evidence in FRN v. Fani-Kayode reflects a changing judicial perspective on digital admissibility. These examples show how strict formalism gradually gives way to a more purposeful interpretation of evidence norms. However, disparities still exist, underscoring the necessity of more precise regulations and technologically sound tools to assist judicial decision-making in the digital era (Eze, 2024).

LITERATURE REVIEW

Blockchain in Evidence Management

More recent research has focused on the use of blockchain technology in evidence handling within criminal justice systems. Blockchain is especially well-suited for maintaining the integrity of digital evidence because of its fundamental characteristics of immutability, decentralisation, and transparency. Studies have shown that blockchain technology can produce audit trails that are unchangeable, guaranteeing that each interaction with evidence is documented and verified (Casino et al., 2024). Furthermore, by offering a safe and transparent record of evidence handling from collection to court presentation, blockchain-based systems can improve chain of custody management. This increases the trustworthiness of the evidence and lowers the possibility of unauthorised changes. Similarly, new studies show how smart contracts can automate evidence handling procedures, increasing productivity and lowering human error (Ratul, Mollajafari, & Wynn, 2024). Scholars warn that difficulties including scalability, interoperability, and regulatory compliance must be taken into account when implementing blockchain in legal systems. Although the technology presents intriguing possibilities, its incorporation into current legal frameworks necessitates careful planning and execution to guarantee compliance with procedural rules and evidential standards.

Digital Evidence Challenges in Nigeria

The literature on digital evidence in Nigeria identifies several persistent problems that jeopardise the integrity of evidence. Major issues include inadequate forensic infrastructure, a lack of technical expertise, and unequal application of evidence laws. Scholars claim that the strict requirements of Section 84 of the Evidence Act often lead to procedural barriers that prohibit the admission of electronic evidence (Dada, 2025). Poor chain of custody protocols and insufficient documentation requirements can increase the risk of evidence loss and manipulation. Institutional limitations, such as a lack of specific knowledge and insufficient funding, exacerbate these issues. As a result, Nigerian

courts frequently challenge the reliability and validity of digital evidence, highlighting the need for innovative approaches to enhance evidential processes. (Orji, 2024).

Global Best Practices

A number of countries across the world have started investigating the application of blockchain technology to improve evidence management. Blockchain has been incorporated into legal systems in nations like Estonia and China to increase efficiency and transparency. The use of distributed ledger technologies in public administration, including legal procedures, has also been encouraged by the European Union. Pilot projects in the US have shown how blockchain can be used to safeguard digital data and provide strong audit trails. These programs emphasise how crucial it is to integrate law reform, institutional capacity building, and technological innovation. When establishing blockchain-based systems, best practices highlight the importance of stakeholder collaboration, regulatory clarity, and interoperability (Casino et al., 2024).

Identified Gaps in Existing Literature

In spite of the fact that blockchain technology is becoming popular, there are still gaps in the literature, especially when it comes to Nigeria. The majority of research on blockchain ignores its institutional and legal ramifications in favour of concentrating on its technical features. Research on blockchain's conformity with Nigerian evidentiary laws or its actual application in the criminal justice system is few. Similarly, current research frequently ignores the socio-legal aspects of technology adoption, such as institutional preparedness and regulatory obstacles. As such, this paper seeks to bridge these gaps, by offering a thorough analysis that incorporates legal, technological, and policy viewpoints on blockchain and evidence integrity in Nigeria.

METHODOLOGY

Research Design

The qualitative doctrinal research strategy used in this work is especially appropriate for legal scholarship that entails the methodical examination of statutes, case law, and academic literature. The doctrinal approach makes it possible to critically analyse Nigeria's current legal frameworks pertaining to digital evidence and how they interact with cutting-edge technology like blockchain. Its main objectives are to evaluate legal principles, find doctrinal gaps, and assess how well-suited existing laws are to new developments in technology. This approach is appropriate because the study aims to assess whether blockchain-based evidence management aligns with established evidentiary standards and procedural safeguards (Orji, 2024).

Sources of Data

Judicial rulings from Nigerian courts and statutory instruments like the Evidence Act 2023 and the Administration of Criminal Justice Act 2015 are among the secondary sources of data used in the study. Important sources include policy papers, academic journal articles, and current scholarly publications (2024–2026) on digital evidence and blockchain technology. These resources offer the doctrinal and analytical insights required to assess how technology and law interact.

Method of Data Analysis

Thematic and legal analytical techniques are combined in data analysis. Finding recurrent themes and important topics in the literature particularly with regard to evidence integrity, technological innovation, and institutional challenges is the goal of the thematic method. The legal analytical method is used to evaluate the implications of judicial rulings and statutory regulations for the management of digital evidence. A thorough assessment of the normative legal framework and the real-world applications of blockchain integration in Nigeria's criminal justice system is made possible by this dual approach (Dada, 2025).

Reliability and Validity Considerations

The study uses reputable and credible sources, such as recent peer-reviewed articles, statutes, and decided cases, to guarantee validity and trustworthiness. While careful interpretation of legislative requirements guarantees doctrinal truth, triangulation of sources is used to improve analytical consistency. The relevance and reliability of this study is strengthened by the incorporation of recent literature (2024–2026).

Ethical Considerations

There are no human subjects in the study; it is solely based on secondary data. However, correct depiction of legal authority, commitment to academic integrity, and proper credit of sources uphold ethical standards. The APA 7th edition criteria are followed when citing all relevant materials.

ANALYTICAL FRAMEWORK

Evidence Integrity (EI), Transparency (TR), Accountability (ACCT), and Procedural Reliability (PR) are the four main evaluation criteria that form the basis of this study's multidimensional analytical methodology. These standards offer a methodical framework for evaluating how well blockchain technology improves evidential procedures in Nigeria's criminal justice system. The ability of a system to maintain the authenticity, accuracy, and completeness of evidence throughout its lifecycle is the main focus of evidence integrity (EI). This criterion is used to assess the immutability of blockchain technology and its cryptographic security features. In order to lessen the possibility of manipulation or concealment, transparency (TR) looks at how transparent, traceable, and verifiable evidence handling procedures are.

Accountability (ACCT) takes into account the ways in which participants in the legal system might be held accountable for their evidence management-related acts. In this context, blockchain's decentralised and auditable structure is especially pertinent. Procedural Reliability (PR) evaluates the reliability, efficiency, and consistency of evidence procedures, including adherence to accepted legal norms. To ascertain whether blockchain-based systems comply with legal requirements, these standards are compared to current Nigerian legal frameworks, especially the Evidence Act 2023. A thorough and methodical examination of the technological potential and legal ramifications of blockchain adoption in Nigeria is made possible by this methodology.

BLOCKCHAIN AND EVIDENCE INTEGRITY ANALYSIS

Blockchain for Chain of Custody Management

A crucial component of evidence integrity is the chain of custody (CoC), which guarantees that both digital and tangible evidence is preserved from collection to court presentation. Cybercrime and digital offences are difficult to prosecute in Nigeria due to CoC failures (Adebayo, 2025). Blockchain technology offers an unchangeable ledger that automatically logs all interactions including time-stamped access, transfers, and modifications with a piece of evidence. This feature minimises disagreements about authenticity or procedural violations by guaranteeing a traceable audit trail. A blockchain creates a safe, sequential record of evidence handling by including cryptographic hashes of earlier blocks in each block. In addition to preventing retroactive manipulation, this gives judges, prosecutors, and law enforcement organisations an unquestionable chronology of custodial occurrences. Case studies from Nigerian courts, such Okoro v. Federal Republic of Nigeria (2024), indicate the potential usefulness of blockchain technology to reduce procedural errors and highlight persistent issues with evidence processing. Additionally, decentralised verification in which several parties can verify the legitimacy of CoC without depending on a single authority is made possible by blockchain integration, boosting trust in court decisions (Eze, 2024).

Smart Contracts and Procedural Automation

Procedural precautions in evidence management can be automated using smart contracts, which are self-executing code on blockchain networks. In order to minimise human mistake or intentional tampering, these contracts can enforce predetermined criteria, such as access permissions, submission dates, and verification procedures (Chukwuma, 2025). For instance, a smart contract can automatically limit access to authorised staff, alert pertinent judicial actors of developments, and record every interaction for auditing

reasons once digital evidence is uploaded to a blockchain. This automation improves productivity without sacrificing legal standards and complies with the Evidence Act 2023's procedural criteria. A viable path for Nigerian criminal justice reform has been shown by pilot deployments in other countries, which have shown decreased delays in criminal trials and increased adherence to evidential protocols (Okeke, 2025).

Transparency and Auditability

A key component of procedural justice is transparency, which promotes public trust in the legal system. A permanent, auditable record is provided by blockchain's distributed ledger, which guarantees that all evidence-related acts are visible to authorised actors (Nwachukwu, 2024). Prosecutors, defence attorneys, or judicial reviewers can independently verify that every evidence transaction can be tracked back to its source thanks to auditability. Due to a lack of verifiable integrity, cases in Nigeria have frequently been dismissed or acquitted as a result of opaque treatment of digital evidence (Adesanya, 2025). By establishing a shared, impenetrable environment for evidence management, blockchain reduces this danger. This promotes procedural justice while upholding accountability and is in line with international norms, such as the United Nations Office on Drugs and Crime's recommendations for digital evidence management (UNODC, 2024).

Security and Tamper Resistance

Because digital evidence is susceptible to manipulation, hacks, or unauthorised access, security is still a major worry in Nigeria's legal system (Olatunji, 2025). By using cryptographic methods, consensus algorithms, and decentralised data storage, blockchain improves security by rendering unauthorised changes computationally impossible. Decentralisation lessens insider threats by ensuring that no single player controls the evidence ledger. Blockchain also makes it possible to hash digital evidence files, creating distinct digital fingerprints that instantly detect changes. When used in conjunction with secure access protocols, this function safeguards private information like financial records, surveillance footage, and forensic reports. Nigeria can comply with the Evidence Act 2023's procedural and security standards by incorporating blockchain, which will also lessen the persistent risks to the integrity of the evidence that have been identified in cases like Abubakar v. State (2024), where digital records were contested due to alleged tampering.

Evaluation of Research Propositions

Doctrinal and comparative analyses support the study's claims that blockchain improves evidence integrity, procedural reliability, and accountability; its immutable ledger addresses vulnerabilities in traditional evidence handling, aligning with statutory requirements and judicial expectations; smart contracts automate procedural compliance, ensuring CoC management is dependable and verifiable; empirical evidence from pilot programs worldwide shows that blockchain integration reduces evidence disputes, increases auditability, and strengthens public trust (Chen & Li, 2025). In the Nigerian context, these findings suggest that implementing blockchain could close the gap between legal provisions and technological realities, supporting the Evidence Act 2023.

COMPARATIVE AND INTERNATIONAL PERSPECTIVES

China

In order to expedite case tracking and lower fraud, China has incorporated blockchain technology into judicial evidence management and public security. In order to ensure authenticity and minimise procedural delays, the People's Courts use blockchain technology for digital notarisation and secure evidence transfer (Li & Zhang, 2025).

European Union

Through the European Blockchain Services Infrastructure (EBSI), which enables cross-border verification of legal and administrative documents, including digital proof, the European Union promotes blockchain technology. EBSI provides a paradigm for institutional and legal adaptation, emphasising data protection, interoperability, and GDPR compliance (European Commission, 2025).

United States

Blockchain experiments in the US have concentrated on evidence management in financial fraud and cybercrime investigations. Blockchain-based court filings and digital notarisation, which offer openness, auditability, and procedural reliability, have been tested by

states including Delaware and California (Smith & Johnson, 2025).

Lessons for Nigeria

By coordinating blockchain deployment with regional legal frameworks, such as the Evidence Act 2023, Nigeria can incorporate these international experiences. In order to maintain evidentiary integrity and procedural transparency, it is important to ensure regulatory compliance, encourage institutional capacity building, and integrate blockchain with current police, court, and forensic systems.

APPLICABILITY TO NIGERIA

Legal Compatibility

The Evidence Act 2023 of Nigeria, which acknowledges electronic documents as acceptable evidence if authenticity, integrity, and dependability can be proven, is mainly compatible with blockchain implementation. These requirements are supported by blockchain's immutability and verifiable audit trails (Okeke, 2025). Judicial acceptance is also necessary for legal compatibility, and this can be promoted by training, pilot programs, and precedent.

Institutional Readiness

Police databases, court registries, and forensic units are all implementing ICT solutions as Nigeria's criminal justice institutions progressively go digital. Infrastructure, technological know-how, and interagency collaboration are still lacking, nevertheless. Capacity-building initiatives, instruction in digital literacy, and legislative recommendations for blockchain integration can all improve institutional preparedness (Eze, 2025).

Interoperability with Existing Systems

Integration with current police databases, court registries, and forensic systems is necessary for blockchain adoption to be effective. Interoperability guarantees smooth data transfer, minimises duplication, and upholds platform chain of custody. Standardised protocols and API-based frameworks can promote compatibility while maintaining data accessibility and integrity (Chukwuma, 2025).

Risks and Constraints

High implementation costs, opposition to technical change, cybersecurity flaws, and legal issues around smart contracts are some potential risks. In order to integrate blockchain technology with Nigerian legal and institutional environments, mitigation methods include phased implementation, regulatory clarity, public-private collaboration, and ongoing monitoring (Adebayo, 2025).

ETHICAL AND GOVERNANCE CONSIDERATIONS

Adoption of blockchain presents serious ethical and governance issues. There is a fundamental conflict between privacy and openness; whereas blockchain encourages accountability and auditability, sensitive personal or forensic data must be safeguarded in compliance with the Nigeria Data Protection Act 2023 (Okoro, 2025). Decentralised verification and unchangeable data bolster accountability measures by making it possible to identify and resolve misconduct or procedural violations. This is consistent with the values of judicial integrity and good governance. Implications for human rights must also be taken into account, especially with regard to digital monitoring, gathering of evidence, and possible exclusion of people without access to digital systems. In order to ensure adherence to national and international norms, ethical implementation necessitates striking a balance between technology efficiency and individual rights (UNODC, 2024).

Clear operational procedures, stakeholder duties, and monitoring procedures should all be part of governance frameworks. By offering technical assistance while upholding legal and human rights commitments, public-private partnerships can promote ethical deployment. Finally, in order to address new ethical, legal, and social issues and make sure that the technology enhances rather than compromises the integrity of Nigeria's legal system, ongoing evaluation of blockchain applications in criminal justice is crucial (Eze, 2025).

POLICY IMPLICATIONS AND IMPLEMENTATION FRAMEWORK

Blockchain technology has important policy ramifications for Nigeria's criminal justice system, especially when it comes to improving public trust, procedural dependability, and evidence integrity. A key component of this integration is legal change, which calls for revisions to the Evidence Act 2023 and other relevant laws to specifically allow for blockchain-generated documents and smart contract-based processes. Reducing judicial confusion and promoting uniform application in courts can be achieved by elucidating the legal position of blockchain evidence and codifying criteria for admissibility, authentication, and chain of custody (Adebayo, 2025).

Building institutional capability is equally important. Comprehensive training on blockchain functions, digital evidence management, and cybersecurity measures is necessary for police units, forensic labs, prosecuting agencies, and court staff. Developing technical skills guarantees that stakeholders can use the system efficiently, lowering errors and enhancing procedural compliance (Eze, 2025). Blockchain deployment requires investment in technology infrastructure, such as high-speed networks, distributed ledger systems, secure servers, and encryption tools. Infrastructure needs to be robust against cyberattacks and scalable to handle increasing volumes of digital evidence (Okeke, 2025). By utilising the knowledge of academic institutions, cybersecurity companies, and technology suppliers, public-private partnerships can expedite adoption. While upholding ethical and legal control, collaborative arrangements allow for prototype initiatives, creative smart contract design, and continuous system support (Chukwuma, 2025).

A phased, integrated model should be used for the implementation architecture. Digital files are instantly hashed and encrypted to provide a distinct digital fingerprint at the point of collection, where evidence capture takes place. After that, these files are kept on a blockchain ledger to guarantee traceability and immutability. Authorised staff can authenticate records using verification processes, creating a trustworthy audit trail that is available to courts, investigators, and oversight organisations. Nigeria may reconcile institutional, legal, and technological aspects by using an all-encompassing framework, guaranteeing that blockchain improves the administration of justice. while preserving procedural integrity and rights (Nwachukwu, 2024).

LIMITATION OF THE STUDY

This analysis is mostly qualitative and doctrinal, based on secondary literature, case law, and statutory provisions. As a result, it has not been empirically validated through field tests or pilot deployments in Nigerian criminal justice systems. As a result, assessments about blockchain integration's practical efficacy are indicative rather than demonstrative (Adesanya, 2025). The quick advancement of technology is another drawback. Certain legal and procedural suggestions may become outdated if they are not regularly evaluated due to the constant advancements in blockchain platforms, consensus mechanisms, and cybersecurity standards. Furthermore, immediate adoption may be hampered by jurisdictional differences in the laws governing digital evidence as well as possible opposition from institutional actors. Okoro (2025). Notwithstanding these limitations, the study makes a significant contribution to the body of knowledge on digital justice and evidence integrity in Nigeria by providing a strong doctrinal framework, highlighting important policy and legal issues, and laying the groundwork for upcoming empirical research and pilot projects.

CONCLUSION

Blockchain technology offers Nigeria's criminal justice system a revolutionary chance to improve evidence integrity. Blockchain solves enduring issues with chain of custody, procedural dependability, and transparency by offering an unchangeable, auditable, and decentralised record of evidence management. Smart contract integration further automates procedural safeguards, minimising human mistake and guaranteeing adherence to the Evidence Act 2023's legal standards (Adebisi, 2025). Comparative research shows that Nigeria can learn useful lessons from international implementations in China, the US, and the EU, especially with regard to institutional preparedness, interoperability, and legal compliance. Phased deployment, legal change, and public-private partnerships might reduce risks and encourage sustainable

adoption, even though issues with infrastructure, capacity, and ethical considerations still exist (Chukwuma, 2025; Nwachukwu, 2024). At the end, blockchain could improve public confidence, safeguard human rights, and update the legal system. To keep Nigeria's criminal justice system both technologically sophisticated and legally competent, future research should concentrate on empirical validation, pilot implementations, and integration with cutting-edge technology like artificial intelligence.

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APPENDIX

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Table of Abbreviations

Abbreviation	Full Meaning
ACCT	Accountability
ACJA	Administration of Criminal Justice Act (2015)
ACJL	Administration of Criminal Justice Law (state-level adaptation)
AI	Artificial Intelligence
AI-BC	Artificial Intelligence–Blockchain Integration
API	Application Programming Interface
API-BC	Application Programming Interface–Blockchain Integration
BC	Blockchain
B-DEMS	Blockchain-based Digital Evidence Management System
CCTV	Closed-Circuit Television
CoC	Chain of Custody
DLT	Distributed Ledger Technology
EI	Evidence Integrity
EU	European Union
EBSI	European Blockchain Services Infrastructure
GDPR	General Data Protection Regulation
ICT	Information and Communication Technology
ICTS	Information and Communication Technology Systems
JSON	JavaScript Object Notation
LLB	Bachelor of Laws
NDP	Nigeria Data Protection Act (2023)
PR	Procedural Reliability
TR	Transparency
SSRN	Social Science Research Network
UNODC	United Nations Office on Drugs and Crime
USA	United States of America
VPN	Virtual Private Network
XML	eXtensible Markup Language