FORENSIC EVIDENCE AND LEGAL PROOF: BRIDGING THE GAP BETWEEN SCIENTIFIC VALIDITY AND JUDICIAL ADMISSIBILITY IN NIGERIA*

Abstract

In the adjudication of modern criminal and civil disputes, forensic science plays an increasingly pivotal role in the construction and authentication of legal proof. However, in Nigeria, the evidentiary treatment of forensic material is plagued by systemic deficiencies ranging from poor infrastructural support and judicial illiteracy in scientific reasoning, to a fragmented legal framework governing admissibility. This article critically examines the conceptual and procedural tensions between scientific validity and legal admissibility within Nigerian jurisprudence. Drawing upon comparative insights from the United States' Daubert standard and the United Kingdom's empirical threshold for expert evidence, the article interrogates the adequacy of the Nigerian Evidence Act 2011, particularly Sections 68–71, in filtering pseudoscientific methods and ensuring reliability. Case law analysis reveals a troubling pattern of judicial deference to flawed or inadequately scrutinized forensic techniques, including DNA, ballistic, and digital evidence. The article further investigates institutional bottlenecks within the Nigeria Police Forensic Unit and the Nigeria Immigration/Customs cyber labs, highlighting gaps in chain of custody, expert qualification, and cross-examination practices. In closing, the article proposes a reform agenda grounded in scientific literacy for the judiciary, accreditation of forensic labs, and a stricter evidentiary gatekeeping model. By re-aligning legal proof with scientific rigor, Nigerian courts can improve evidential integrity, ensure procedural fairness, and strengthen public confidence in the justice system.

Keywords: Forensic evidence, legal proof, admissibility, scientific validity, Nigeria

1. Introduction

In an era where the complexities of crime and dispute resolution increasingly demand scientific sophistication, the role of forensic evidence in judicial proceedings has become indispensable. From DNA profiling and fingerprint analysis to digital forensics and ballistics, scientific methods now underpin many aspects of modern fact-finding. In Nigeria, however, the intersection between scientific inquiry and legal adjudication remains fraught with challenges. Courts are often called upon to adjudicate disputes involving expert forensic evidence without a coherent framework for determining the reliability or admissibility of such evidence. As a result, the foundational relationship between legal proof and scientific validity is frequently undermined, threatening both fair trial guarantees and the broader credibility of the justice system. At the heart of this disconnect is a doctrinal and institutional vacuum. While the Evidence Act 2011 makes provision for the admissibility of expert opinion evidence, particularly under Sections 68–71, it fails to articulate a structured or rigorous standard for the scientific reliability of such testimony. In effect, the current legal framework often leaves judges with wide discretion to admit or reject forensic evidence without the benefit of scientific criteria or procedural safeguards. This can lead to the admissibility of pseudoscientific evidence, or the exclusion of legitimate science due to judicial unfamiliarity. The consequences are not merely academic; they affect real-world outcomes in both criminal and civil trials, with implications for the right to a fair hearing, the presumption of innocence, and the overall integrity of the judicial process.

A close analysis of recent Nigerian jurisprudence reveals divergent and often inconsistent judicial approaches to forensic science. In *Moses Jua v State*, the Supreme Court of Nigeria held, among other things, that where exhibits 'point unequivocally to the guilt of an accused person,' forensic evidence becomes unnecessary, affirming a conviction based largely on confessional statements and items recovered at the crime scene, without any demand for scientific corroboration.[1] This evidentiary minimalism sidesteps the safeguards of scientific reliability embedded in the *Evidence Act 2011*, thereby risking a jurisprudence that treats forensic science as peripheral rather than central to criminal adjudication. This minimalist evidentiary approach has been judicially rationalized on several occasions. In *Abu Mohammed v The State*, the Court of Appeal restated the position that even in homicide cases, medical or forensic evidence is not essential where death can be established by other means. Uwa, JCA observed that 'it is common knowledge [that there is a] lack of scientific and forensic analysis in our criminal trial...with the resultant effect that the trial Court would be left to look for other means to arrive at its conclusion,' including reliance on circumstantial or testimonial evidence.[2] Citing *R v Johnson Nwokocha* and *Alarape v State*, the Court affirmed that death could be proved beyond reasonable doubt without scientific confirmation, provided there is evidence of both death and a causal link to the accused's unlawful act.[3]

The foregoing approach/pattern of the Nigerian Courts was further demonstrated in *Friday Sumaila v The State*,[4] where the Court of Appeal upheld the admission of two cutlasses allegedly used in a murder, despite the absence of any forensic

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[1] *Moses Jua v The State* (2010) LPELR-1637(SC) p. 27 para. B, per Niki-Tobi, JSC

[2] *Abu Mohammed v The State* (2014) LPELR-24321(CA) p. 32 paras. A – D, per Uwa JCA.

[3] *R v Johnson Nwokocha* (1949) 12 WACA 453; *Alarape v State* (2001) 5 NWLR (Pt. 705) 79.

[4] Friday Sumaila v The State (2019) LPELR-47730(CA) pp. 46-50 para. E

investigation linking the weapons to the accused or the deceased. The Court reasoned that the accused's confessional statement, the photographic evidence of the body, and the post-mortem report indicating machete wounds sufficed to ground a conviction. According to Aliyu JCA, there was no legal necessity to subject the weapons to scientific analysis where circumstantial and confessional evidence sufficiently established guilt. While such reasoning may meet the threshold of legal admissibility, it fails to subject critical evidence to the standards of reliability and chain of custody demanded by forensic science, thereby weakening the procedural integrity of capital trials. While doctrinally defensible, this approach arguably institutionalizes an evidentiary culture where forensic rigour is treated as optional rather than foundational - a reality which significantly impairs Nigeria's capacity to modernize its criminal justice system in line with global best practices. In contrast, the Court of Appeal in *Kunle Shonubi v People of Lagos State* undertook a detailed examination of the admissibility and probative value of both circumstantial and forensic evidence in a homicide case.[5] The Court upheld the admissibility of a DNA report jointly produced by forensic officers in Nigeria and the United Kingdom, despite the Appellant's objection that the foreign analysts were not physically present in court.[6] Relying on *sections 39(d), 49 and 68 of the Evidence Act 2011*, the Court affirmed that the report, tendered by a trained Nigerian forensic officer (PW6) who had supervised, participated in, and interpreted the analysis, was not hearsay.[7] Crucially, the DNA evidence - which showed the deceased's genetic material under the Appellant's fingernails and matched a bloodstain on the Appellant's shirt - was found admissible and reliable.[8] The *Shonubi* judgment thus exemplifies a forensic-literate posture, highlighting how scientific methods can bolster evidentiary integrity, particularly in capital cases. These contrasting decisions raise an urgent question: how should Nigerian courts bridge the gap between scientific truth and legal admissibility?

Internationally, jurisdictions have grappled with this issue by adopting formal tests to guide admissibility. In the United States, the Daubert standard, articulated by the Supreme Court in *Daubert v Merrell Dow Pharmaceuticals Inc.*, requires that expert testimony be grounded in methods that are testable, peer-reviewed, and generally accepted within the scientific community.[9] The United Kingdom employs a similar, though more flexible, standard based on *R v Bonython*, which requires that expert evidence be logically relevant and scientifically credible.[10] In both cases, the judge serves as a gatekeeper—scrutinizing the validity of scientific evidence before it reaches the fact-finder. Nigeria, by contrast, lacks a comparable threshold or judicial culture of evidentiary scrutiny, and this lacuna leaves the courts vulnerable to both scientific illiteracy and evidentiary abuse**.** Moreover, institutional barriers compound the problem. Nigeria's forensic infrastructure is grossly underdeveloped. The Nigeria Police Forensic Department, which handles ballistics, handwriting, and toxicology analysis, remains chronically underfunded and poorly equipped. There is no independent regulatory authority for forensic science, nor a national accreditation framework for laboratories and practitioners. In most cases, forensic experts are police officers whose objectivity may be compromised, and who lack training in modern forensic protocols. As such, the very sources of scientific evidence admitted in court are often procedurally and methodologically defective. These problems are exacerbated by gaps in judicial education**.** Many judges lack scientific training and are unfamiliar with principles of probability, falsifiability, or statistical reasoning that underpin forensic validity.[11]

This study argues that resolving this systemic gap requires a restructuring of the Nigerian legal framework for forensic evidence**.** It begins by interrogating the theoretical distinction between scientific validity and legal admissibility**,** before exploring comparative jurisprudence on evidentiary gatekeeping. The article then critically analyses Nigerian case law and statutory provisions, highlighting patterns of admissibility that do not reflect scientific standards. In the latter sections, institutional and procedural challenges are mapped, and a reform agenda is proposed. Central to these recommendations is the need for a codified standard of admissibility**,** judicial scientific training, and the accreditation of forensic laboratories in line with international best practices. In sum, while forensic science holds immense promise for evidentiary precision, this potential will remain unrealized unless Nigeria aligns its legal system with the rigours of scientific proof. Without such alignment, courts may continue to admit unreliable evidence or exclude legitimate expert testimony-thereby compromising justice and eroding public confidence in the rule of law.

2. Theoretical and Doctrinal Foundations

The use of forensic evidence in legal proceedings raises complex questions about the relationship between science and law, particularly regarding the production and assessment of proof. At its core, forensic science aims to apply scientific methods to criminal and civil investigations, producing evidence that can assist the court in fact-finding. The law, on the other hand, demands that any evidence admitted into judicial proceedings satisfy certain procedural and evidentiary thresholds. Where these domains intersect, tension often arises: scientific reliability does not automatically translate into legal admissibility, and legally admissible evidence is not always scientifically valid. This section explores these conceptual tensions, grounding them in Nigerian evidentiary law and comparative jurisprudence.

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[5] *Kunle Shonubi v People of Lagos State* (2015) LPELR-24807(CA) pp. 31-52, paras. D-D, per Abimbola Osarugue Obaseki-Adejumo, JCA

[6] *Ibid*, 36–38.

[7] Evidence Act 2011, ss. 39(d), 49, 68; *Blessing v FRN* (2012) LPELR-9838(CA), 13–14.

[8] *Kunle Shonubi v People of Lagos State* (supra) pp. 44–46

[9] *Daubert v Merrell Dow Pharmaceuticals Inc.* 509 U.S. 579 (1993) <https://supreme.justia.com/cases/federal/us/509/579/> accessed on 24 June 2025; see also Federal Rules of Evidence, Rule 702 (USA) <https://www.law.cornell.edu/rules/fre/rule_702> accessed on 24 June 2025

[10] *R v Bonython* (1984) 38 SASR 45 (Supreme Court of South Australia), adopted in *R v Dlugosz* [2013] EWCA Crim 2 <http://netk.net.au/Australia/Bonython.asp> accessed on 24 June 2024; <https://vlex.co.uk/vid/i-r-v-kuba-793164049> accessed on 24 June 2024

[11]

Legal Proof and Scientific Validity: Distinctions and Intersections

Legal proof, in adversarial systems such as Nigeria's, is determined by whether a fact is established on a requisite standard - either beyond reasonable doubt in criminal cases or on the balance of probabilities in civil matters. Forensic science contributes to this process by providing expert analysis of physical or digital evidence, including fingerprints, DNA profiles, ballistic trajectories, toxicology reports, or even voice and handwriting analysis. However, scientific methods derive their authority not from their persuasive effect in court, but from their epistemological grounding in verifiability, replicability, and falsifiability. A method is scientifically valid if it consistently produces reliable results under standard conditions - not merely if it convinces a judge or jury. Legal admissibility, by contrast, has historically been driven by criteria such as relevance**,** competence of the witness, and compliance with procedural rules**.** The two concepts - scientific validity and legal admissibility - are therefore not synonymous, though they ought to be closely aligned in any credible justice system.

Admissibility of Expert and Forensic Evidence under Nigerian Law

The principal statutory framework governing the admissibility of forensic and expert evidence in Nigeria is the Evidence Act 2011, particularly Sections 68 to 71**.**

- **Section 68(1)** provides that when a court has to form an opinion on a matter relating to science, art, or any specialized field, the opinion of a person specially skilled in that field is relevant.
- **Section 69** allows the court to consider facts showing the basis of the expert's opinion - i.e., the data or experiments underlying the conclusion.
- **Section 71** gives courts discretion to reject expert opinions where they are inconsistent with common sense or contradict judicially noticeable facts.

The cumulative effect of these provisions is to allow judges considerable latitude in determining whether expert forensic evidence is admissible. However, the Act does not establish any threshold for assessing the reliability of the scientific methodology employed. Nor does it require that experts meet accreditation standards or that their methods be generally accepted within the relevant scientific community. This legislative silence creates a doctrinal vacuum in which scientifically flawed or speculative techniques may be admitted if they appear superficially persuasive.

The Common Law Influence and the Need for Judicial Gatekeeping

Although Nigerian evidentiary law is codified, it draws heavily on common law traditions, particularly the doctrines inherited from English law. In common law systems, the judge serves as a gatekeeper**,** determining whether the methodology and conclusions of a forensic expert are sufficiently reliable to be presented to the trier of fact. This role was formalized in the **United States** in *Daubert v Merrell Dow Pharmaceuticals Inc.*, where the Supreme Court listed criteria for admissibility, including testability, peer review, known error rates, and general acceptance.[12] In the United Kingdom, courts use the more flexible approach established in *R v Bonython*, which allows for admission so long as the evidence is logically relevant and the witness is demonstrably skilled in the relevant science.[13] However, even under this standard, courts are increasingly requiring methodological transparency and scientific credibility, especially in criminal trials where liberty is at stake.[14] Nigeria's courts have not yet developed a consistent standard akin to *Daubert* or *Bonython*. In *Kunle Shonubi v People of Lagos State*,[15] the Court of Appeal upheld the admissibility of forensic evidence tendered through PW6 (an expert) to dislodge the Appellant's defence of alibi without any judicial inquiry into the certification of the forensic unit or the underlying methodology through which the evidence was arrived at. This points to the absence of a judicial framework for screening questionable scientific techniques, despite the judiciary's inherent power under Section 6(6)(b) of the Constitution of the Federal Republic of Nigeria 1999 to adjudicate all justiciable matters and enforce procedural fairness.

Presumptions, Burden of Proof, and Expert Evidence

Another important dimension is the interaction between **expert evidence and the burden of proof.** Under the Evidence Act:

- **Section 135(1)** provides that the burden of proof in criminal trials rests on the prosecution, who must prove their case beyond reasonable doubt.
- **Section 136** clarifies that the burden may shift where a fact is particularly within the knowledge of the accused.

In practice, the use of forensic evidence has complicated this landscape. For instance, where DNA evidence is presented by the prosecution, the defence often lacks the capacity to rebut it, either due to technical illiteracy or resource constraints. Nigerian courts have not consistently recognized this asymmetry of access to science, and this creates a risk of miscarriages of justice when scientifically questionable evidence is treated as conclusive. Moreover, courts sometimes accord forensic evidence undue weight, treating it as infallible, especially in cases involving ballistics or chemical analysis. This tendency, coupled with minimal judicial oversight, reinforces the need for doctrinal reform. The theoretical underpinnings of forensic evidence in legal proof reveal a fundamental tension between scientific legitimacy and judicial pragmatism**.** While the Nigerian Evidence Act provides a basic statutory scaffold, it does not demand rigorous inquiry into the reliability or scientific validity of expert opinions. In the absence of a clearly defined gatekeeping function, the courts risk admitting evidence that fails to meet objective

[12] *Daubert v Merrell Dow Pharmaceuticals Inc.* 509 U.S. 579 (1993); see also Federal Rules of Evidence Rule 702 (USA)

[13] *R v Bonython* (1984) 38 SASR 45; see also *R v Dlugosz* [2013] EWCA Crim 2

[14] G Edmond, 'Forensic Science Evidence and the Conditions for Rational (Jury) Evaluation' (2015) 46 *Australian Journal of Forensic Sciences* 147 <https://law.unimelb.edu.au/__data/assets/pdf_file/0011/1586360/03Edmond2.pdf> accessed on 28 June 2025

[15] *Kunle Shonubi v People of Lagos State* (supra) pp. 60-63, paras. E-A

standards of scientific quality. The next section explores how comparative jurisdictions have addressed these challenges and what lessons can be drawn for Nigeria.

3. Scientific Validity vs Legal Admissibility: A Comparative Jurisprudence

In modern legal systems, forensic science plays a critical role in establishing facts that may not be otherwise observable. However, different jurisdictions have developed varying approaches to determining the admissibility of forensic evidence**,** especially where questions of scientific validity are raised. This section undertakes a comparative analysis of how key common law jurisdictions - the United States, the United Kingdom, and South Africa — navigate the interplay between science and legal proof. The goal is to distil doctrinal lessons for Nigerian courts, particularly on the role of judicial gatekeeping, standardization of expert evidence, and procedural safeguards for rebuttal.

United States: Daubert and the 'Scientific Methodology' Threshold

The modern American approach to expert evidence was profoundly shaped by the landmark case of *Daubert v Merrell Dow Pharmaceuticals Inc***.**[16] Prior to *Daubert*, courts relied on the so-called Frye test, which required scientific evidence to be 'generally accepted' in the relevant field. *Daubert* rejected Frye as too rigid and substituted a more comprehensive standard grounded in scientific methodology**.** In *Daubert*, the Supreme Court emphasized that Federal Rule of Evidence 702 charges trial judges with a gatekeeping function: they must assess not just the expert's credentials but also the scientific reliability of their testimony.[17] The Court outlined non-exhaustive factors to guide admissibility:

- Whether the theory or technique can be and has been tested;
- Whether it has been subjected to peer review and publication;
- The known or potential error rate;
- The existence and maintenance of standards;
- Whether the theory or technique has gained widespread acceptance.

Subsequent cases such as *General Electric Co. v Joiner*[18] and *Kumho Tire Co. v Carmichael*[19] extended this framework to technical and non-scientific expert testimony. Together, these cases make clear that expert evidence must be both relevant and reliable, and judges must scrutinize the methodological foundation of forensic claims before they reach the jury. This approach has had significant implications for American trial practice: entire categories of unreliable forensic techniques (e.g., bite mark analysis, non-validated ballistics comparisons) have been excluded in certain jurisdictions. It also places the onus on the proponent of evidence to demonstrate its scientific merit - a practice that enhances accountability and encourages methodological rigour.

United Kingdom: Bonython and the Cautious Embrace of Novel Science

English law adopts a more flexible, but still structured, approach to forensic evidence. The leading authority remains *R v Bonython***,**[20] a decision of the South Australian Supreme Court that has been followed in English jurisprudence. In *Bonython*, King CJ established two principal questions for admissibility:

1. Is the subject matter of the expert's opinion sufficiently recognized as reliable within the relevant scientific discipline?
2. Is the witness demonstrably qualified in that discipline?

This test permits the introduction of novel scientific techniques, but only where the science is logically relevant and sufficiently developed to warrant reliance. Subsequent English decisions have required courts to probe the methodological basis of such evidence. In *R v Dlugosz*,[21] the Court of Appeal ruled that low-template DNA evidence required careful judicial scrutiny due to its statistical uncertainties. Similarly, in *R v Reed*,[22] the court emphasized the need for judicial awareness of scientific limitations**.** Notably, the Law Commission of England and Wales recommended a codified reliability threshold in its 2011 report, urging courts to ensure that expert testimony is not only relevant but also valid, reliable, and fair.[23] Although these reforms have not been fully enacted legislatively, they illustrate an evolving culture of judicial vigilance towards forensic evidence.

South Africa: Case-Led Evolution of Admissibility and Adversarial Testing

South African jurisprudence on forensic evidence is grounded in common law principles of relevance and probative value, though it lacks a codified standard like *Daubert* or the UK's Bonython test. However, courts have shown increasing awareness of the risks of uncritical admissibility and have embraced cross-examination as a crucial safeguard. In *S v Ndhlovu*,[24] the

[16] *Daubert v Merrell Dow Pharmaceuticals Inc.* 509 U.S. 579 (1993) <https://supreme.justia.com/cases/federal/us/509/579/> accessed on 28 June 2025

[17] See J. U. Okoye & Ikenga K. E. Oraegbunam, 'Daubert and Frye Models: Implications for Admissibility of Expert Testimony for Nigeria', *International Review of Law and Jurisprudence*, 1(3) (2019), 10-15.

[18] *General Electric Co. v Joiner* 522 U.S. 136 (1997) <https://supreme.justia.com/cases/federal/us/522/136/> accessed on 28 June 2025

[19] *Kumho Tire Co. v Carmichael* 526 U.S. 137 (1999) <https://supreme.justia.com/cases/federal/us/526/137/> accessed on 28 June 2025

[20] *R v Bonython* (1984) 38 SASR 45, per King CJ

[21] *R v Dlugosz* [2013] EWCA Crim 2 <https://vlex.co.uk/vid/i-r-v-kuba-793164049> accessed on 28 June 2025

[22] *R v Reed & Reed* [2009] EWCA Crim 2698 <https://vlex.co.uk/vid/r-v-reed-r-793497201> accessed on 28 June 2025

[23] Law Commission (England and Wales), *Expert Evidence in Criminal Proceedings in England and Wales*, Law Com No 325 (2011) paras 1.14–1.21 <https://assets.publishing.service.gov.uk/media/5a7cc0c0e5274a38e575689b/0829.pdf> accessed on 28 June 2025

[24] *S v Ndhlovu* [2002] 2 SACR 325 (SCA) <https://www.saflii.org/za/cases/ZASCA/2002/70.html> accessed on 28 June 2025

Supreme Court of Appeal addressed the admissibility of forensic voice analysis and warned against the dangers of admitting expert evidence without contextual scrutiny. Similarly, in *S v Cele*,[25] the court criticized the use of fingerprint evidence without proper documentation of methodology or expert certification. These cases suggest a growing recognition that forensic evidence, particularly where it bears heavily on guilt or innocence, must be open to adversarial interrogation. Importantly, the South African model allows for expert evidence to be challenged through cross-examination and rebuttal testimony, thereby protecting the rights of the accused. While the judiciary has not developed a formal admissibility test, courts are increasingly willing to exclude forensic testimony if it lacks empirical grounding or procedural safeguards.

Comparative Lessons for Nigerian Jurisprudence

From these jurisdictions, several comparative lessons emerge that are directly relevant for the Nigerian context:

Judicial Gatekeeping Must be Robust and Proactive: Across the jurisdictions, one consistent theme is the active role of the judge in preventing the admission of unreliable or untested forensic evidence. In the U.S., judges are mandated to interrogate the scientific foundation of evidence. In the UK and South Africa, judicial caution is exercised through relevance, expert competence, and logical reliability. Nigerian judges, empowered under Sections 68–71 of the Evidence Act and Section 6 of the Constitution, should adopt a proactive gatekeeping function, assessing not only the relevance of forensic evidence but its scientific merit**.**

Standardization and Certification are Essential: The absence of a statutory or regulatory body to accredit forensic experts in Nigeria stands in sharp contrast to international best practices. In the U.S., the National Institute of Standards and Technology (NIST) plays a coordinating role; in the UK, the Forensic Science Regulator ensures compliance with quality standards. Nigeria would benefit from a National Forensic Science Council or equivalent agency tasked with laboratory accreditation, expert certification, and publication of reliability benchmarks.

Rebuttal Protocols Must Be Strengthened: A final lesson lies in procedural fairness. In all three systems examined, cross-examination of expert witnesses and opportunities for rebuttal are recognized as core safeguards. Nigerian courts must similarly insist on full disclosure of forensic reports, the availability of counter-experts, and the right to challenge scientific assumptions through adversarial means. This is particularly vital in capital trials and other criminal matters where the risk of wrongful conviction is highest.

The comparative analysis shows that the evolving doctrines of forensic admissibility in jurisdictions like the U.S., UK, and South Africa offer a clear blueprint for Nigeria**.** Scientific evidence, while powerful, is not infallible. Without legal safeguards such as judicial gatekeeping, standardization, and procedural parity**,** the courtroom risks becoming a theatre for speculative science. Nigerian jurisprudence must evolve beyond mere relevance and formal expertise to embrace a standard of empirical rigour, rooted in both scientific integrity and procedural fairness. A modern evidentiary framework must go beyond admissibility based solely on an expert's credentials or the superficial relevance of the evidence. Instead, it should incorporate mechanisms for testing the underlying methodology, reproducibility, and peer consensus, much like the *Daubert* standard in the U.S. or the *Bonython* criteria in the UK.

4. Forensic Evidence in Nigerian Judicial Practice

In Nigeria, the evidentiary framework for forensic science is primarily governed by the Evidence Act 2011, yet its application has revealed troubling inconsistencies in the way courts evaluate expert opinion, scientific methodology, and procedural safeguards. Although forensic evidence is increasingly common in both civil and criminal proceedings - particularly in cybercrime, financial fraud, and capital offences - its judicial treatment remains uneven and, in many cases, scientifically uncritical. This section analyses Nigeria's judicial experience with forensic evidence, focusing on admissibility, chain of custody, judicial reasoning, and the competence of expert witnesses.

Admissibility without Validity: The Silent Crisis: A persistent issue in Nigerian forensic jurisprudence is the admission of expert evidence without rigorous scrutiny of its scientific validity. Section 68 of the *Evidence Act 2011* permits expert testimony on matters requiring specialized knowledge. However, Nigerian courts often fail to assess whether the techniques used by the expert are generally accepted within the relevant scientific community, whether the expert has published peer-reviewed work in the field, or whether the procedures followed are capable of independent replication.6 This is particularly concerning in criminal trials where forensic evidence may form the sole basis for conviction.

Chain of Custody and Evidentiary Integrity: Another structural flaw in Nigerian forensic practice lies in the weak enforcement of chain of custody protocols. Under Section 89 of the *Evidence Act 2011*, secondary documentary evidence such as laboratory reports must be properly authenticated. Nevertheless, Nigerian courts frequently accept photocopied or unsigned forensic reports as primary evidence, especially when they are not vigorously contested. This undermines the credibility of the forensic process and opens the door to contamination or fabrication, both of which are fatal to the integrity of the judicial process.[26]

[25] *S v Cele* (AR48/2012) [2012] ZAKZPHC 42 <https://www.saflii.org/za/cases/ZAKZPHC/2012/42.html> accessed on 28 June 2025

[26] UN Office on Drugs and Crime, *Manual on the Effective Investigation and Documentation of Torture and Other Cruel, Inhuman or Degrading Treatment or Punishment* (Istanbul Protocol, New York: United Nations, 2004) 33–35 <https://www.refworld.org/en/download/40680> accessed on 28 June 2025.

Competence of Expert Witnesses: The Myth of Institutional Authority: A particularly troubling trend is the judicial presumption that affiliation with a government agency suffices to qualify an individual as a forensic expert. For instance, officers from the Nigeria Police Force, EFCC, or NDLEA are routinely admitted/accepted as forensic experts without any documentary evidence of training in forensic methodologies.[27] However, Section 68(1) of the *Evidence Act* clearly stipulates that an expert must be 'specially skilled' in the relevant science, art, or profession. This requires individual competence - not institutional inference. Nigerian courts must begin to require documentary proof of forensic training, continuing education, and a track record of relevant publications to prevent the infiltration of pseudoscience into courtrooms.[28]

Judicial Reasoning and Evidentiary Oversight: The decisions discussed above reveal a pervasive lacuna in judicial reasoning when it comes to forensic science. Nigerian courts rarely cite scientific literature, international forensic guidelines, or even local technical standards (such as those issued by NAFDAC, NDLEA, or the Ministry of Justice). Judges are trained primarily in legal reasoning, not scientific epistemology. This epistemic gap frequently results in judicial deference to authority rather than substantive deliberation. This problem can be remedied by integrating forensic literacy into judicial training programs through the National Judicial Institute (NJI). In addition, appellate courts should begin to establish jurisprudential benchmarks for assessing forensic validity - including threshold tests, peer-reviewed methodologies, and protocols for replication - to guide lower courts in evidentiary gatekeeping. Nigeria's legal system thus stands at a crossroads. While the inclusion of forensic evidence in legal proceedings is a step forward, it brings with it the obligation of scientific diligence. Without urgent reform in judicial training, expert accreditation, and evidentiary oversight, courts risk legitimizing unreliable forensic techniques under the guise of objectivity - thereby eroding public confidence in the administration of justice.

5. Institutional and Procedural Challenges in Nigerian Forensic Practice

Forensic science is an increasingly indispensable tool in modern legal systems. However, its utility is only as strong as the institutional capacity, procedural safeguards, and legal frameworks within which it is deployed. In Nigeria, systemic weaknesses in investigative bodies, judicial institutions, and legislative standards continue to undermine the reliability and probative value of forensic evidence**.** This section explores the structural and procedural deficits that compromise forensic evidence in Nigerian courts, focusing on capacity limitations within law enforcement, the absence of accredited laboratories, gaps in professional training, and the lack of a codified admissibility standard comparable to international best practices.

Weak Forensic Capacity in Law Enforcement Agencies: The Nigerian Police Force (NPF) and the National Drug Law Enforcement Agency (NDLEA) are the two primary institutions that handle forensic investigations in criminal matters. However, both agencies suffer from chronic infrastructural deficiencies, limited human capacity, and outdated forensic equipment. The Police Forensic Laboratory in Lagos, for instance, lacks modern DNA sequencing machines, digital traceability tools**,** and ballistic databanks that are routine in comparable jurisdictions.[29] Despite the occasional use of digital forensics in high-profile cases (e.g., cybercrime and terrorism), many police officers lack basic training in evidence preservation, scene contamination prevention, and electronic data extraction. The EFCC, despite its prominence in financial crime investigation, also lacks a robust in-house forensic unit. It often relies on external digital analysts, whose neutrality and certification are not always verifiable. This systemic shortfall weakens the chain of evidentiary custody, creates room for tampering, and fuels judicial skepticism over the reliability of forensic submissions.

Absence of Accredited Forensic Laboratories and Standardized Protocols: One of the most profound institutional failings is the non-existence of a nationally accredited forensic science system in Nigeria. There is no equivalent of the Forensic Science Regulator (UK) **or** National Institute of Standards and Technology (USA) that prescribes uniform protocols, calibration standards, or error margins for forensic disciplines. As a result, forensic practitioners operate in a regulatory vacuum, leading to variability in testing techniques, documentation procedures, and reporting formats. The few forensic laboratories in Nigeria - including those within universities, police departments, and private entities - largely lack accreditation under ISO/IEC 17025, the global standard for laboratory competence. Independent assessments have revealed that many of these facilities do not maintain external quality assurance protocols and that their reports are rarely subjected to peer review or replication standards**,** weakening the reliability of forensic submissions in court.[30] This fragmentation is exacerbated by the absence of a central forensic database (such as an AFIS for fingerprints or CODIS for DNA). Consequently, cross-jurisdictional evidence sharing is hampered, and repeat offenders go undetected across states.

Poor Training in Scientific Reasoning for Judges and Prosecutors: The interface between law and science demands more than procedural compliance - it requires scientific literacy among legal professionals. Yet, most Nigerian judges and prosecutors have no formal training in forensic methodologies, statistical probability, or scientific reasoning. Judicial education curricula,

[27] Evidence Act 2011 (Nigeria), s 55(1) & (2); *Olufon Daodu* v *Federal Republic of Nigeria* (2023) LPELR-60653(CA) pp. 19-21, para. C
[28] Evidence Act 2011 (Nigeria), s 68(1)
[29] US Department of State, *2023 Country Reports on Human Rights Practices: Nigeria* (Washington DC: Bureau of Democracy, Human Rights and Labor, 2024) <https://www.state.gov/reports/2023-country-reports-on-human-rights-practices/nigeria/> accessed on 28 June 2025.
[30] US Department of State, *2023 Country Reports on Human Rights Practices: Nigeria* (Washington DC: Bureau of Democracy, Human Rights and Labor, 2024) <https://www.state.gov/reports/2023-country-reports-on-human-rights-practices/nigeria/> accessed on 28 June 2025; UNODC, *Strengthening Crime Scene and Forensics Capabilities in Nigeria: Situational Analysis* (Vienna: United Nations Office on Drugs and Crime, 2019) 18–20<https://www.unodc.org/documents/evaluation/Independent_Project_Evaluations/2016/GLOR35_Nigeria_final_Independent_Project_Evaluation_Report_2016.pdf> accessed on 28 June 2025; CLEEN Foundation, *Criminal Justice in Nigeria: The Administration of Justice and Forensic Science* (Lagos: CLEEN Foundation, 2016) 22–26

even those offered by the National Judicial Institute (NJI), often treat forensic evidence as a peripheral topic, rather than a core component of modern adjudication. This epistemic gap leads to decisions in which scientifically dubious evidence is admitted, or conversely, where valid forensic techniques are dismissed as speculative due to lack of understanding. Prosecutors fare no better. Many rely on police-prepared forensic summaries without verifying the methodology or challenging inconsistent findings. In complex cybercrime and financial cases, prosecutors often misstate the implications of forensic reports, leading to miscarriages of justice or acquittals on technical grounds. Addressing this requires **a** reform of legal education and continuing professional development, including mandatory forensic science modules in the Nigerian Law School and certification-based training for judges and prosecutors handling technical cases.

Legislative Gaps: Absence of a Codified Admissibility Standard: Nigeria's legal framework lacks a codified standard for assessing the admissibility of scientific evidence. Unlike the Daubert standard in the United States[31] - which requires that expert evidence be based on testable theory, peer review, known error rates, and general acceptance - or the Frye test,[32] which demands general acceptance within the scientific community, the Nigerian *Evidence Act 2011* offers only generic provisions under Sections 68–71, stating that opinions of persons specially skilled in a subject are admissible. This legislative vagueness gives courts wide discretion and no objective benchmark for evaluating the reliability of forensic techniques. For example, there is no statutory requirement that DNA evidence must be processed by an accredited laboratory or that experts must disclose margin of error, reproducibility, or conflict of interest. The absence of legislative guidance creates inconsistent evidentiary thresholds across courts and undermines the ability of the defence to meaningfully cross-examine or challenge forensic evidence. Comparative jurisdictions such as South Africa and India have begun to legislate standards on electronic evidence and forensic admissibility. Nigeria urgently needs a Forensic Evidence Bill, or at the very least, a set of Rules of Court establishing baseline admissibility criteria.

Regulatory and Policy Deficiencies: Beyond the courtroom, regulatory oversight of forensic practitioners is virtually non-existent. There is no independent licensing board or forensic science council in Nigeria to certify, discipline, or standardize practice. This allows unqualified individuals to pose as forensic experts, particularly in regional courts and private litigation. Additionally, professional associations such as the Nigerian Society of Forensic Sciences (NSFS) lack legal backing and operate primarily in academic spaces without enforcement capacity. Policy coordination is also lacking. For instance, there i**s no** national strategy linking forensic development to the administration of justice sector, despite recommendations from international partners such as the UNODC and the British Council's Rule of Law Programme. Fragmentation across the Police, NDLEA, EFCC, and State Ministries of Justice further weakens the development of coherent forensic standards. The effective use of forensic evidence in Nigeria is obstructed not only by technical limitations but by deep institutional and procedural inadequacies. Without accredited laboratories, codified admissibility standards, trained legal professionals, or coordinated regulatory frameworks, forensic science risks becoming an uncritical ritual rather than a reliable instrument of justice. Reform must be multi-dimensional - involving legislative intervention, capacity building, judicial education, and the creation of a national forensic oversight body. Until these systemic reforms are undertaken, the gap between scientific validity and legal proof will continue to widen, to the detriment of justice and public confidence.

6. Conclusion and Recommendations

The effective administration of justice in contemporary legal systems increasingly depends on the integrity and reliability of forensic evidence. In Nigeria, however, the deployment of forensic science in judicial proceedings remains fraught with institutional, legal, and epistemic gaps. This article has demonstrated that while forensic evidence has become more prevalent in criminal adjudication - its application is often compromised by the absence of clear admissibility standards, weak institutional capacity, poor chain of custody, and a general lack of scientific literacy among legal actors. Comparative insights from jurisdictions such as the United States (*Daubert*), the United Kingdom (*Bonython*), and South Africa indicate that successful integration of forensic evidence into legal systems depends on robust judicial gatekeeping, standardization of scientific methods, and consistent procedural safeguards. Nigeria has yet to evolve a similar institutional culture or normative framework. Instead, courts tend to treat forensic evidence on a case-by-case basis, often conflating the professional rank of the testifier with the validity of the method used, or admitting complex evidence without adequate scrutiny. The lack of statutory guidance under the *Evidence Act 2011*, the absence of a national forensic science regulatory body, and the fragmentation of forensic services across law enforcement agencies further exacerbate the problem. In the absence of codified admissibility thresholds, such as those under the *Daubert* or *Frye* standards, Nigerian courts continue to rely on discretionary judgments, which foster inconsistency, undermine the credibility of forensic submissions, and ultimately weaken public confidence in the justice system.

To bridge the widening gap between scientific validity and legal admissibility in Nigeria, it is imperative to embark on a comprehensive reform agenda that addresses legislative, institutional, and professional dimensions of forensic justice.

Enact a Forensic Evidence and Expert Testimony Law

Nigeria urgently needs a dedicated legal framework that codifies the criteria for the admissibility of scientific evidence and expert testimony. This legislation should:

- Require forensic techniques to meet standards of testability, peer review, known error rates, and general acceptance**;**
- Impose disclosure obligations on forensic experts regarding methods, limitations, and affiliations;

[31] *Daubert v Merrell Dow Pharmaceuticals Inc* 509 US 579 (1993)

[32] *Frye v United States* 293 F. 1013 (DC Cir. 1923) <https://law.justia.com/cases/district-of-columbia/court-of-appeals/1923/no-3968.html> accessed on 28 June 2025

- Set out the procedural duties of judges as evidentiary gatekeepers, ensuring that scientific evidence is not admitted merely by default;
- Require that all forensic evidence be accompanied by certification from accredited laboratories.

This reform would mirror the *Daubert* test's logic while being tailored to Nigeria's unique legal and infrastructural context.

Establish a National Forensic Science Authority
The Nigerian government, in collaboration with the Ministry of Justice, Police Service Commission, and Nigerian Bar Association, should establish an independent National Forensic Science Authority (NFSA) to regulate all aspects of forensic practice. Its mandates should include:

- Accrediting forensic laboratories nationwide based on ISO 17025 standards;
- Licensing and maintaining a register of qualified forensic experts;
- Issuing practice guidelines and ethics codes for forensic practitioners;
- Conducting peer reviews and audits to ensure ongoing quality assurance;
- Facilitating national forensic databases (e.g., for fingerprints, DNA, ballistics).

The Authority must be statutorily independent to ensure neutrality and credibility.

Mandatory Training in Scientific Reasoning for Judges and Prosecutors
The National Judicial Institute (NJI) and the Council of Legal Education should incorporate scientific methodology, evidentiary reliability, and forensic reasoning into their training curricula. Specifically:

- All criminal judges should undergo periodic refresher courses on emerging forensic technologies and courtroom challenges;
- Prosecutors should be trained to assess and interrogate forensic reports critically, rather than treating expert opinions as infallible;
- Legal education should integrate forensic science modules at the LLB and Law School levels to foster scientific literacy early.

These reforms would ensure that forensic evidence is evaluated with methodological rigour rather than institutional deference.[33]

Develop National Forensic Practice Guidelines and Benchbooks
Drawing on models from the UK, Canada, and South Africa, Nigeria should publish a Forensic Evidence Benchbook for judges and prosecutors. This would:

- Provide guidance on the types of forensic disciplines and their admissibility criteria;
- Highlight common pitfalls, such as cognitive bias, error rates, and pseudo-science;
- Outline procedures for examining expert witnesses, including permissible scope of testimony and rebuttal mechanisms;
- Serve as a reference for crafting rulings on admissibility and weight of forensic submissions.

This would standardize judicial practice and reduce reliance on idiosyncratic rulings.

Improve Laboratory Infrastructure and Inter-Agency Coordination
The Federal Government must prioritize investment in modern, accredited forensic laboratories, with emphasis on:

- **Geographical coverage**: ensuring that all geopolitical zones have at least one fully functional forensic facility;
- **Specialization**: equipping labs to handle various disciplines (DNA, toxicology, ballistics, cyber-forensics);
- **Data integration**: establishing central databases linked to the Nigeria Police, EFCC, NDLEA, and courts.

Moreover, a coordinated inter-agency protocol should be developed to govern evidence collection, transfer, and analysis, minimizing procedural lapses and contamination risks.

Enhance Chain of Custody Standards and Digital Documentation
A standardized chain of custody protocol must be adopted nationwide, enforced through judicial insistence and law enforcement compliance. Such a protocol should:

- Require detailed logging of every transfer of evidence, with timestamps and personnel identifiers;
- Mandate use of digital case tracking systems accessible to both defence and prosecution;
- Introduce tamper-proof containers and electronic seals for sensitive samples like DNA, firearms, or narcotics.

Courts are hereby most respectfully urged begin to treat chain-of-custody breaches as substantive violations of due process, not mere technicalities.

[33] US Department of State, *2023 Country Reports on Human Rights Practices: Nigeria* (Washington DC: Bureau of Democracy, Human Rights and Labor, 2024) <https://www.state.gov/reports/2023-country-reports-on-human-rights-practices/nigeria/> accessed on 28 June 2025.

Create a National Registry of Expert Witnesses

A vetted, publicly accessible registry of forensic experts should be maintained by the NFSA or Ministry of Justice. The registry should:

- Include academic and professional qualifications, areas of expertise, and case history;
- Be subject to peer rating or complaint mechanisms;
- Allow courts and counsel to verify the credibility of expert witnesses prior to trial.

This would prevent unqualified individuals from manipulating judicial proceedings through fictitious or unverifiable claims of expertise.

In an era of increasing reliance on scientific evidence, the credibility of a legal system depends on its ability to understand, evaluate, and apply science within normative and procedural boundaries. Nigeria has the human capital, legal tradition, and comparative models necessary to reform its forensic justice framework. What remains is the political will and institutional coordination to translate these insights into binding law and practice. The recommendations outlined above are not merely aspirational but essential. Until forensic science is properly regulated and scientifically grounded, Nigerian courts risk treating it as a technocratic incantation rather than a tool of truth, with profound consequences for the integrity of justice and the rights of the accused.