

# The Role and Importance of Forensic Evidence in the Criminal Justice System

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**Abstract:** “Law gave us Crime, Science gave us Forensics, Research gave us Hope”- Sofie Claerhout, Dader Onbeken.

*Forensic evidence plays a vital role in the criminal justice system by providing scientific and objective methods to investigate crimes and establish facts. It helps in accurately determining the guilt or innocence of an accused, thereby reducing reliance on unreliable evidence such as eyewitness testimony. Techniques like DNA analysis, fingerprint identification, and digital forensics have significantly improved the efficiency and reliability of criminal investigations. This paper highlights the importance of forensic evidence at various stages of the justice process, from crime scene investigation to courtroom proceedings. It also discusses challenges such as evidence contamination, delays, and a lack of infrastructure. Overall, forensic evidence strengthens the fairness and effectiveness of the criminal justice system, ensuring that justice is delivered accurately and efficiently..*

**Keywords:** Forensic evidence, criminal justice system, DNA analysis, fingerprint identification, digital forensics, crime scene investigation

## I. INTRODUCTION

The criminal justice system aims to maintain law and order, ensure justice, and protect the rights of individuals. Traditionally, investigations relied heavily on eyewitness testimony and confessions. However, these methods are often unreliable due to human error, bias, or coercion. Forensic science has revolutionised this process by introducing objective, scientific analysis into criminal investigations. It bridges the gap between law and science, helping law enforcement agencies establish facts based on evidence rather than assumptions.

¶ Meaning of Forensic Evidence: Forensic evidence refers to any scientific evidence used in a court of law to establish facts about a crime. It is collected, preserved, analysed, and presented by forensic experts.

## HISTORICAL BACKGROUND

The development of forensic evidence dates back to ancient times, with early examples found in 13th-century China, where scientific methods were used to determine causes of death. In Europe, during the 16th and 17th centuries<sup>1</sup>, autopsies and medical knowledge began to assist legal investigations. Significant progress occurred in the 19th century with the introduction of toxicology, anthropometry, and fingerprint analysis. The 20th century further advanced forensic science through the establishment of laboratories and principles like Locard's Exchange Principle.

A major breakthrough came in the 1980s with the development of DNA profiling, which revolutionised criminal investigations. Today, modern technologies such as digital forensics and advanced DNA analysis make forensic evidence a vital part of the criminal justice system.

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<sup>1</sup> Sherlock Institute of Forensic Science, History and development of Forensic Science, <https://www.sifs.in/blog-details/history-of-forensic-science>



## LEGISLATIONS

Recent legal reforms in India<sup>2</sup> have significantly strengthened the role of forensic evidence in the criminal justice system by promoting scientific and technology-driven investigations. The Bharatiya Sakshya Adhinyam, 2023, which replaces the Indian Evidence Act, modernizes evidentiary rules by giving greater recognition to electronic records and expert opinions, thereby enhancing the admissibility and importance of forensic and digital evidence in courts. The Bharatiya Nagarik Suraksha Sanhita (BNSS), 2023, replacing the Code of Criminal Procedure, introduces a major reform by mandating forensic investigation for serious offences punishable with imprisonment of seven years or more. This ensures that evidence collection becomes more scientific, reducing reliance on confessions and improving the accuracy of investigations.

Further, the Bharatiya Nyaya Sanhita (BNS), 2023, which replaces the Indian Penal Code, aligns substantive criminal law with modern investigative practices, indirectly supporting the use of forensic techniques in proving offences. In addition, the DNA Technology (Use and Application) Act, 2019 provides a structured framework for the use of DNA analysis, including the establishment of DNA data banks and safeguards for privacy and data protection.

## JUDICIAL APPROACH

The Indian judiciary has consistently recognised the importance of forensic evidence in ensuring fair trials and accurate convictions. In *Mukesh v. State (NCT of Delhi)* (2017)<sup>3</sup>, the Supreme Court relied on DNA and medical evidence to uphold a conviction, showing the strong evidentiary value of forensic science. Similarly, in *Manoj v. State of M.P.*(2022)<sup>4</sup>, the Court emphasised the need for greater use of DNA profiling in criminal investigations.

Courts have also highlighted safeguards. In *Rahul v. State of Delhi* (2022)<sup>5</sup> and *Prakash Nishad v. State of Maharashtra* (2023)<sup>6</sup>, it was held that proper collection and chain of custody of forensic evidence are essential. In *Rajkumar v. State of M:P.* (2014)<sup>7</sup> and *Anil v. State of Maharashtra* (2014)<sup>8</sup>, forensic and medical evidence were treated as reliable even when other evidence was weak.

At the same time, in *Selvi v. State of Karnataka* (2010)<sup>9</sup>, the Court protected fundamental rights by restricting involuntary forensic techniques. Recent cases like *Nivrutti Hange* (2024)<sup>10</sup> and *Yogesh Dewangan* (2024) reaffirm that while forensic evidence is crucial, it must be carefully interpreted.

## II. CONCLUSION

Forensic evidence has become an essential pillar of the modern criminal justice system, bringing objectivity, accuracy, and scientific reliability to criminal investigations and trials. It reduces dependence on unreliable forms of evidence

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<sup>2</sup> Lalit Prakash & Archana Johari, The Role of Digital Forensics and Cyber Crime Provisions in India's New Criminal Laws, 7 Int'l J. Econ. Soc. Sci. & Mgmt. L. 52 (2026), <https://www.researchgate.net/publication/400977439> **THE ROLE OF DIGITAL FORENSICS AND CYBER CRIME PROVISIONS IN INDIA'S NEW CRIMINAL LAWS**

<sup>3</sup> *Mukesh v. State (NCT of Delhi)*, (2017) 6 S.C.C. 1 (India).

<sup>4</sup> *Manoj v. State of Madhya Pradesh*, (2022) 9 S.C.C. 1 (India).

<sup>5</sup> *Rahul v. State (NCT of Delhi)*, (2022) S.C.C. OnLine Del \_ (India).

<sup>6</sup> *Prakash Nishad v. State of Maharashtra*, (2023) S.C.C. OnLine SC \_ (India).

<sup>7</sup> *Rajkumar v. State of Madhya Pradesh*, (2014) 5 S.C.C. 353 (India).

<sup>8</sup> *Anil v. State of Maharashtra*, (2014) 4 S.C.C. 69 (India).

<sup>9</sup> *Selvi v. State of Karnataka*, (2010) 7 S.C.C. 263 (India).

<sup>10</sup> *Nivrutti Nagorao Hange v. State of Maharashtra*, (2024) S.C.C (India).



such as eyewitness testimony and confessions, thereby minimising the chances of wrongful convictions<sup>11</sup>. In conclusion, while challenges such as delays and lack of infrastructure remain, strengthening forensic systems and promoting scientific investigation will lead to a more efficient, transparent, and just criminal justice system.

### **SUGGESTION/ RECOMMENDATION**

To strengthen forensic evidence, there is a need to improve infrastructure, provide proper training to officials, and ensure strict adherence to procedures like the chain of custody. The use of modern technologies such as DNA profiling and digital forensics should be encouraged, along with better coordination between agencies. Additionally, awareness among legal professionals and strong legal safeguards are essential to ensure fairness and protect the individual

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