



# The Role Of Forensic Evidence In Criminal Investigations In India

**Kunal Kanwat**

**Assistant Professor**

**Law Centre-II, Faculty of Law, University of Delhi**

## **Abstract:**

In India, forensic evidence is essential to the criminal justice system. In order to guarantee justice and equity in criminal proceedings, it offers an impartial and scientific foundation for determining a suspect's guilt or innocence. Establishing the facts of a case and identifying the criminals are two other uses for forensic evidence. This article will go over the function, significance, and difficulties faced by forensic evidence in India's criminal court system. This study aims to clarify the crucial role that forensic evidence plays in criminal investigations and to highlight the significant influence that it has on the administration of justice. After providing a thorough overview of forensic science and its historical development in the Indian context, the paper goes into great length to examine several types of forensic evidence, including digital, biological, physical, and trace evidence. The role of forensic evidence in criminal investigations in India will be covered in this essay.

## **Keywords:**

Forensic Evidence, Criminal, Investigations, Criminal Justice, Science, Police Agencies, Digital Footprints, Legal Framework.

## **Introduction:**

### **Forensic Evidence:**

"The application of science to those civil and criminal laws that are enforced by the police agencies in a criminal justice system" is the definition of forensic science. To be more precise, it provides answers to legal problems and uses methods and instruments to analyze evidence from crime scenes and apply that knowledge to investigations. Anything that can be used in a court of law that was gathered using scientific procedures is considered forensic evidence. It serves as more than just a tool for solving crimes; it also plays a crucial role in the larger legal system, supporting the establishment of the crime's occurrence, identifying the offender, and

clearing the unfairly accused. The range of forensic evidence is extensive, encompassing digital traces and DNA profiles. Each with a distinct set of problems for data gathering, analysis, and presentation. [1]

Any tangible or digital evidence that can be utilized to solve a crime is considered forensic evidence. Crime scenes, victims, suspects, and witnesses may provide evidence. A wide number of fields are included in forensic science, such as digital forensics, toxicology, ballistics, DNA analysis, and fingerprint analysis. Forensic experts and forensic laboratories provide the specific training and skills needed for the collection, analysis, and interpretation of forensic evidence.

In recent times, there has been a notable surge in the utilization of forensic evidence within the Indian criminal court system. This is because forensic laboratories have been established all over the nation and there is a growing recognition of the value of scientific evidence in criminal investigations. The top forensic laboratory in India is called the Central Forensic Science Laboratory (CFSL), and it has regional branches spread throughout the nation.

The application of forensic evidence in India is controlled by a complicated legal system. Due to high-profile cases and increased public awareness, forensic science has been used much more frequently in the nation, yet there are still issues. These include the requirement for qualified specialists, infrastructure constraints, and a court system still getting used to the subtleties of scientific testimony.

The development of forensic science in India has been both intricate and fascinating, entwining with the changing judicial system of the country. Indian epics mention the interaction between medical knowledge and criminal investigations dating back to ancient India. But the colonial era of the late 19th century is when modern forensic science truly got started.

### **Legal Framework for The Use of Forensic Evidence in India:**

In the Indian criminal justice system, forensic evidence is extremely important as it directs investigations and court cases. The legal framework that governs its use is outlined by a number of legislation that include instructions for gathering, preserving, admitting, and presenting it in court.

#### **The Code of Criminal Procedure (CrPC):**

The cornerstone of Indian procedural laws controlling criminal investigations and trials is the Code of Criminal Procedure (CrPC). In particular, the examination of accused persons is covered by Sections 53 and 54 of the CrPC. Section 53 gives the judge the right to perform forensic evaluations in addition to the accused's medical examination. This makes it possible for law enforcement to collect vital forensic evidence from the defendant, including bodily fluids or samples, for additional examination.

#### **Indian Evidence Act, 1872**

The laws pertaining to the admissibility of evidence in India, especially forensic evidence, are governed by the Indian Evidence Act, 1872. Under certain conditions, Section 45 of the Act considers the opinion of experts—including forensic experts—to be significant. This clause establishes the legitimacy and applicability of forensic evidence by allowing experts to testify on issues like DNA profiling, fingerprint matching, and handwriting analysis. Furthermore, in addition to the Indian Evidence Act, Section 293 of the CrPC provides the legal foundation for forensic reports' admission in court, guaranteeing that these reports are admissible as evidence when prepared and submitted in accordance with established legal procedures.

#### **Information Technology Act, 2000**

The admissibility and legal elements of digital evidence are covered under provisions of the Information Technology Act, 2000, and its later modifications. Digital evidence is crucial in today's world, particularly when it comes to matters involving cybercrimes, data theft, or electronic transactions. In order to guarantee that digital

evidence is acceptable in court and may be used efficiently in investigations and legal procedures, the Act provides a legal framework for its gathering and use. [2]

### **Fundamental Principles of Forensic Science:**

The identification and investigation of crimes depend heavily on forensic evidence. Nonetheless, the scientific data that supports the criminal justice system is grounded on a number of reliable principles, making it relevant and admissible in a court of law. They are –

**Individuality:** Every natural object has a unique identity. It is not duplicated by man or by nature. Take fingerprints, for instance.

**Locard's Principal:** Every time two identities come into contact, traces are mutually exchanged. The Locard exchange principle refers to this.

**Law of Progressive change:** With the passing of time, everything changes. As time goes on, the crime scene, tangible evidence, and the offending criminal all change.

**Principles of Comparison:** It is only possible to compare objects that share similar characteristics. This principle emphasizes how important it is to provide comparable specimens or samples for comparative analysis.

**Principles of Analysis:** Correct sampling and packaging techniques must be prioritized in order to use scientific evidence in trials in an efficient manner..

**Law of Probability:** It establishes the likelihood that a specific event will occur in a given manner among several possible ways in which it may occur or not occur with equal ease.

### **Importance of forensic evidence in criminal trials in India:**

All of India's states and governing bodies adhere to the Evidence Act, which was introduced by the governing body. It contains consistent guidelines for both criminal and civil proceedings. While the standard of proof in criminal and civil trials may vary, the same decisions apply to both. India follows the onus probandi principle, but with a focus on criminal jurisdiction. It states that until the accused is proven guilty beyond a reasonable doubt, they must be considered innocent. The Evidence Act's adoption of the onus probandi concept has resulted in a decrease in the use of forensic evidence in criminal proceedings. [3]

### **Review of Literature:**

In the *Tomaso Bruno and Anr. v. State of Uttar Pradesh* case, the Hon. Supreme Court stated that the investigative process needs to be seamlessly integrated with the progressive field of information technology and scientific acumen. This is because electronic evidence has the potential to be a valuable tool for law enforcement agencies in establishing unquestionable facts. The Court wisely maintained the admissibility of electronic evidence while establishing the necessary protections to guarantee its reliability and validity. [4]

The goal of the criminal justice system is to use law enforcement to arrange for offenders' rehabilitation and to bring justice to victims. The criminal justice system seeks to deter crime by providing moral support to offenders. The prosecution, court, jail, police, and legal system are the main institutions that make up the criminal justice system. Government institutions and agencies operate as a system to handle criminal cases. A wide range of criminal justice professions work in the criminal justice system, in addition to law enforcement, judges, attorneys, corrections personnel, paramedics, and other professionals. Every position in the criminal justice system department is a reputable position. (Ezejio, R. A. (2016) [5]

(Zapp, P. A., 2017) Forensic evidence is necessary in criminal justice cases to establish the commission of crimes and the extent of criminal activity. Numerous methods for analyzing the evidence and its specifics are offered by forensic science. To learn more about crimes and identify the perpetrators, forensic science uses sophisticated forensic procedures. In forensic labs, fingerprinting and DNA testing are the most sophisticated tests available.

Through professional analysis, the tools accurately identify the offenders. These precise methods can identify personal information. Serological testing is a highly effective method for identifying the perpetrators in rape cases<sup>3</sup>. The victim's clothing, skin, and the scene of the crime are used to gather evidence in rape trials. A serological test is useful for investigating rape cases as it may analyze various bodily fluids such as blood, saliva, semen, and vaginal fluid. To identify the real incident and establish a connection between criminals and crime in India, forensic science techniques are employed. [6]

### Objectives:

- To Understanding the concept of Criminalistics/Forensic Science
- To examine the Role and impact of forensic evidence.
- To make focus on the Legal Provisions Supporting Criminal Investigation
- To explore the Restrictive use of Forensic Evidence in Indian Legal Scenario.

### Research Methodology:

This study's overall design was exploratory.

This study used a positivistic and interpretive research paradigm that was based on text analysis and observation. This study adopted a critical stance toward all extant literature on forensic evidence and its relationship to judicial decision-making, as well as the laws of the United States, the United Kingdom, India, and other countries. This thesis's primary theoretical tenet was an analysis of how courts in developed nations handle criminal cases and how those approaches contrast and overlap with those in India.

### Result and Discussion:

#### Criminal Law:

Criminal law is the body of legislation that establishes all criminal acts, controls how criminal suspects are apprehended, and specifies the fines, punishments, and treatment options available to them.

#### Criminal law is governed by:

- IPC (Indian Penal Code 1860),
- IEC (Indian Evidence Act 1872)
- Cr. PC (Code of Criminal Procedure 1973)

#### Criminal

The person who commits crime, violates the laws, responsible for the unlawful act is known as CRIMINAL.

#### Crime Scene

It is the location of the crime. Any location that offers tangible evidence, which is unquestionably the lifeblood of a crime scene. It serves as the investigation's launchpad and is where the majority of data is obtained.

- The crime scene, also known as the scene of the offence, has no territorial limitations. It is not limited and can be extended to other locations.

The type of crime committed determines the location of the crime scene. There are never two identical crime scenes.

## Types of Crime Scene

There are three classifications on different basis:

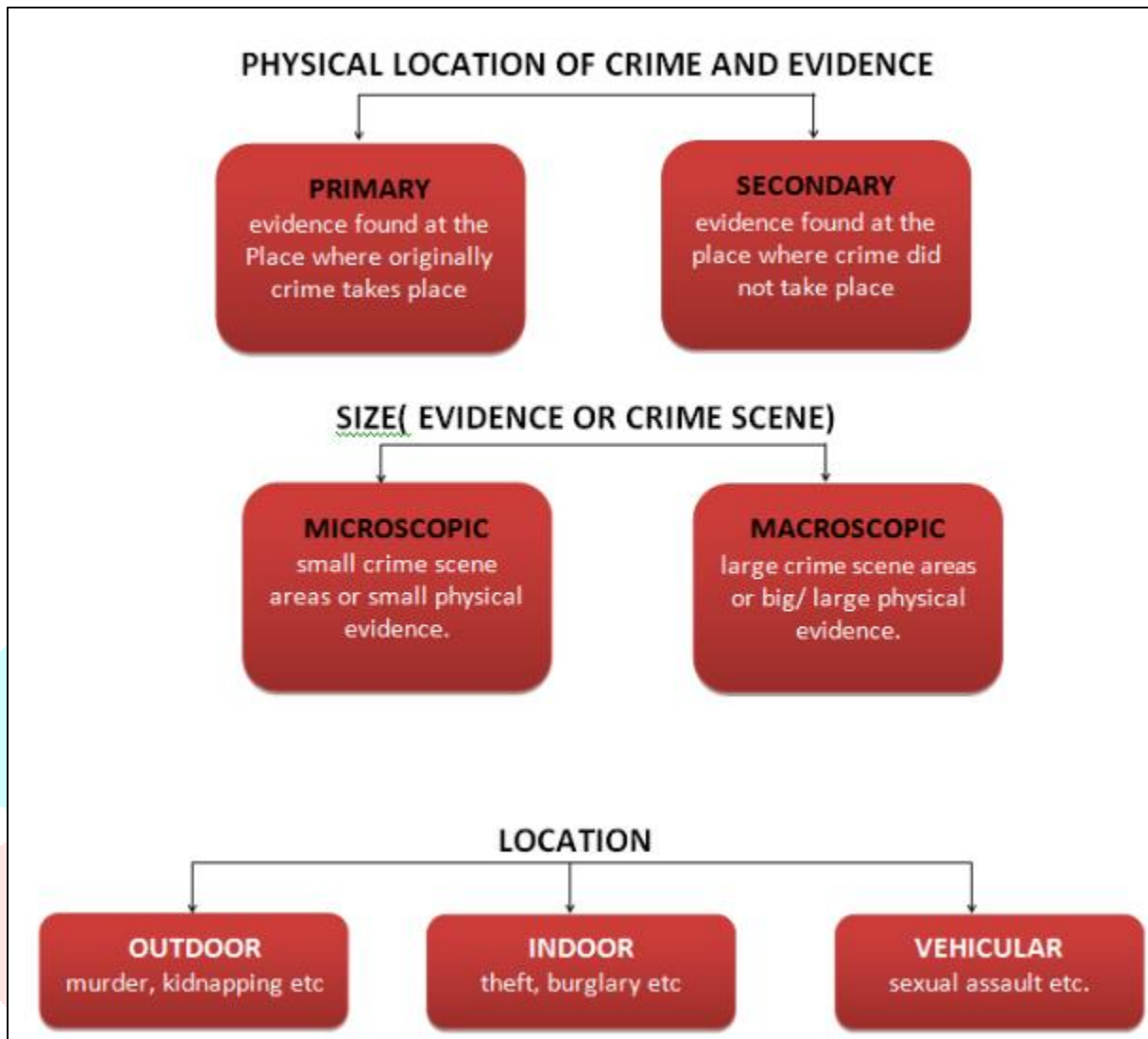


Figure 1: Types of Crime Scene [7]

## Crime Scene Investigation

Crime scene investigation is basically the meeting point of three principles – science, logic and law.

1. The goal of a crime scene investigation is to gather information about what actually occurred there, which is something we are obviously not able to imagine. However, the remains or evidence found at the murder scene—such as any biotic or abiotic factor—speaks for itself.
2. It aids in establishing a clear connection between the victim, suspect, and physical evidence.

## Types of Forensic Evidence

A myriad of forensic evidence types is utilized within the Indian criminal justice system:

- DNA Evidence: Provides a genetic fingerprint that allows for an individual's unique identification.
- Fingerprint analysis: Among the most dependable and traditional types of forensic evidence.
- Ballistic Evidence: Offers information on the use of weapons during criminal activity.
- Digital Forensics: With the rise in cybercrime, this field is becoming more and more significant. It deals with the recovery and analysis of data from digital devices.
- Toxicology: Examines bodily fluids for the presence of chemicals and/or toxins.
- Each of these and other types of evidence is essential to the inquiry and decision-making process.



**Figure 2: Types of Forensic Evidence [8]**

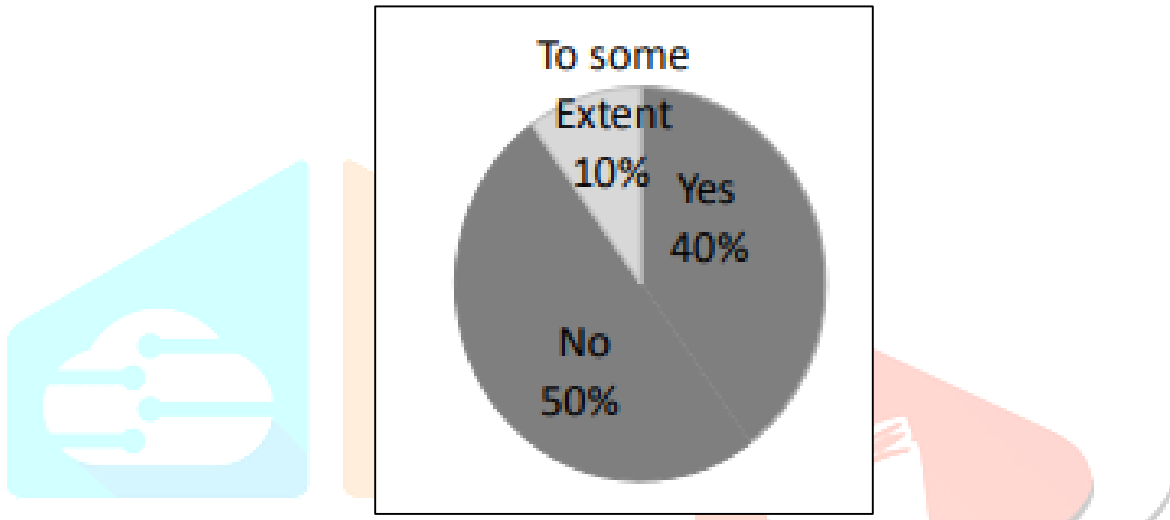
Table 1 - Two approaches to the routine integration of scientific support to crime investigation:

<b>Technical assistance integrated into organisational structures</b>	<b>Expert collaboration integrated into the investigative process</b>
<b>Control</b>	
External hierarchical supervision	Internal professional supervision
Attempt exhaustive attendance	Ensure informed attendance
Locally accountable	Locally co-accountable
CSEs as supervised specialists	CSEs as reflective practitioners
<b>Reach</b>	
BCU boundary governed	BCU and cross-border oriented
Reactive	Proactive
Contribute to intelligence	Define, contribute to, and use intelligence
Suspect identification orientation	Suspect targeting, identification and detection focus

Source: Williams 2004: 24.

This chapter demonstrates how crucial it is to comprehend and effectively manage the human, social side of the forensic process if forensic science is to contribute optimally to policing and criminal justice objectives, such as the reduction of volume crime, the prompt elimination of the innocent, and the conviction of the guilty. The sequence of results demonstrating persistent flaws in the procedure highlights how challenging it is to justify the procedure. Changes in science, the legal system in which forensic procedures are conducted, the development of criminal practices, political agendas, and our knowledge of criminal behavior all contribute to the challenges. [9]

One of the earliest systematic attempts to link the important function of forensic science in crime investigation is this study. A sample of one hundred (100) Hyderabad police officers participated in the survey. The responders ranged in rank from Inspector to Constable. The technique of random sampling was employed to pick the subjects. Both primary and secondary data are used in the investigation. The study on Sindh Police done in Karachi by Riaz (2008) was used to obtain secondary data on the subject..

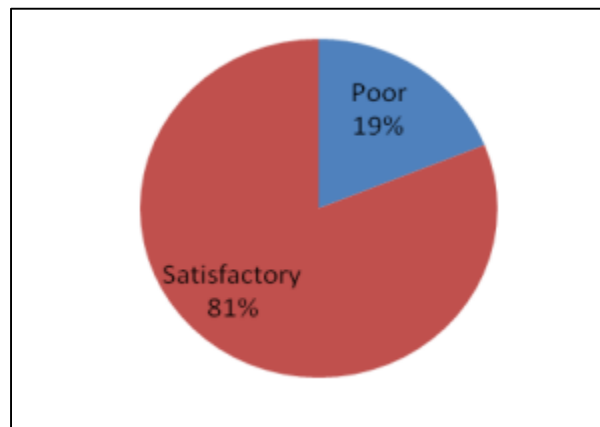


**Figure 3: Does Successful criminal investigation depend on application of forensic science**

**Forensic science and investigation:** The answers to the questions posed to the participants are shown in figure (a) above. The use of forensic science was associated with the success of criminal investigations. The findings represent the opinions of the participants, who have differing degrees of exposure to forensic science. There are police officers with moderate education, normal education, and better exposure to training and opportunity..

#### **Police Knowledge of Forensic science:**

Sindh's police investigators face limitations due to a lack of national databases, funding, forensic understanding, and experience. Forensic education and training have a crucial part in the effectiveness of police investigations and investigators. 81% of those surveyed expressed satisfaction with the police's competence (knowledge and skills). This strengthens the conviction that forensic science-related inquiry is worthwhile. According to the 19% of respondents, cops are not very good in science. This has to do with the subjects' prior perceptions and unfavorable experiences with the way the police handled ordinary investigative cases.



**Figure 4: Police Knowledge of Forensic science**

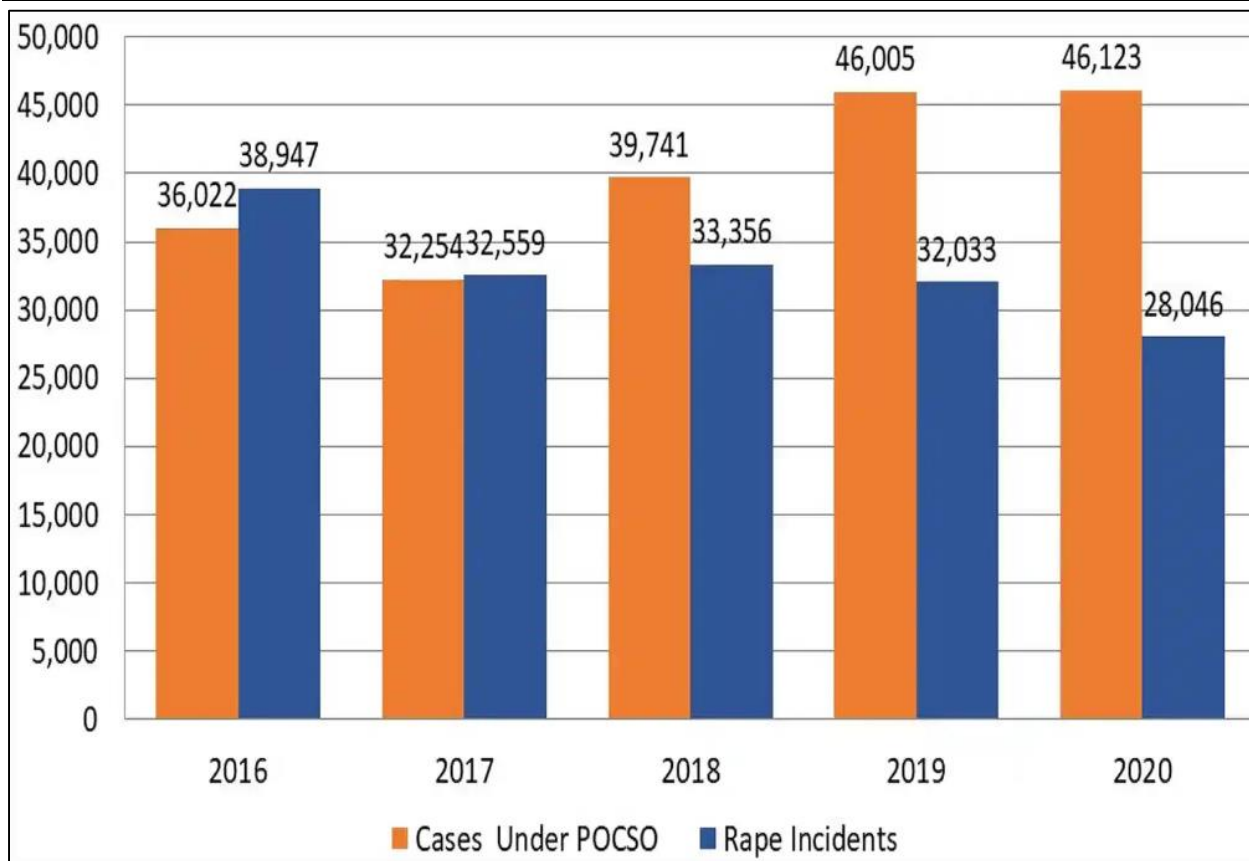
### **Evidential significance of DNA in criminal and civil proceedings/disputes in India:**

A thorough inquiry is required for full justice. scientific contributions to the criminal investigation and support the administration of just justice. The courtroom has changed significantly since DNA technology was introduced in CJS. In several criminal investigations, such as those involving sexual assault, child abuse, and murder, as well as civil cases, such as those involving paternity or maternity disputes, DNA plays a crucial role and offers scientific proof beyond a reasonable doubt. Additionally, DNA has been essential to the investigation of cold and blind cases.

### **Examples of the role of DNA profiling in criminal cases**

When traditional procedures are ineffective for identifying suspects in crimes like murder, rape, and theft, DNA evidence has shown to be a valuable tool. As shown in Fig. 5, sexual offenses are one of the major crimes against women in the current situation and are rising at a startling rate. The investigator faces a number of difficulties while dealing with rape cases that result in homicide. Scientific investigation is crucial, particularly the victim's and the accused's/culprit's DNA tests. DNA is essential for verifying the evidence, the offender, and the victim. [10]





**Figure 5: Over the years rape and POCSO case: statistics at a glance**

### Conclusion:

In India, forensic evidence is essential to the criminal justice system. It offers an impartial and scientific foundation for determining a suspect's guilt or innocence, locating criminals, and establishing the case's facts. In addition to helping to guarantee that justice is done, the inclusion of forensic evidence in criminal cases encourages accountability and transparency in the criminal justice system. The significance of forensic evidence is maintained even if error margins and uncertainties are acknowledged. Rather, it enhances the legal system by guaranteeing that judgments are rendered with a complete awareness of the advantages and disadvantages of the available evidence. Minimizing these errors also depends on strict quality controls and ongoing advancements in forensic procedures., thereby enhancing the credibility and accuracy of forensic results.

### References:

1. Roman, J. K., Reid, S. E., & Reid, J. (2018). "Forensic Science Evidence and the Policing of Crime: The Case for a New Conceptual Framework for Understanding the Impact of Forensic Science Evidence." *Criminology & Public Policy*, 17(2), 505-536.
2. State of NCT Delhi v. Sujeet Kumar, 2014 SCC Online Del 1952.
3. Shali, Sonia Kaul, Applicability of Forensic Science in Criminal Justice System in India with Special Emphasis on Crime Scene Investigation (June 25, 2018). Medico-Legal Desire Media and Publications, Medico-Legal Reporter, Inaugural Issue, June 2018 ISSN NO: 2347-3525, Available at SSRN: <https://ssrn.com/abstract=3220169>.
4. Tomaso Bruno and Anr. v. State of Uttar Pradesh, (2015) 7 S.C.C. 178(India).
5. R. A. Ezejio for, N. P. Nwakoby, et.al., —Impact of forensic accounting on combating fraud in Nigerian banking industry||1(1) International Journal of Academic Research in Management and Business1-19 (2016).

6. P. A. Zapf and I. E. Dror, —Understanding and mitigating bias in forensic evaluation: Lessons from forensic science16(3) International Journal of Forensic Mental Health227-238 (2017).
7. Adams, C., Carabott, R., & Evans, S. (2013). Forensic odontology: an essential guide. John Wiley & Sons.
8. Borah U. Role of Forensic Science in Crime Scene Investigation. Austin J Forensic Sci Criminol. 2020; 7(1): 1083, last accessed on 19 Aug 2020.
9. Kubic. L. and A. Petraco (2005) Forensic Science Laboratory Manual and Workbook, CRC Press Taylor and Francis Group.
10. Cordner S (2001) Ethics of forensic applications and databanks. In: Encyclopedia of Forensic and Legal Medicine 2. Elsevier Ltd.

