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The Digital Paradigm Shift: Technological Advancements in Indian Criminal Laws

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ABSTRACT

The development of digital technologies has affected legal systems globally, and India, as a fast-growing digital economy, has experienced rapid change in governance, commerce, and communication. While technology has increased efficiency, it has also created challenges for existing legal frameworks by enabling new forms of crime, such as digital fraud and electronic financial crime, making the modernization of criminal laws and investigative methods essential. India has responded by enacting three criminal law reforms, namely the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, which aim to integrate technology within the criminal justice system and to replace the inherited colonial statutes. This paper evaluates the impact of technology on the transformation of the criminal justice system in India, focusing on the use of technology in law enforcement and judicial administration, the legal-technological advances introduced by the new criminal laws, the growing significance of digital data and electronic records, and the enhancements in techniques used to conduct criminal investigations. It further identifies challenges relating to privacy, the threat of expanded surveillance, and the protection of constitutional integrity and the system of checks and balances. This paper argues that the modernization of the criminal justice system is necessary to meet contemporary societal demands but must be undertaken in a measured manner that safeguards the rights of individuals.

Keywords: Indian criminal laws, Digital evidence, BNS 2023, BNSS 2023, BSA 2023, Criminal justice system, Technology and law.

I. INTRODUCTION

The digitization of nearly every field of human endeavour has made technology an integral part of everyday life. The changes brought to communication, financial transactions, administration, health care, education, and the law by the digital revolution now dominate daily existence. These social changes have not escaped the attention of criminals. In this new technological world, offenders use digital platforms, computer networks, electronic communication, and

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online financial systems to commit crimes that provide them with ample opportunity and that know no borders.¹

The accelerated digitization of India has produced vast economic and social dividends. The Digital India programme, expanded access to the internet, the wider use of smartphones, the introduction of electronic payment systems, and digital governance initiatives have brought unprecedented technological change and contributed to a positive transformation of society. However, these changes have also made society more vulnerable to new offences and cybercrimes, compelling law enforcement and the judicial system to update and modernize their structures and legal frameworks.²

The Indian Penal Code, 1860, the Code of Criminal Procedure, 1973, and the Indian Evidence Act, 1872, governed India's criminal justice system for more than a century.³ Although these statutes provided the foundational criminal law of India, they were drafted in periods that lacked modern digital technology. As a result, many of their provisions proved inadequate to address contemporary digital technologies.

New criminal activities have introduced challenges relating to new categories of evidence and new procedures. The increasing use of technology to carry out crimes has meant that traditional methods of investigation and judicial procedure have often failed to address these offences effectively.

To address these difficulties, the Government of India introduced three new criminal laws in 2023: the Bharatiya Nyaya Sanhita (BNS),⁴ the Bharatiya Nagarik Suraksha Sanhita (BNSS),⁵ and the Bharatiya Sakshya Adhiniyam (BSA).⁶ The purpose of these reforms is to streamline the administration of criminal justice by incorporating the advanced use of technology, the digitization of processes, forensic investigation, and electronic evidence.

The impact of technology extends beyond the need for legislative change. In the context of modern criminal investigations, information drawn from mobile phones, computers, surveillance systems, social media, cloud storage, and electronic financial transactions has become indispensable. Digital evidence is now central to the prosecution of an increasing number of offences beyond cybercrime, including homicide, kidnapping, fraud, and corruption.

¹ The Bharatiya Nyaya Sanhita, 2023, No. 45, Acts of Parliament, 2023 (India).

² The Information Technology Act, 2000, No. 21, Acts of Parliament, 2000 (India).

³ The Indian Penal Code, 1860, No. 45, Acts of Parliament, 1860 (India); The Code of Criminal Procedure, 1973, No. 2, Acts of Parliament, 1974 (India); The Indian Evidence Act, 1872, No. 1, Acts of Parliament, 1872 (India).

⁴ The Bharatiya Nyaya Sanhita, 2023, No. 45, Acts of Parliament, 2023 (India).

⁵ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, Acts of Parliament, 2023 (India).

⁶ The Bharatiya Sakshya Adhiniyam, 2023, No. 47, Acts of Parliament, 2023 (India).

The application of technology to the administration of criminal justice offers multiple benefits. The digital management of records increases efficiency, the electronic transfer of information accelerates procedures, forensic technologies improve the accuracy of investigations, and virtual court proceedings enhance accessibility. However, the application of technology also raises challenges relating to privacy and surveillance, as well as concerns for data protection and the safeguarding of fundamental rights.⁷

This paper explores the changing nexus of technology and criminal law in India. It assesses both the opportunities and the challenges of digital transformation, including the impact of contemporary technological advances on legislative reform, criminal investigation, the law of evidence, and judicial administration.

A. Research objectives

This paper seeks to examine the role of technology in transforming India's criminal justice system; to analyse the technological innovations introduced under the BNS, BNSS, and BSA; to evaluate the significance of digital evidence in criminal proceedings; to identify the challenges associated with technology-driven criminal justice administration; and to assess the future implications of technological advancement in Indian criminal law.

II. RESEARCH METHODOLOGY

This paper adopts a doctrinal legal research method, drawing primarily on secondary sources. The principal materials are statutes, case law, and government publications, supplemented by scholarly writings, policy papers, books, and legal commentaries on the relationship between criminal law and emerging technology.

The study employs a qualitative approach and seeks to assess the influence of digital technology on the criminal justice system of India. The analysis focuses on the Bharatiya Nyaya Sanhita, the Bharatiya Nagarik Suraksha Sanhita, and the Bharatiya Sakshya Adhiniyam, and on the degree to which technology has been incorporated within the new criminal law framework.

This paper also considers advances in digital evidence, technology-based forensic investigation, and technology-driven criminal law enforcement systems. Using a doctrinal methodology, the study offers a comprehensive evaluation of the technological advancement of the criminal justice system and of the challenges and possibilities that may arise from its modernization.

⁷ Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (India).

III. EVOLUTION OF TECHNOLOGY IN INDIA'S CRIMINAL JUSTICE SYSTEM

India's traditional criminal justice system relied on the manual handling of case files. Paper documentation, the physical collection of evidence, and face-to-face interaction prolonged the investigative process, while liaison among different criminal justice institutions was poor. Over time, the increasing sophistication of crime began to outpace the traditional system.

Initiatives towards the digital transformation of criminal justice administration were first introduced as part of a broader governmental effort to modernize service delivery through information technology. The evolution of digital governance enabled law enforcement and judicial services to modernize their functions through the introduction of technology.

One notable initiative was the establishment of the Crime and Criminal Tracking Network and Systems (CCTNS). This project aimed to create an India-wide network connecting all police stations. Through the CCTNS, police services can now manage and access criminal records and track and share investigative information more readily, enhancing the efficacy and efficiency of crime investigation and analysis.

A further significant undertaking is the Interoperable Criminal Justice System (ICJS), an integrated network linking various criminal justice institutions, including the police, courts, prisons, forensic laboratories, and prosecution. By facilitating the seamless exchange of information, the ICJS addresses time lags in institutional operations and improves inter-institutional cooperation.

The modernization of judicial administration has also been aided by initiatives such as the e-Courts Mission Mode Project. This project has introduced new elements to make the judiciary more transparent and user-friendly, including electronic filing, virtual case and court record management, and virtual hearings. During the COVID-19 pandemic, the rapid expansion of video conferencing demonstrated that information and communication technology can help the judiciary deliver services and maintain continuity even during disruptions.

The impact of technology on the criminal justice system is also evident in the transformation of policing. The modern police service has access to a wide range of advanced tools and technologies, including sophisticated surveillance systems, digital record and identification systems, geospatial technologies, and advanced forensic techniques. These tools help police services and investigators to gather, analyse, and interpret information more expeditiously and reliably.

The growing reliance on digital evidence is a further illustration of the impact of technology on the administration of criminal justice. Information and communication technologies have transformed the ways in which information relevant to a crime can be gathered. As a result, police services and the judiciary increasingly rely on digital records to establish facts and determine culpability.

Technology has had an unparalleled impact on the entire Indian criminal justice framework. It has transformed the system from a traditional paper-based model into a digitally integrated framework of communication, evidence, and technology.

IV. TECHNOLOGICAL ADVANCEMENTS UNDER THE NEW CRIMINAL LAWS

The enactment of the Bharatiya Nyaya Sanhita, the Bharatiya Nagarik Suraksha Sanhita, and the Bharatiya Sakshya Adhiniyam demonstrates the manner in which India is transforming the administration of criminal justice by integrating technology into substantive criminal law, the law of criminal procedure, and the law of evidence.

A. Bharatiya Nyaya Sanhita, 2023

The Bharatiya Nyaya Sanhita replaces the Indian Penal Code and seeks to address the new forms of criminality that emerge as society evolves.⁸ The legislation recognizes that many new offences are perpetrated through the internet, communication technologies, and cybercrime.

The rise in cybercrime, online fraud, and offences involving identity and trust, among other technology-enabled crimes, requires the law to respond to these needs. The BNS treats the enforcement of criminal law as a dynamic process that must take account of the uses of technology.

The law also recognizes the role of digital technology in proving offences. In contemporary practice, the prosecution increasingly relies on digital logs, records, and communication data.

B. Bharatiya Nagarik Suraksha Sanhita, 2023

The Bharatiya Nagarik Suraksha Sanhita replaces the Code of Criminal Procedure and makes significant changes to procedural law in order to make systems and processes more efficient through the adoption of technology.⁹

An example is the recognition of digital communication as a valid mode of communication in criminal proceedings. The use of digital systems to serve notices, issue summons, and convey

⁸ The Bharatiya Nyaya Sanhita, 2023, No. 45, Acts of Parliament, 2023 (India).

⁹ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, Acts of Parliament, 2023 (India).

official information helps to minimize delays in legal procedure and improves the efficiency of the system.¹⁰

The BNSS also facilitates the use of digital systems in the management of records and documents. Criminal procedure generates a substantial volume of paperwork, and digital systems aid in the management and control of information. Such record management systems and technologies improve the transparency and accountability of the criminal justice system.

C. Bharatiya Sakshya Adhiniyam, 2023

Of the three criminal law reforms, the Bharatiya Sakshya Adhiniyam, 2023, introduces the most substantial technological change. Replacing the Indian Evidence Act, 1872, this legislation updates the principles of evidence to reflect the demands of a digital society.

Today, criminal evidence is more commonly obtained in electronic rather than physical form. Emails and text messages, digital photographs, CCTV and other recorded footage, social media posts, electronic documents, cloud-based data, and online transaction records are now routinely tendered as evidence in criminal cases. The BSA responds to this shift by expressly including electronic and digital records within the definition of a document.¹¹

The BSA seeks to offer a modern approach to assessing the reliability, authenticity, and probative threshold of electronically stored and recorded evidence.¹² This is a direct consequence of the increasing reliance of criminal investigation and judicial process on digital evidence.

D. Electronic communication, e-summons, and video conferencing

The new criminal laws improve procedural efficiency by integrating electronic communication systems into the process. The physical service of documents and notices is a requirement of most criminal procedures and contributes to delays in investigation and prosecution.

The use of electronic summons, digital notifications, and electronic communication significantly reduces bureaucratic delay and enables more efficient communication among the courts, the police, legal practitioners, and litigants.

Another important innovation is the embedding of video conferencing into criminal processes. Virtual hearings were especially important during the COVID-19 pandemic and demonstrated the capacity of the legal system to integrate technology while maintaining procedural integrity.

¹⁰ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, § 530, Acts of Parliament, 2023 (India).

¹¹ The Bharatiya Sakshya Adhiniyam, 2023, No. 47, § 2(1)(d), Acts of Parliament, 2023 (India).

¹² The Bharatiya Sakshya Adhiniyam, 2023, No. 47, § 63, Acts of Parliament, 2023 (India).

The BNSS now permits trials, inquiries, and proceedings to be held in electronic mode through audio-video electronic means.¹³

The remote participation of witnesses, experts, accused persons, and counsel is now facilitated by the use of technology in legal proceedings. This optimizes time, effort, and resources, and is both economical and accessible. The adoption of such technology is likely to be a constant feature of the future of India's criminal justice system, and video conferencing exemplifies the broader points discussed above.

E. Impact on criminal justice administration

On a broad scale, the technology implemented under the BNS, BNSS, and BSA is likely to transform the administration of criminal justice. The digital management of records, electronic means of communication, and virtual sessions will reduce delay in processes and strengthen the system.

Scientific methods and electronic evidence will strengthen the investigative process. The BNSS now makes the visit of a forensic expert and the videography of evidence collection mandatory for offences punishable with imprisonment of seven years or more.¹⁴ As criminal conduct evolves and is increasingly committed through technology, the legal process must evolve in a corresponding manner so that such conduct can be justly adjudicated.

The use of technology in the legal process will enhance the transparency and accountability of the system. The mandatory audio-video recording of search and seizure under the BNSS is one illustration of this objective.¹⁵ These procedural changes will strengthen public trust in the system and increase institutional productivity.

V. DIGITAL EVIDENCE AND TECHNOLOGY-DRIVEN INVESTIGATION

The rapid digitization across various facets of society has altered the types of evidence available for use in the prosecution of crime. Digital evidence is emerging as one of the key categories of information in the prosecution of both cybercrime and traditional crime.

Digital evidence is information that is stored, transmitted, or created by electronic devices and technological systems. Common examples include emails, text messages, call records, social media messages, and videos. Digital evidence may also include footage from surveillance

¹³ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, § 530, Acts of Parliament, 2023 (India).

¹⁴ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, § 176(3), Acts of Parliament, 2023 (India).

¹⁵ The Bharatiya Nagarik Suraksha Sanhita, 2023, No. 46, §§ 105, 185, Acts of Parliament, 2023 (India).

systems, electronic documents, internet browsing histories, and records of financial transactions.¹⁶

Digital evidence has gained importance because individuals today are highly active digital users. As a result, almost every communication, financial transaction, purchase, or social interaction may be recorded electronically. Such evidence is also useful in understanding criminal acts, as well as criminal intentions, plans, and the manner in which offences are executed.

Digital evidence presents its own challenges in comparison with traditional evidence. Electronic information is comparatively easy to alter, manipulate, and, in some cases, destroy. Investigators are therefore required to employ specialized methods to safeguard the integrity of digital evidence. The collection and preservation of such evidence also requires technical expertise, specialized forensic tools, and strict adherence to procedural safeguards. The risk of manipulation is precisely why the law conditions the admissibility of electronic records on a certificate verifying their authenticity.¹⁷

For these reasons, digital forensics has become a highly specialized field in modern crime investigation. Digital forensic specialists examine computers, smartphones, storage devices, servers, and other network systems in order to recover and analyse evidence of crime. Beyond the direct analysis of systems, modern digital forensics can also be used to reconstruct the chronological sequence of events, recover deleted information, and trace communications, and is valuable in establishing links between suspects and criminal acts.

The evolving nature of technology has given rise to new forms of investigation that extend beyond traditional forensic methods. Numerous law enforcement agencies employ data analytics, artificial intelligence, facial recognition, and digital surveillance methods to help investigators process and analyse data and to uncover useful leads.

The expanding role of digital evidence is not confined to cybercrime. Investigations into homicide, kidnapping, terrorism, corruption, organized crime, and financial fraud also rely on telecommunications and other digital communication records. The judicial treatment of such records, including call data records, has been central to leading decisions on electronic evidence.¹⁸ The ability of forensic practitioners to collect, preserve, and analyse digital evidence is therefore critical to the functioning of modern criminal justice.

¹⁶ The Bharatiya Sakshya Adhiniyam, 2023, No. 47, § 63, Acts of Parliament, 2023 (India).

¹⁷ Anvar P.V. v. P.K. Basheer, (2014) 10 SCC 473 (India).

¹⁸ State (NCT of Delhi) v. Navjot Sandhu, (2005) 11 SCC 600 (India), overruled by Anvar P.V. v. P.K. Basheer, (2014) 10 SCC 473 (India).

Improvements in the investigative process resulting from increased technological capacity have also fostered greater collaboration among agencies. Digital integration allows agencies to access timely and relevant information, thereby enhancing the speed and quality of investigations and of the prosecutions they support.

Nonetheless, continual technological innovation, coupled with increased dependence on digital evidence, places a burden on agency resources to sustain and safeguard forensic infrastructure and trained personnel. Without the necessary forensic infrastructure and skilled personnel, the advantages of technology-driven investigation may not outweigh the evidentiary and procedural challenges that such investigations face.

VI. CHALLENGES AND CONCERNS

Significant challenges in the legal and ethical domains accompany the benefits of integrating technology into the criminal justice system.

One of the foremost issues concerns the effect on surveillance and privacy. The integration of these technologies may advance state objectives of efficient policing and greater public safety; at the same time, aggressive surveillance practices may infringe upon the rights and liberties of individuals. The Supreme Court has held that interception of communications engages the right to privacy under Article 21 and may be undertaken only in accordance with a procedure established by law.¹⁹

The recognition of privacy as a fundamental right intrinsic to life and personal liberty further constrains the deployment of surveillance technologies, which must satisfy the tests of legality, necessity, and proportionality.²⁰

The need to ensure the integrity and security of digital evidence also raises concerns for the criminal justice system. The relative ease with which digital records may be manipulated risks compromising the integrity of the evidential process, a concern that the certificate requirement for electronic records is designed to address.²¹

The disparity in the capacity to access and implement technology, combined with the dependence of such technology on physical infrastructure, creates further challenges. Technological and infrastructural capacity within the criminal justice system will need to be consistent across regions in order to support the implementation of technology adequately.

¹⁹ People's Union for Civil Liberties v. Union of India, (1997) 1 SCC 301 (India).

²⁰ Justice K.S. Puttaswamy (Retd.) v. Union of India, (2017) 10 SCC 1 (India).

²¹ Arjun Panditrao Khotkar v. Kailash Kushanrao Gorantyal, (2020) 7 SCC 1 (India); The Bharatiya Sakshya Adhiniyam, 2023, No. 47, § 63(4), Acts of Parliament, 2023 (India).

Perhaps the most pressing challenge concerns the use of artificial intelligence and automated decision-making. Reliance on these technologies in the criminal justice system is problematic, particularly given the possibility of bias in automation and machine learning.

Finally, rapid technological change compels regulators to respond. Criminal law must adapt to new technologies, new forms of cybercrime, and emerging categories of crime, and innovative forms of offending pose particular challenges. The law must remain flexible while ensuring that procedural safeguards and constitutional rights are not compromised.

VII. CONCLUSION

The ways in which India administers criminal justice and constructs its criminal laws have changed significantly as a result of the digital revolution. The commission, investigation, prosecution, and adjudication of crime have all been altered by the shifting social reliance on technology, and the criminal justice institutions have had to adapt accordingly.

The Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023, and the Bharatiya Sakshya Adhiniyam, 2023, together reflect India's focus on improving the structures of its criminal justice system. These reforms rest on the recognition that the contemporary criminal justice system depends on the rapid evolution of interpersonal and digital communication, on digital and forensic investigation, and on the growing acceptance of the validity of electronic evidence.

Equally important are the safeguards that must accompany the integration of new technologies. Considerations of privacy, the protection of the integrity of evidence, algorithmic accountability, and compliance with the Constitution are all essential. The incorporation of advanced technologies will enhance the criminal justice system successfully only if a balance is maintained between technological advance and the protection of core civil and constitutional rights.

The digital revolution has had significant ramifications for Indian criminal law and carries the potential to modernize both the law and the criminal justice system. The challenge will be to harness technology and modernize the system while ensuring that it remains just, fair, and accountable.
