



Cyber Crime and Indian Legal Framework: An Analysis of Emerging Challenges and Necessary Reforms

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Abstract- The rapid expansion of information and communication technologies has fundamentally transformed the manner in which individuals, businesses, governmental institutions and societies communicate, transact and store information. Alongside the benefits of digitalisation, cyberspace has become an increasingly significant environment for criminal activities such as identity theft, phishing, online financial fraud, cyber stalking, ransomware, data breaches, cyber extortion, online impersonation, cyber terrorism, deepfakes and AI-enabled crimes. The borderless and technologically dynamic nature of cybercrime creates significant challenges for conventional criminal law, investigation, evidence collection and prosecution. India has developed a multi-layered legal and institutional framework to address these challenges. The Information Technology Act, 2000 remains the principal legislation dealing specifically with cyber offences and electronic transactions. However, the legal framework has expanded through the Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021, the Digital Personal Data Protection Act, 2023, the Bharatiya Nyaya Sanhita, 2023, the Bharatiya Nagarik Suraksha Sanhita, 2023 and the Bharatiya Sakshya Adhiniyam, 2023. The latter three criminal-law enactments came into force from 1 July 2024, creating a new legal environment for substantive offences, criminal procedure and electronic evidence. The present research critically analyses the adequacy of India's existing cyber-crime framework in dealing with emerging forms of cyber offending. intermediary responsibility and institutional coordination. The paper argues that the principal challenge is no longer merely the absence of cyber-crime provisions, but the fragmentation, technological obsolescence, investigative capacity gap and coordination gap within the existing framework. The paper therefore proposes legislative harmonisation, specialised cyber courts, stronger digital-forensic infrastructure, standardised electronic-evidence protocols, enhanced international cooperation, AI-specific safeguards, victim-centric financial-fraud mechanisms and continuous legal reform.

Keywords- Cyber Crime, Information Technology Act, 2000, BNS, BNSS, BSA, DPDP Act, Digital Evidence, Cybersecurity, Artificial Intelligence, Deepfake, Data Protection, Legal Reform.



I. INTRODUCTION

The twenty-first century has witnessed an unprecedented transformation from a predominantly physical society to a digitally interconnected society. Computers, smartphones, cloud computing, artificial intelligence, digital payment systems, social-media platforms, online banking and e-governance have become integral components of everyday life. The digital environment has substantially increased accessibility, efficiency and economic opportunity; however, it has simultaneously created new opportunities for criminal activity. Criminals increasingly exploit digital technologies to commit offences against individuals, property, businesses, society and the State.

Cyber crime differs from conventional crime because the offender may operate remotely, anonymously and across multiple jurisdictions. A cyber criminal located in one country may target a victim in another country, use infrastructure situated in a third country and route the proceeds through several digital or financial channels. Consequently, traditional concepts of territorial jurisdiction, physical possession of evidence and identification of offenders become considerably more complicated.

The Indian legal response to cyber crime began principally with the enactment of the Information Technology Act, 2000. The legislation provided legal recognition to electronic records and electronic transactions and created specific offences relating to unauthorised access, damage to computer systems, identity theft, cheating by personation, privacy violations and other technology-related conduct.

However, the technological environment has changed substantially since 2000. Social media, smartphones, cryptocurrencies, cloud infrastructure, artificial intelligence, generative AI, deepfakes, ransomware-as-a-service, sophisticated phishing and digital-payment fraud were either absent or substantially less developed when the original legislation was enacted. Consequently, India's cyber-law framework has gradually developed into a multi-statute framework rather than a single comprehensive cyber code.

The current framework includes the IT Act, 2000; the BNS, 2023; the BNSS, 2023; the BSA, 2023; the DPDP Act, 2023; intermediary regulations; CERT-In directions; sector-specific regulations; and institutional mechanisms such as the Indian Cyber Crime Coordination Centre (I4C). The Government has specifically recognised I4C as a national framework for coordinated prevention, detection and response to cyber crime.

The fundamental question, therefore, is whether this expanding framework is sufficiently coherent, technologically adaptive and victim-centric to address contemporary and future cyber threats.

II. Statement of the Research Problem

The principal research problem may be stated as follows:

Whether the existing Indian legal and institutional framework is sufficiently comprehensive, technologically adaptable and effectively enforceable to prevent, investigate and prosecute emerging forms of cybercrime, and what legislative, procedural and institutional reforms are necessary to strengthen India's response to cybercrime?



The research is based on the proposition that cybercrime is developing more rapidly than conventional legislative processes. This creates a continuing gap between technological innovation and legal regulation.

Objectives of the Study

The major objectives of the study are:

- To examine the nature and changing dimensions of cyber crime in India.
- To analyse the Information Technology Act, 2000 and its principal cyber-crime provisions.
- To examine the relevance of BNS, 2023 to technology-enabled criminal activities.
- To analyse the procedural framework under BNSS, 2023 for investigation of cyber offences.
- To examine the evidentiary framework relating to electronic and digital evidence under BSA, 2023.
- To study the role of the DPDP Act, 2023 in protecting personal data and privacy.
- To examine emerging challenges created by AI, deepfakes, ransomware, cryptocurrency and sophisticated financial fraud.
- To analyse judicial approaches towards cyber-related constitutional and legal issues.
- To identify deficiencies in the existing legal and institutional framework.
- To suggest necessary legislative, procedural, technological and institutional reforms.

Research Questions

The study seeks to answer the following questions:

RQ1

Whether the Information Technology Act, 2000 is adequate to address contemporary forms of cybercrime?

RQ2

Whether the interaction between the IT Act, BNS, BNSS, BSA and DPDP Act creates sufficient legal clarity?

RQ3

What are the principal challenges in investigation and prosecution of cyber offences?

RQ4

Whether the present framework adequately addresses AI-generated crimes and deepfakes?

RQ5

Whether India's electronic-evidence framework is sufficiently effective for cyber-crime prosecution?

RQ6

What reforms are necessary to create a technologically neutral and future-ready cyber-crime framework?

III. Research Methodology

The present study adopts a doctrinal and analytical research methodology.

The primary sources consist of:

- Information Technology Act, 2000
- Digital Personal Data Protection Act, 2023
- Bharatiya Nyaya Sanhita, 2023



- Bharatiya Nagarik Suraksha Sanhita, 2023
- Bharatiya Sakshya Adhiniyam, 2023
- IT Rules, 2021
- CERT-In Directions
- Constitutional provisions
- Judicial decisions of the Supreme Court of India and High Courts
- Government notifications and reports.

Secondary sources include books, research articles, journals, government reports, NCRB publications, institutional materials and scholarly commentary.

The methodology is primarily qualitative, doctrinal, comparative and analytical.

IV. Evolution of India's Cyber-Law Framework

India's cyber-law framework has evolved through several stages.

1. Information Technology Act, 2000

The IT Act, 2000 constitutes the foundation of India's statutory cyber-law framework. Its original objective included providing legal recognition to electronic transactions and electronic records. The Act subsequently became an important instrument for dealing with cyber offences.

Important provisions include:

Provision	Subject
Section 43	Unauthorised access/damage to computer resources
Section 43A	Compensation relating to failure to protect data
Section 65	Tampering with computer source documents
Section 66	Computer-related offences
Section 66C	Identity theft
Section 66D	Cheating by personation using computer resource
Section 66E	Violation of privacy
Section 66F	Cyber terrorism
Section 67	Obscene electronic material
Section 67A	Sexually explicit material
Section 67B	Child sexual material
Section 69	Interception/monitoring/decryption
Section 69A	Blocking of public access
Section 70	Protected systems
Section 70B	CERT-In
Section 72	Breach of confidentiality/privacy
Section 72A	Disclosure of information in breach of lawful contract
Section 79	Intermediary liability/safe harbour

The Act continues to provide the statutory foundation for important cyber-security mechanisms, including CERT-In under Section 70B.



BNS, 2023 and Cyber Crime

The enactment of the Bharatiya Nyaya Sanhita, 2023 represents a major transformation of India's substantive criminal law. It came into force on 1 July 2024.

Although the BNS is not a specialised cyber-crime statute, several conventional offences can be committed through digital technologies.

Examples include:

- cheating through digital platforms;
- cheating by personation;
- criminal intimidation through electronic communications;
- extortion using digital platforms;
- forgery of electronic documents;
- organised crime involving technological infrastructure;
- offences involving public mischief and misinformation;
- offences involving threats to national security.

This demonstrates an important characteristic of India's present framework: cyber crime is regulated both by technology-specific legislation and technology-neutral criminal law.

This dual approach is useful, but it can also create uncertainty about the appropriate provision, classification and interaction between statutes.

BNSS, 2023 and Cyber-Crime Investigation

The BNSS, 2023 provides the contemporary procedural framework for criminal investigation and trial. Of particular importance is the recognition of technology in investigation and criminal proceedings. Section 105 specifically provides for recording search and seizure through audio-video electronic means. The BNSS also contains provisions dealing with offences involving electronic communications, investigation outside India and proceedings in electronic mode.

Section 530 further recognises trials and proceedings in electronic mode.

These provisions represent a significant movement from a purely physical criminal-procedure framework toward a digitally enabled justice system.

Nevertheless, the effectiveness of these provisions depends upon:

- trained investigators;
- forensic infrastructure;
- secure digital evidence management;
- chain-of-custody protocols;
- interoperability between police and forensic laboratories;
- judicial familiarity with digital evidence.

Thus, procedural recognition alone is insufficient without institutional capacity.

Bharatiya Sakshya Adhiniyam, 2023 and Digital Evidence

Cyber-crime prosecution depends heavily on electronic evidence.

The BSA, 2023 contains specific provisions dealing with electronic and digital records. Section 61 provides that electronic or digital records cannot be denied legal effect merely because they are



electronic or digital, subject to the statutory requirements concerning admissibility. Sections 62 and 63 specifically address proof and admissibility of electronic records.

Digital evidence may include:

- emails;
- WhatsApp conversations;
- social-media posts;
- CCTV footage;
- call-detail records;
- IP logs;
- server logs;
- cloud records;
- GPS information;
- digital photographs;
- metadata;
- blockchain transactions;
- mobile-phone data;
- computer forensic images.

The major challenge is not merely obtaining digital evidence but establishing its:

- authenticity;
- integrity;
- reliability;
- source;
- chain of custody;
- continuity;
- forensic integrity.

Therefore, India's cyber-crime framework requires uniform national protocols for the acquisition, preservation, analysis and presentation of digital evidence.

Digital Personal Data Protection Act, 2023

The DPDP Act, 2023 marks an important development in India's data-protection framework.

The legislation establishes obligations for Data Fiduciaries and recognises rights of Data Principals relating to personal data. It provides, among other things, for notice, consent, security obligations, children's data protection, rights to access information, correction and erasure and grievance redressal. The Act therefore complements the cyber-crime framework by addressing the protection and lawful processing of digital personal data.

An important contemporary issue is the relationship between:
data protection + cybersecurity + cybercrime + privacy.

A data breach may simultaneously raise questions under cybersecurity obligations, data protection law, criminal law, contractual obligations and sectoral regulation.

This overlap makes coordination and legal clarity essential.

CERT-In and Cybersecurity Regulation

CERT-In plays a central role in India's cybersecurity architecture.



The 28 April 2022 CERT-In Directions require specified cyber incidents to be reported within six hours of noticing them. The framework covers serious incidents including data breaches/data leaks, ransomware, intrusion and denial-of-service attacks.

The six-hour reporting framework demonstrates India's movement from a purely reactive criminal-law model toward a preventive cybersecurity model.

However, challenges remain regarding:

- awareness among smaller entities;
- compliance costs;
- technical capacity;
- incident classification;
- reporting consistency;
- coordination between CERT-In and law-enforcement agencies.

Role of I4C and Cyber-Crime Institutional Framework

Cybercrime cannot be effectively addressed by legislation alone.

The Government has established the Indian Cyber Crime Coordination Centre (I4C) to strengthen coordinated action against cybercrime. It supports law-enforcement agencies, cybercrime reporting, capacity building, cyber forensics and public awareness.

This institutional approach is important because policing and public order remain primarily State subjects, while cybercrime frequently crosses State and national boundaries.

Consequently, India's cyber-crime framework requires continuous coordination between:

- Central Government;
- State police;
- Cyber police stations;
- CERT-In;
- I4C;
- banks;
- payment intermediaries;
- telecom companies;
- social-media platforms;
- cloud-service providers;
- forensic laboratories;
- prosecutors;
- courts.

Emerging Challenges

Artificial Intelligence and AI-Enabled Crime

Artificial intelligence is creating new opportunities for criminals.

AI can be used for:

- automated phishing;
- synthetic identities;
- automated social engineering;
- voice cloning;



- fraudulent customer-service interactions;
- automated malware development;
- manipulation of images and videos;
- impersonation.

The Government itself has recognised the growing threat posed by AI-generated deepfakes and synthetic audio, video and text.

The central legal challenge is that AI is a technology rather than a single category of crime. Therefore, regulation should focus on harmful conduct rather than merely the technology used.

Deepfakes

Deepfake technology creates significant risks to:

- reputation;
- privacy;
- personal dignity;
- elections;
- financial security;
- public order;
- women and children.

Existing laws can address many deepfake situations through provisions relating to identity theft, personation, privacy, sexually explicit material, intermediary responsibility and data protection.

However, there is no single comprehensive deepfake-specific criminal framework.

A future reform should therefore establish:

- rapid takedown mechanisms;
- provenance requirements for synthetic content;
- victim notification;
- platform accountability;
- forensic authentication mechanisms;
- enhanced penalties for malicious synthetic impersonation.

Online Financial Fraud

Digital financial fraud has become one of the most serious cyber-crime challenges.

Common forms include:

- UPI fraud;
- phishing;
- OTP fraud;
- investment scams;
- digital lending fraud;
- impersonation scams;
- fake customer-care fraud;
- business email compromise;
- remote-access fraud;
- "digital arrest" scams.



The major difficulty is the speed of fund transfers. By the time a victim realises the fraud, funds may have moved through several accounts or payment channels.

Therefore, criminal prosecution must be accompanied by rapid financial intervention and fund-freezing mechanisms.

Ransomware

Ransomware attacks can affect:

- individuals;
- hospitals;
- universities;
- banks;
- government departments;
- critical infrastructure;
- corporations.

Ransomware creates both criminal-law and cybersecurity concerns.

A successful response therefore requires:

prevention + detection + reporting + forensic investigation + recovery + prosecution.

Cross-Border Cyber Crime

The borderless nature of cyberspace is one of the greatest difficulties in cyber-crime investigation.

Evidence may be stored in:

- foreign cloud servers;
- social-media platforms;
- foreign data centres;
- overseas email servers.

The investigating agency may therefore require international cooperation.

This creates delays in:

- obtaining subscriber information;
- preserving data;
- securing electronic evidence;
- identifying offenders;
- freezing foreign assets.

India therefore needs stronger and faster mechanisms for international cybercrime cooperation.

Cryptocurrency and Dark-Web Crime

Cryptocurrency can be misused for:

- ransomware payments;
- money laundering;
- illegal marketplaces;
- fraud;
- extortion.



The decentralised and pseudonymous characteristics of certain crypto transactions create difficulties for investigators.

The legal framework must therefore improve cooperation between:

- cyber investigators;
- financial intelligence authorities;
- cryptocurrency exchanges;
- banks;
- forensic experts.

Gender-Based Cyber Crime

Women may face:

- cyber stalking;
- cyber harassment;
- morphing;
- impersonation;
- non-consensual intimate imagery;
- sexual extortion;
- deepfake pornography;
- online threats.

The legal response should be victim-centric, especially because social stigma may discourage victims from reporting.

Jurisdictional Challenges

Traditional criminal law is substantially territorial.

Cybercrime is not.

Judicial Perspective

Shreya Singhal v. Union of India

The Supreme Court's decision in *Shreya Singhal v. Union of India*, (2015) 5 SCC 1, is one of India's most significant cyber-law judgments.

The Court struck down Section 66A of the IT Act on constitutional grounds, particularly because of vagueness and its impact on freedom of speech. The Supreme Court's reasoning highlighted the importance of clear and constitutionally valid drafting of cyber legislation.

The judgment establishes an important principle:

Technological regulation cannot be separated from constitutional rights.

Cybersecurity legislation must therefore balance:

- security;
- privacy;
- freedom of speech;
- due process;
- proportionality.



Anuradha Bhasin v. Union of India

In *Anuradha Bhasin v. Union of India*, (2020) 3 SCC 637, the Supreme Court examined restrictions on internet services and emphasised constitutional limitations on restrictions affecting fundamental rights. The Court stressed legality, reasonableness and proportionality in imposing restrictions.

The case is significant because it demonstrates that the digital environment cannot be regulated without considering constitutional rights.

Major Deficiencies in the Existing Framework

The analysis identifies the following principal deficiencies:

Fragmentation of Law

Cyber offences are distributed across multiple statutes.

Technological Obsolescence

Technology develops faster than legislation.

Lack of Uniform Investigation Standards

Cybercrime investigation practices vary between jurisdictions.

Digital-Forensic Capacity Gap

Many investigating agencies require advanced forensic infrastructure and trained personnel.

Electronic Evidence Challenges

Obtaining and proving reliable digital evidence remains difficult.

Cross-Border Investigation

International cooperation can be slow.

Low Public Awareness

Victims frequently do not know how or where to report cyber crime.

Victim Compensation

Recovery of money and compensation mechanisms require further strengthening.

AI and Deepfake Regulation

Emerging technologies create legal questions not fully addressed by traditional offence structures.

Lack of Specialised Cyber Courts

Complex cyber cases require technically trained judicial officers and prosecutors.

Necessary Legal Reforms

Comprehensive Cyber Crime Legislation

India should consider developing a more integrated cybercrime framework that harmonises the IT Act with BNS, BNSS, BSA and data-protection legislation.

Periodic Review Mechanism

Cyber legislation should not remain static.

A statutory mechanism should require review every three to five years to consider:



- AI;
- deepfake;
- cryptocurrency;
- cloud computing;
- IoT;
- quantum computing;
- new forms of cyber fraud.

AI and Deepfake Legislation

A dedicated regulatory framework should establish:

- definitions;
- prohibited conduct;
- platform duties;
- provenance requirements;
- victim remedies;
- criminal liability for malicious impersonation;
- expedited removal;
- forensic authentication.

Stronger Digital Evidence Framework

India should establish national standards for:

- collection;
- preservation;
- imaging;
- hashing;
- authentication;
- chain of custody;
- forensic analysis;
- courtroom presentation.

Specialised Cyber Courts

Specialised cyber courts should be established with:

- technologically trained judges;
- cyber prosecutors;
- forensic experts;
- digital-evidence infrastructure.

Cyber-Fraud Response Mechanism

A national victim-response mechanism should integrate:

1930 + police + banks + payment systems + I4C + cyber forensic units.

The objective should be to minimise the time between fraud detection and financial intervention.

Capacity Building

Continuous training should be provided to:

- police officers;
- prosecutors;
- judicial officers;
- forensic experts;



- banking officials;
- regulatory authorities.

International Cooperation

India should strengthen:

- mutual legal assistance;
- electronic evidence preservation;
- cross-border data requests;
- extradition mechanisms;
- international cybercrime cooperation.

Major Findings

The study reveals the following findings:

- India's cyber-law framework has significantly expanded since the enactment of the IT Act, 2000.
- The IT Act remains the central specialised cyber statute.
- BNS, BNSS and BSA have introduced important technology-relevant criminal-law mechanisms.
- The DPDP Act strengthens the personal-data protection dimension.
- CERT-In and I4C represent important institutional mechanisms.
- The principal problem is increasingly one of coordination rather than complete legislative absence.
- AI and deepfakes represent major emerging challenges.
- Digital financial fraud requires faster preventive and recovery mechanisms.
- Electronic evidence requires specialised technical capacity.
- Cross-border cyber crime cannot be effectively addressed through purely domestic legislation.
- Cyber legislation must maintain a balance between security and constitutional freedoms.
- Continuous legal reform is necessary because technology evolves faster than conventional legislative cycles.

Suggestions

Based upon the analysis, the following reforms are recommended:

Legislative Reforms

- Harmonise cyber provisions across different statutes.
- Introduce technology-neutral drafting.
- Establish periodic statutory review.
- Develop AI/deepfake-specific safeguards.

Procedural Reforms

- Standardise cyber investigation procedures.
- Establish digital-evidence protocols.
- Improve electronic search and seizure mechanisms.
- Develop specialised prosecution systems.

Institutional Reforms

- Expand cyber police stations.
- Strengthen I4C and State cyber units.
- Establish specialised cyber courts.
- Improve forensic laboratory capacity.



Victim-Centric Reforms

- Strengthen 1930 and cybercrime reporting.
- Establish rapid fund-freezing mechanisms.
- Improve victim compensation.
- Provide special protection for women and children.

Technological Reforms

- AI-based fraud detection.
- Deepfake detection mechanisms.
- Blockchain/crypto forensic capability.
- Automated threat intelligence.
- Secure digital evidence repositories.

International Reforms

- Faster cross-border evidence requests.
- Stronger mutual legal assistance.
- Greater international cybercrime cooperation.
- Common standards for electronic evidence.

V. Conclusion

Cybercrime represents one of the most significant legal challenges of the digital era. The nature of cyber offending has evolved considerably from conventional computer hacking to sophisticated financial fraud, ransomware, identity theft, social-engineering attacks, cryptocurrency crime, AI-enabled offences and deepfake-based manipulation.

India has responded through a multi-layered legal framework consisting principally of the IT Act, 2000, BNS, 2023, BNSS, 2023, BSA, 2023, DPDP Act, 2023, intermediary regulation and cybersecurity directions. The BNS, BNSS and BSA came into force on 1 July 2024 and have introduced significant changes to substantive criminal law, criminal procedure and electronic evidence.

However, the existence of multiple statutes does not automatically ensure effective cyber-crime control. The critical issue is the coherence and implementation of the framework. Fragmentation between substantive criminal law, procedural law, evidence law, data protection, cybersecurity regulation and institutional mechanisms can create practical difficulties.

The future of cyber-law reform in India should therefore move beyond simply increasing punishment. Effective cyber governance requires a combination of clear legislation, technologically neutral provisions, specialised investigation, digital-forensic capacity, electronic-evidence standards, victim protection, institutional coordination and international cooperation.

The central proposition emerging from this research is that India does not merely require more cyber laws; it requires better-integrated, technologically adaptive and effectively enforceable cyber laws.

The ultimate objective should be to create a legal framework that protects not only computers and networks but also human dignity, privacy, financial security, constitutional freedoms, personal data, national security and public trust in the digital economy.



REFERENCES

1. Legislation

- Information Technology Act, 2000, Act No. 21 of 2000, Government of India.
- Digital Personal Data Protection Act, 2023, Act No. 22 of 2023.
- Bharatiya Nyaya Sanhita, 2023, Act No. 45 of 2023.
- Bharatiya Nagarik Suraksha Sanhita, 2023, Act No. 46 of 2023.
- Bharatiya Sakshya Adhinyam, 2023.
- Information Technology (Intermediary Guidelines and Digital Media Ethics Code) Rules, 2021.
- CERT-In Directions under Section 70B of the Information Technology Act, 2000.
- Cases
- Shreya Singhal v. Union of India, (2015) 5 SCC 1.
- Anuradha Bhasin v. Union of India, (2020) 3 SCC 637.
- State of Tamil Nadu v. Suhas Katti, 2004.

2. Government / Institutional Sources

- Ministry of Home Affairs, Government of India, materials concerning cyber crime and I4C.
- Indian Computer Emergency Response Team (CERT-In), Directions and cybersecurity guidelines.
- Press Information Bureau, Government of India, materials on cyber crime, AI and deepfakes.
- National Crime Records Bureau, Crime in India reports.

3. Books / Secondary Sources

- Duggal, P. Cyber Law in India. LexisNexis.
- Singh, Y. Cyber Laws.
- Chaubey, R. K. An Introduction to Cyber Crime and Cyber Law.
- Fatima, T. Cyber Crimes.
- Vishwanathan, S. T. The Indian Information Technology Act.
- Jain, N., & Menon, R. Cyber Crime and Cyber Law.