

Blockchain Technology in the Indian Legal Context: Regulatory Framework, Compliance, and Emerging Challenges

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ABSTRACT

Blockchain technology has emerged as one of the most transformative digital innovations of the twenty-first century, significantly influencing governance, finance, cybersecurity, healthcare, supply chain management, and digital infrastructure. In India, blockchain is increasingly being recognized not merely as the technological foundation of cryptocurrencies but as a broader decentralized framework capable of enhancing transparency, efficiency, accountability, and data security across multiple sectors. Despite its growing adoption, the legal and regulatory framework governing blockchain technology in India remains fragmented and continuously evolving. Existing laws such as the Information Technology Act, 2000, the Prevention of Money Laundering Act, 2002, taxation laws relating to Virtual Digital Assets, and the Digital Personal Data Protection Act, 2023 collectively shape the legal environment surrounding blockchain applications. This study examines blockchain technology within the Indian legal context by analyzing its regulatory framework, financial implications, taxation policies, anti-money laundering obligations, data protection requirements, and legal risks associated with decentralized systems. The article also explores the role of Indian regulatory institutions such as the Reserve Bank of India (RBI), Securities and Exchange Board of India (SEBI), Ministry of Electronics and Information Technology (MeitY), and Financial Intelligence Unit-India (FIU-IND) in shaping blockchain governance. Additionally, the study highlights practical applications of blockchain technology in sectors such as land records, healthcare, banking, supply chain management, and intellectual property protection. The research concludes that India is moving toward a balanced and innovation-oriented regulatory framework that seeks to encourage technological development while ensuring financial stability, consumer protection, cybersecurity, and regulatory compliance. The future of blockchain law in India will likely evolve through judicial interpretation, policy reforms, sector-specific regulations, and international regulatory cooperation.

Keywords: *Blockchain Technology, Indian Legal Framework, Cryptocurrency Regulation, Digital Assets, Smart Contracts, Distributed Ledger Technology, Financial Regulation, Data Protection, Cybersecurity, Anti-Money Laundering (AML), Virtual Digital Assets (VDA), RBI, SEBI, FIU-IND, Digital Governance, Taxation, Compliance, Decentralized Finance (DeFi)*

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Globally, block chain law has emerged as a rapidly evolving legal and policy domain, profoundly influenced by technology policy, financial regulation, data protection, cybersecurity, taxation, and judicial interpretations. block chain technology has introduced a more transparent, decentralized, and secure framework to replace traditional digital systems; consequently, it is being recognized as a primary vehicle for innovation across numerous sectors, including banking, supply chain management, healthcare, e-governance, insurance, education, and intellectual property. Although the utility of this technology has gained widespread recognition, its legal framework remains in a continuous state of flux and consolidation. Governments and regulatory bodies across various nations are striving to formulate clear rules, compliance standards, and accountability mechanisms for blockchain-related activities, aiming to strike a balance between fostering innovation and ensuring consumer protection.

In the initial stages, distinguishing between blockchain technology and cryptocurrencies has proven challenging for most people. Generally, blockchain is perceived solely through the lens of Bitcoin or other digital currencies; however, the reality is that blockchain itself constitutes a foundational digital infrastructure capable of facilitating secure data storage, smart contracts, digital identity management, record-keeping, and the development of decentralized applications. Cryptocurrencies, conversely, represent a specific class of financial assets built upon blockchain technology. This common misconception often complicates the task of establishing appropriate legal distinctions between technological innovation and financial risks.

In the Indian context, the legal framework governing blockchain is currently in a nascent stage of development. Institutions such as the Reserve Bank of India (RBI), the Securities and Exchange Board of India (SEBI), the Ministry of Electronics and Information Technology (MeitY), and the Ministry of Finance have periodically issued guidelines, advisories, and policy signals pertinent to this sector. In India, blockchain technology is being actively encouraged across various domains—most notably in digital governance, land record management, supply chain verification, and financial services. However, comprehensive legal clarity is still being developed regarding issues such as the regulation of crypto assets, data privacy, taxation, anti-money laundering (AML), and consumer protection.

This brochure presents the legal framework, regulatory risks, compliance requirements, and real-world practical applications of blockchain technology in India in a simple, systematic, and analytical manner. Its objective is to assist businesses, managers, developers, legal researchers, and investors in understanding how Indian law views and governs blockchain-based systems, and how these technologies can be utilized safely and effectively within the existing legal boundaries and regulatory expectations.

Objectives of the Study:

1. To examine the concept and legal nature of blockchain technology in India.
2. To analyze the existing regulatory and legal framework governing blockchain-based systems.
3. To study the role of Indian regulatory authorities in blockchain governance and compliance.
4. To evaluate the impact of financial regulations, taxation laws, and anti-money laundering obligations on blockchain platforms.

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5. To examine the legal challenges associated with smart contracts, digital assets, and decentralized systems.
6. To explore the practical applications of blockchain technology in governance, healthcare, finance, supply chain management, and intellectual property protection.
7. To assess the future scope and regulatory direction of blockchain law in India.

RESEARCH METHODOLOGY

The present study is based on a doctrinal and analytical research methodology. The research primarily relies on secondary sources of data, including statutes, government notifications, policy papers, judicial decisions, academic journals, regulatory guidelines, reports published by institutions such as RBI, SEBI, MeitY, NITI Aayog, and FIU-IND, as well as scholarly articles and legal commentaries relating to blockchain technology and digital assets.

A comparative and descriptive approach has also been adopted to understand the evolving nature of blockchain regulation in India in relation to global regulatory trends. The study critically analyzes existing laws and policies to evaluate their applicability to decentralized technologies and blockchain-based systems.

Scope of the Study:

The scope of this study extends to the legal, regulatory, financial, and technological dimensions of blockchain technology in India. It includes an examination of:

- The legal recognition and regulatory treatment of blockchain technology.
- Financial regulations relating to cryptocurrencies and blockchain-based financial services.
- Taxation policies applicable to Virtual Digital Assets and blockchain transactions.
- Anti-money laundering compliance obligations and KYC requirements.
- Data protection and cybersecurity obligations under Indian law.
- Legal risks associated with smart contracts, decentralized systems, and cross-border blockchain operations.
- Practical applications of blockchain in governance, healthcare, finance, real estate, supply chain management, and intellectual property rights.
- The future direction of blockchain regulation and policy development in India.

However, the study does not focus extensively on the technical coding architecture of blockchain systems or highly specialized cryptographic mechanisms.

From an Indian legal perspective, blockchain technology is viewed as an emerging and transformative digital system with the potential to bring about sweeping changes in traditional data management and transaction systems. Fundamentally, blockchain is a Distributed Ledger system wherein transaction-related information is securely stored simultaneously across numerous computers or network nodes. Its architecture is designed in such a way that, once recorded, information cannot be altered without the collective consensus of the network. It is this very characteristic that renders it transparent, secure, reliable, and tamper-resistant.

In India, regulatory bodies and policymakers no longer perceive blockchain merely as a technology confined to cryptocurrencies or digital currencies; rather, they are embracing it as a tool to enhance the efficacy of governance, administration, and the digital economy. Various government reports and policy documents have highlighted that blockchain can be

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leveraged to make public service delivery, land record management, supply chain monitoring, health record preservation, educational certificate verification, and digital identity systems more secure and transparent. Notably, NITI Aayog has published several strategic documents and discussion papers on blockchain technology, explicitly articulating the pivotal role blockchain can play in strengthening India's Digital Public Infrastructure. These documents have provided a conceptual framework for policymakers, administrative bodies, and the industry to comprehend both the potential and the challenges associated with this technology.

From a legal standpoint, there are no direct prohibitions on blockchain technology in India. Indian law primarily focuses on the specific purpose and manner in which blockchain is being utilized. If its application is limited to enhancing data security, record management, or administrative efficiency, it is generally deemed legally permissible. However, when blockchain-based systems intersect with financial transactions, digital assets, personal data, cross-border payments, or investment activities, the role of various regulatory bodies becomes critical. For instance, if financial services or digital token-based investments are offered on a blockchain platform, regulations promulgated by the Reserve Bank of India, the Securities and Exchange Board of India, and the Ministry of Finance may become applicable. Similarly, if citizens' personal data is stored within a blockchain network, the need arises to ensure compliance with laws pertaining to data privacy, cybersecurity, and information technology. Furthermore, provisions concerning cross-border data transfers, Anti-Money Laundering (AML), Know Your Customer (KYC) norms, and taxation may also impact such applications.

Thus, the Indian legal framework views blockchain as an opportunity for innovation and digital growth, while simultaneously seeking to ensure that its utilization remains consistent with the principles of financial stability, national security, consumer protection, and data privacy. Therefore, when developing blockchain-based systems in India, it is essential to accord equal importance to legal compliance and regulatory responsibilities alongside technological innovation.

In India, blockchain law has not yet evolved into a single dedicated or codified statute; rather, it operates through the combined effect of various existing laws, regulatory guidelines, and administrative policies. The Indian legal framework views blockchain technology as a multifaceted digital innovation, the implications of which are not confined solely to the financial sector but extend across numerous domains such as information technology, data management, taxation, cybersecurity, contract law, and anti-money laundering. Consequently, the regulatory framework pertaining to blockchain in India is developing in a multi-layered and sector-specific manner. This approach aligns with international regulatory trends, wherein most nations regulate blockchain under various distinct legal domains rather than through a standalone piece of legislation.

Indian policymakers and regulatory bodies have endeavored to draw a clear distinction between blockchain technology itself and crypto assets. Blockchain, in essence, is a technical infrastructure that can be utilized for secure data recording, digital verification, smart contracts, and the development of decentralized applications. Crypto assets—or digital tokens—on the other hand, are imbued with financial value and may serve as instruments for investment, trading, or payments. For this reason, blockchain platforms deployed for non-financial purposes—such as record management, supply chain monitoring, health data protection, or enterprise automation—are subject to relatively fewer regulatory constraints.

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Conversely, applications involving cryptocurrencies, digital tokens, or Decentralized Finance (DeFi) undergo more rigorous scrutiny, as they raise critical issues concerning financial stability, investor protection, and national economic security.

Among the key statutes influencing blockchain regulation in India, the Information Technology Act, 2000, holds particular significance. This Act governs the validity of electronic records, digital signatures, cybercrimes, and electronic transactions. The legal validity of digital data stored within blockchain-based systems—as well as that of smart contracts—is frequently assessed based on the principles enshrined in this very Act. Furthermore, the Prevention of Money Laundering Act, 2002 (PMLA) exerts a significant impact on activities related to crypto assets and digital transactions, particularly in instances where there is a suspicion of money laundering, illicit financial flows, or terrorist financing.

Specific provisions regarding blockchain and crypto assets have also been developed within the realm of taxation. The Government of India has implemented regulations concerning Income Tax and Tax Deducted at Source (TDS) on Virtual Digital Assets; this clearly signals that the government recognizes digital assets as a form of economic activity, even if they do not hold the status of legal tender. Additionally, sector-specific regulations pertaining to banking, securities markets, data protection, foreign exchange, and consumer protection may also be applicable to blockchain-based applications.

The Indian judiciary is also playing a pivotal role within this evolving legal framework. Courts have, from time to time, provided interpretations regarding how traditional legal principles can be applied to decentralized digital systems. Particularly in cases involving crypto assets and digital transactions, the courts have emphasized the necessity of adopting a balanced approach—one that fosters technological innovation while simultaneously ensuring the protection of consumers and the financial system.

Thus, the regulatory framework for blockchain in India remains in a nascent stage of development, wherein various laws, policies, and judicial interpretations are collectively shaping a comprehensive legal structure. In the coming years, it is anticipated that India will formulate a more lucid and coordinated blockchain policy, thereby establishing a better equilibrium between innovation, investment, and legal certainty.

The Government of India's approach toward blockchain technology has generally been positive, encouraging, and innovation-oriented. The government views blockchain not merely as a technological experiment, but as a crucial tool capable of enhancing digital governance, administrative transparency, and the effectiveness of public service delivery. Consequently, both the central government and various state governments have launched numerous pilot projects to adopt blockchain-based solutions and explore their potential for practical application. The primary objective of these initiatives is to increase transparency in administrative processes, secure record management, and mitigate the risks of corruption and data manipulation.

Several Indian states have piloted the use of blockchain technology in areas such as land record management, academic certificate verification, health record preservation, and the distribution of welfare schemes. The application of blockchain in land records is considered particularly significant, as it can reduce the likelihood of record tampering and assist in minimizing ownership-related disputes. Similarly, initiatives to securely store certificates

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issued by universities and educational institutions on the blockchain are viewed as effective measures for curbing the problem of counterfeit certificates. In the context of welfare schemes, the deployment of this technology can render beneficiary identification and fund distribution processes more transparent and accountable.

The Ministry of Electronics and Information Technology (MeitY) has also launched several initiatives to foster blockchain research, innovation, and capacity building. Various programs and research projects supported by the Ministry aim to develop a secure, reliable, and interoperable blockchain ecosystem. Government guidelines place particular emphasis on cybersecurity, data protection, technical standardization, and ethical usage, ensuring that blockchain-based systems are not only technically proficient but also legally and socially responsible.

Government policies and public documents provide a clear indication that, rather than restricting blockchain technology, India seeks to encourage its controlled and responsible utilization. This approach is particularly evident in the context of applications related to the public interest, administrative efficiency, and the strengthening of digital infrastructure. The adoption of blockchain technology by the public sector also reinforces the legal and institutional acceptance of this technology. When government entities themselves utilize blockchain-based systems, it fosters confidence among the industry, investors, and developers that this technology can become a pivotal component of India's digital future.

Furthermore, this governmental stance also indicates that Indian regulatory bodies intend to maintain a clear distinction between blockchain technology and cryptocurrencies. While caution is being exercised regarding speculative and high-risk crypto investments, regulatory confidence in non-speculative and public utility-based blockchain applications is steadily growing. This balanced policy seeks to encourage innovation while simultaneously mitigating financial and social risks.

When the use of blockchain technology is limited solely to data management or record verification, its legal complexities remain relatively minimal. However, as soon as blockchain-based systems become intertwined with financial transactions, digital assets, payment services, or investment activities, the associated regulatory and legal liabilities increase significantly. In the financial sector, blockchain is being utilized in activities such as banking, payment systems, digital wallets, tokenization, Decentralized Finance (DeFi), and cross-border transactions; consequently, the role of regulatory bodies becomes paramount. In India, the oversight of these activities is primarily conducted by the Reserve Bank of India (RBI) and other financial regulators.

The Reserve Bank of India serves as the primary regulator for the country's payment systems, banking infrastructure, and monetary stability. The RBI's approach is not to directly regulate blockchain technology itself, but rather to regulate the specific services and activities that involve financial transactions or banking relationships. This implies that if a blockchain platform offers only non-financial services—such as record management, supply chain verification, or digital certification—it generally falls outside the purview of the RBI's direct regulation. However, if that same platform provides payment services, digital wallets, investment facilities, or token-based financial products, then financial regulations may become applicable to it.

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In India, cryptocurrencies have not yet been accorded the status of legal tender. This means that Bitcoin or other digital currencies cannot be utilized as an official substitute for the Indian Rupee. Nevertheless, the Government of India and regulatory bodies acknowledge that crypto assets and related services have become an integral part of genuine economic activity. Consequently, entities operating digital wallets, crypto exchanges, tokenized services, or blockchain-based investment platforms are required to adhere to regulations pertaining to financial oversight, Customer Identification (KYC), and Anti-Money Laundering (AML).

Furthermore, regulatory obligations also extend to the banks that provide banking services to such blockchain platforms. Banks are required to exercise due diligence regarding their customers and business partners in order to mitigate the risks associated with illicit financial activities, tax evasion, fraud, or money laundering. Consequently, banks typically conduct a detailed review of the operating models, risk structures, and compliance systems of companies that provide blockchain- or crypto-based financial services.

For businesses developing blockchain-based financial solutions, it is imperative to regularly review the circulars, guidelines, and regulatory updates issued periodically by the Reserve Bank of India. As regulations within the financial technology sector are evolving rapidly, a failure to comply can lead to legal risks, banking restrictions, or regulatory action. Furthermore, businesses are also required to adhere to other Indian laws pertaining to data protection, consumer protection, taxation, and cybersecurity.

Overall, the regulatory approach toward blockchain-based financial services in India is balanced and cautious. While the government and regulatory bodies seek to foster financial innovation and promote the digital economy, they simultaneously aim to safeguard financial stability, consumer protection, and national economic interests. This is precisely why the relationship between blockchain and financial regulation in India is continuously evolving, and it is likely that a more explicit and comprehensive legal framework will be developed in the near future.

With the growing adoption of blockchain-based financial services and digital assets in India, the significance of anti-money laundering laws has increased manifold. In particular, the Prevention of Money Laundering Act, 2002 (PMLA) plays a pivotal role in the regulation of blockchain and crypto assets. The primary objective of this Act is to curb the flow of illicit funds, financial crimes, terror financing, and unlawful economic activities. Since blockchain-based systems facilitate rapid, global, and often pseudonymous transactions, the government and regulatory bodies aim to ensure that these technologies are not exploited for illicit purposes.

The Government of India has categorized crypto exchanges, digital asset service providers, and certain types of blockchain-based financial services as "Reporting Entities." This implies that, much like traditional financial institutions, these platforms are subject to a host of legal and compliance obligations. These obligations encompass processes such as Customer Identification Verification (KYC), Transaction Monitoring, Risk Assessment, and Record Keeping. These platforms are mandated to ensure that their services are not utilized for illicit fund transfers, fraud, or money laundering activities.

Blockchain platforms that facilitate token transfers, digital asset custody services, wallet services, or crypto trading facilities are required to establish robust compliance frameworks.

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These frameworks entail verifying customer identities, analyzing suspicious activities, conducting risk-based monitoring, and securely maintaining requisite documentation. Furthermore, should any transaction or activity exhibit signs of anomalous behavior, illicit financial activity, or potential money laundering, the concerned entity is obligated to report it to the Financial Intelligence Unit – India (FIU-IND).

In India, registering with the Financial Intelligence Unit – India has emerged as a critical compliance prerequisite for legitimately operating digital asset services. FIU-IND registration ensures that the concerned entity adheres to Indian anti-money laundering standards and stands ready to cooperate with regulatory agencies whenever required. Failure to comply may result in financial penalties, investigations, operational restrictions, or other legal actions.

The objective of these legal obligations is not to stifle innovation associated with blockchain and digital assets, but rather to ensure that technological advancements proceed in a secure, transparent, and accountable manner. Indian regulatory bodies strive to adopt a balanced approach—one that fosters legitimate businesses and technological innovation while simultaneously safeguarding the financial system against misuse, illicit transactions, and national security risks. Thus, anti-money laundering laws play a pivotal role in rendering India's blockchain ecosystem more credible and institutionally acceptable.

With the growing adoption of blockchain-based financial systems and digital assets in India, the significance of anti-money laundering laws has increased manifold. In particular, the Prevention of Money Laundering Act, 2002 (PMLA) plays a pivotal role in the regulation of blockchain and crypto assets. The primary objective of this Act is to curb the flow of illicit funds, financial crimes, terrorist financing, and economic fraud. Since blockchain-based platforms facilitate transactions that are rapid, global, and—in many instances—pseudonymous, the government and regulatory agencies aim to ensure that these systems are not exploited for unlawful activities.

The Government of India has categorized crypto exchanges, digital asset service providers, and certain types of blockchain-based financial services as "Reporting Entities." This implies that these platforms are subject to numerous legal and compliance obligations akin to those applicable to traditional banking and financial institutions. These obligations encompass customer identity verification (KYC), transaction monitoring, risk assessment, and the mandatory maintenance of detailed records. These platforms are required to ensure that their services are not utilized for activities such as money laundering, fraud, tax evasion, or terrorist financing.

Blockchain platforms that facilitate token transfers, digital asset custody services, wallet services, or crypto trading are mandated to establish a robust compliance framework. This framework entails verifying user identities, analyzing suspicious transactions, conducting risk-based monitoring, and securely preserving regulatory records. Furthermore, should any transaction exhibit signs of unusual activity or potential illicit financial conduct, the concerned entity is obligated to report the same to the Financial Intelligence Unit – India (FIU-IND).

In India, registering with the Financial Intelligence Unit – India has emerged as a critical legal prerequisite for legitimately operating digital asset or blockchain-based financial services. FIU-IND registration signifies that the concerned entity is prepared to adhere to

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Indian anti-money laundering standards and provide necessary regulatory cooperation. Should an entity disregard these compliance requirements, it may face financial penalties, investigations, licensing restrictions, or other legal actions.

The objective of these obligations is not to stifle technological innovation associated with blockchain and digital assets, but rather to ensure that such innovation proceeds in a secure, transparent, and responsible manner. Indian regulatory bodies are striving to adopt a balanced approach that encourages legitimate technological development and investment, while simultaneously safeguarding the financial system against illicit activities and misuse. Thus, anti-money laundering laws are playing a pivotal role in bolstering the credibility, statutory acceptance, and long-term stability of the blockchain ecosystem in India.

In the context of India, taxation—specifically regarding digital assets and digital associates—is an area where the government has provided a relatively high degree of clarity. While many legal and documentation-related aspects concerning digital assets remain in a nascent stage, the government has signaled that income derived from digital assets is now being recognized as a form of formal economic activity. Consequently, the associated tax classifications for enterprises, platforms, and service providers operating in this space have become much clearer.

The Government of India has introduced a specific category termed "Virtual Digital Assets" (VDAs). A distinct tax regime has been implemented for the profits derived from these assets. Under this framework, a prescribed tax rate is applicable to any gains realized from the transfer of Virtual Digital Assets. Furthermore, with the objective of tightening the taxation framework in this sector, a specific provision has been introduced stating that any losses incurred from such assets cannot be set off against other sources of income. This implies that if an investor suffers a loss in their crypto account, they cannot utilize that loss to offset other business or personal income. This reflects a cautious and prudent approach within the government's tax policy, aimed at exercising control over potential revenue leakage arising from such assets.

Tax regulations are not the only rules applicable to providers of consultancy-based services; the Goods and Services Tax (GST) rules enforced by the Central Board of Indirect Taxes and Customs (CBIC) also have a significant bearing. If an entity provides services such as engineering-based consultancy, platform operations, digital infrastructure, software services, or technical management, GST may be applicable depending on the specific nature of those services. For instance, services such as platform access fees, network usage charges, software architecture (or access), technical consultancy, and digital service management may fall under the category of taxable services. Furthermore, if a platform provides services of an international standard or involves cross-border digital transactions, additional regulations pertaining to foreign exchange, export-related services, and international taxation may also apply. From a regulatory standpoint, it is imperative that entities accurately assess the legal nature of their services and ensure their compliance by adhering to applicable laws.

The Central Board of Indirect Taxes and Customs (CBIC) and the Department of Revenue periodically issue guidelines to assist stakeholders in determining their tax liabilities. However, as this sector is still evolving, the interpretation of tax treatment and the underlying principles remain subject to certain limitations in many instances. For this reason,

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maintaining a comprehensive record-keeping system and meticulous documentation is of paramount importance for entities operating within the digital assets sector.

The classification, identification, and assessment of every document—along with the calculation of taxable income and the secure preservation of digital records—are considered essential requirements. Since these processes can be procedurally intricate and technically complex, errors in execution may lead to legal disputes, financial penalties, or regulatory audits. Thus, India's taxation framework is playing a pivotal role in rendering the regulatory ecosystem more dynamic, robust, and responsive.

The application of blockchain technology is not limited solely to financial transactions; rather, it is being utilized across numerous sectors such as health records, digital identity, e-governance, supply chain management, and online services. All these sectors involve the collection and processing of vast amounts of personal and sensitive data. Consequently, data protection and technology compliance have emerged as critical legal considerations for blockchain-based systems in India.

In India, the Digital Personal Data Protection Act, 2023 (DPDP Act) provides a primary legal framework for safeguarding personal data. This Act applies to all entities that collect, use, store, or share personal data through digital mediums. Blockchain platforms—should they process users' identities, financial information, contact details, or other personal data—are required to adhere to the provisions of this Act.

As part of legal compliance, blockchain platforms must ensure that data is collected solely for legitimate purposes and that clear, informed consent is obtained from users. Furthermore, data usage must be restricted to the extent that is strictly necessary. Platform operators are mandated to implement appropriate technical and administrative security measures to protect user information against unauthorized access, cyberattacks, and data breaches.

However, decentralized blockchain systems also present unique challenges regarding data protection laws. A fundamental characteristic of blockchain is that once data is recorded on the network, it becomes extremely difficult to modify or delete. Conversely, data protection laws often grant users the right to delete or modify their data under various circumstances. This is precisely why issues such as "data erasure" and "data control" raise complex legal questions for blockchain platforms.

To address these challenges, businesses must develop technical solutions that uphold the principles of data minimization and privacy protection. For instance, instead of storing sensitive personal information directly on the blockchain, it can be kept in secure off-chain databases, while only verifiable references or encrypted hashes are stored on the blockchain itself. This approach allows for the maintenance of both security and transparency.

In the event of a violation of data protection laws, entities may face heavy financial penalties, regulatory investigations, and operational restrictions. Therefore, it is imperative for blockchain-based businesses to adopt a "Privacy by Design" and "Compliance by Design" approach right from the inception stage.

Furthermore, the Information Technology Act, 2000, is also applicable to online blockchain platforms. This Act governs cybersecurity, electronic records, digital communication, and the

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responsibilities of online intermediaries. Under this Act, platforms may be required to establish a Grievance Redressal Mechanism, resolve user complaints within a stipulated timeframe, and implement robust cybersecurity measures.

Cybersecurity compliance encompasses measures such as data encryption, network security, regular security audits, access controls, and incident response systems. Since blockchain platforms often operate on global and decentralized networks, they may also need to address cross-border data transfers and adhere to international data protection standards.

Thus, for blockchain-based systems in India, data protection and technology compliance have evolved from being merely technical requirements into significant legal obligations. Effective compliance not only mitigates regulatory risks but also plays a pivotal role in building trust among users and investors.

Blockchain technology is being hailed as a critical digital infrastructure of the future due to its transparency, security, and decentralization; however, its adoption is also accompanied by numerous legal, technical, and operational risks. As the use of blockchain-based systems expands across finance, governance, supply chains, healthcare, and digital assets, the importance of legal compliance and risk management for businesses and developers continues to grow. In India, this sector is still in a nascent stage of development; consequently, regulatory uncertainty remains one of the most significant challenges.

Policies and regulations pertaining to blockchain are constantly evolving. The government and regulatory bodies periodically issue new guidelines, tax regulations, data protection provisions, and financial compliance standards. As a result, businesses may be required to modify their operational models and compliance systems to align with shifting legal expectations. If an entity fails to adapt to regulatory changes in a timely manner, it may face difficulties such as financial penalties, licensing issues, or operational restrictions.

Smart Contracts represent a significant technical innovation within the blockchain ecosystem, yet they also carry associated legal risks. Smart contracts are automated digital agreements that execute automatically based on predefined conditions. In India, the Indian Contract Act, 1872, and the Information Technology Act, 2000, accord legal validity to electronic contracts; however, the legal enforceability of smart contracts can frequently become a subject of dispute. If the code underlying a smart contract is ambiguous, flawed, or incomplete, it may give rise to contractual disputes.

Code vulnerabilities constitute another serious risk for blockchain systems. Since transactions recorded on a blockchain are generally immutable, it can be difficult to reverse losses resulting from a technical error or security flaw once it has occurred. The permanent loss of digital assets is a possibility due to hacking, smart contract bugs, the theft of private keys, or network attacks. Consequently, cybersecurity audits, code testing, and risk assessments become absolutely essential.

When blockchain platforms operate at an international or cross-border level, complex legal questions regarding jurisdiction arise. In decentralized networks, it can be difficult to determine which country or court possesses the authority to resolve disputes. Compliance becomes even more intricate due to variations in data protection, financial regulation, and taxation laws across different nations. Therefore, for global blockchain-based platforms, it is

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crucial to clearly define the applicable laws, dispute resolution mechanisms, and arbitration provisions.

Furthermore, risks related to data privacy, consumer protection, intellectual property rights, anti-money laundering (AML), and tax compliance can also impact blockchain operations. If a platform fails to safeguard user data or adhere to financial compliance standards, it may face regulatory action.

It is precisely because of these complex risks that many businesses and technology companies are now placing greater emphasis on specialized legal counsel and compliance assessments. Many organizations seek to make their operational models more secure, compliant, and future-ready by consulting with legal experts and advisors specializing in blockchain law, cybersecurity, and financial regulation.

Thus, while blockchain technology offers vast opportunities for innovation and digital transformation, it simultaneously necessitates robust legal strategies, technical security, and continuous compliance management to ensure its successful and secure implementation.

The adoption of blockchain technology in India is growing rapidly and is no longer limited solely to cryptocurrencies. Various industries, government entities, and private enterprises are embracing blockchain as a technology capable of enhancing transparency, security, efficiency, and data reliability. Blockchain is emerging as a critical solution, particularly in sectors requiring robust record management, verification, and multi-party transactions. Several practical use cases have surfaced in India—specifically in scenarios where regulatory risks are relatively low—especially when such applications do not involve activities like raising public investment or token trading.

Supply Chain Management stands as one of the most prominent areas for blockchain application. Companies are utilizing blockchain to maintain secure and transparent records of every stage, from production through to distribution. This facilitates the verification of product authenticity, the identification of counterfeit goods, and the mitigation of fraud. This technology is proving particularly beneficial across the agriculture, pharmaceuticals, food, and logistics sectors. For instance, information regarding a product's origin, transportation, and quality testing can be recorded on a blockchain, thereby enhancing transparency for both consumers and regulatory bodies.

The use of blockchain is also expanding rapidly within the healthcare sector. Hospitals and health management systems are piloting blockchain-based solutions to securely store patient medical records and to facilitate the reliable sharing of data across various institutions. This technology can play a pivotal role in maintaining the integrity of patient data, preventing unauthorized alterations, and boosting the overall efficiency of healthcare services. Furthermore, the secure exchange of digital health records can accelerate treatment processes and foster greater transparency.

Financial institutions, too, are playing a leading role in the adoption of blockchain technology. Banks and financial service providers are deploying blockchain-based systems to streamline and accelerate processes such as payment settlements, cross-border transactions, document verification, and trade finance operations. Compared to traditional banking systems, blockchain can make transaction verification more transparent and less time-consuming.

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In the real estate sector, blockchain is being utilized for property ownership verification and land record management. Securely storing land records and ownership documents on a blockchain can reduce the likelihood of record tampering and assist in mitigating property disputes. Several states in India have also initiated blockchain-based pilot projects for the digitization and verification of land records.

The use of blockchain is also emerging in the fields of Intellectual Property and Digital Rights Management. Distributed Ledger systems are being employed to establish proof of ownership for copyrights, patents, digital art, and creative content. This enables creators and innovators to validate the authenticity of their work and secure better protection against unauthorized use.

A significant characteristic of all these use cases is that they generally do not involve high-risk financial activities such as public fundraising, crypto investments, or token trading. Consequently, regulatory hurdles for such applications are relatively lower, and the government views them positively from the perspective of innovation and digital infrastructure development.

Thus, the application of blockchain technology in India is gradually becoming both practically viable and institutionally acceptable across various industries and public services. In the future, the scope of its application is likely to expand even further, particularly as the legal framework and technical standards become clearer and more mature.

With the increasing adoption of blockchain technology, the number of associated legal disputes is also gradually rising. Although blockchain is widely regarded as a secure, transparent, and tamper-proof system, its usage can nonetheless give rise to various disputes. These disputes typically revolve around fraud, breach of contract, cybercrime, theft of digital assets, investment scams, infringement of intellectual property rights, and issues related to platform operations. Given that the legal framework governing blockchain and digital assets in India is still in a nascent stage of development, the role of courts and regulatory bodies in resolving these disputes has become critically important.

In recent years, the Indian judiciary has demonstrated a growing tendency—in certain cases—to classify digital assets and crypto assets as "property." The significance of this approach is heightened by the fact that once a digital asset is recognized as property, the legal rights pertaining to its ownership, transfer, loss, and unlawful acquisition become significantly clearer. This clarity can assist aggrieved parties in seeking legal recourse through both civil and criminal channels.

In cases involving blockchain-related fraud, victims may file civil suits in Indian courts. Such cases may involve claims for breach of contract, recovery of investment losses, asset recovery, or monetary compensation. Furthermore, if a case involves fraud, cybercrime, data theft, hacking, or financial crimes, criminal complaints may also be lodged. The provisions of the Indian Penal Code, cybercrime laws, and the Information Technology Act, 2000, may be applicable in such instances.

Additionally, if the activities of a blockchain or crypto platform are found to be detrimental to investor interests, financial stability, or in violation of anti-money laundering regulations, the relevant regulatory authorities may initiate investigations. The Reserve Bank of India (RBI),

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the Securities and Exchange Board of India (SEBI), the Financial Intelligence Unit-India (FIU-IND), and various enforcement agencies may intervene depending on the specific circumstances. Regulatory investigations may entail the analysis of banking records, digital wallets, transaction histories, and network activity logs. A key legal question surrounding blockchain disputes relates to jurisdiction. Since blockchain networks are global and decentralized, determining which country's laws govern a dispute—and which court possesses the authority to adjudicate it—can be a complex task. For this reason, establishing clear Terms of Use, dispute resolution provisions, and arbitration clauses is considered paramount for blockchain-based businesses and platforms.

Digital evidence also plays a crucial role in cases involving the recovery of digital assets and cyber fraud. Transaction records, wallet addresses, smart contract data, and blockchain analysis reports can be presented as evidence before courts and investigative agencies. Given that this field is complex from both technical and legal perspectives, many organizations and affected parties seek the assistance of specialized legal advisors and experts with expertise in digital asset disputes.

Thus, disputes associated with blockchain are not merely technical issues; rather, they impact a multitude of legal domains, including contract law, cyber law, financial regulation, data protection, and intellectual property rights. Effective legal strategies, clear contractual frameworks, and robust compliance systems play a pivotal role in mitigating the risks associated with such disputes.

The future of blockchain law in India appears to be evolving toward a balanced, progressive, and multi-layered regulatory framework. The Government of India and various regulatory bodies recognize that blockchain technology holds the potential to bring about significant transformations in the realms of the digital economy, administrative efficiency, financial innovation, and data management. Consequently, the primary objective of policymakers is to develop a legal framework that, on one hand, fosters technological innovation and investment, while simultaneously safeguarding financial stability, consumer protection, cybersecurity, and national interests.

India's current approach appears to lean toward "Balanced Regulation," rather than opting for either a complete ban or absolute deregulation. The government acknowledges that numerous applications of blockchain technology can be beneficial for the public interest and digital development—particularly in sectors such as governance, supply chain management, healthcare, education, and digital identity. Concurrently, policymakers also recognize the necessity of clear regulatory mechanisms to mitigate the risks associated with crypto assets, Decentralized Finance (DeFi), and cross-border digital transactions. For this reason, it is highly probable that more defined and institutionalized legislation regarding blockchain and digital assets will emerge in India in the near future.

Globally, too, regulatory standards for blockchain and digital assets are evolving rapidly. Policies adopted by Europe, the United States, Singapore, and other major economies are likely to influence the trajectory of Indian legislation. India is actively participating in international forums discussing matters related to digital assets, cybersecurity, data protection, and financial oversight. In particular, the collaborative approach toward crypto assets and blockchain regulation currently taking shape within the G20 and other global economic forums is expected to have a discernible impact on India's future policies.

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Blockchain law in India is unlikely to evolve solely through the enactment of a single, standalone statute; rather, it will continue to mature through the combined impact of policy updates, judicial precedents, taxation regulations, data protection laws, and sector-specific regulations. The role of the courts will also be of paramount importance, as they will be tasked with interpreting how traditional legal principles apply to new digital and decentralized systems. Judicial perspectives on issues such as smart contracts, the legal status of digital assets, data ownership, and cyber liability could significantly shape the future legal framework.

Furthermore, as data protection and cybersecurity laws in India become more robust, compliance expectations for blockchain platforms are also set to rise. In the future, it is likely that blockchain-based businesses will be required to adhere to stricter standards regarding transparency, user protection, risk disclosure, and technical audits. For platforms operating within the financial sector, regulations concerning Anti-Money Laundering (AML), Know Your Customer (KYC) protocols, and tax compliance may become even more stringent.

In this evolving regulatory landscape, businesses and organizations that prioritize compliance, transparency, and responsible governance from the very outset will be best positioned for success. A robust legal framework, clear usage policies, cybersecurity measures, and data protection mechanisms will not only mitigate regulatory risks but also play a pivotal role in fostering trust among investors and users.

Overall, the future of blockchain law in India appears to be moving in a structured and collaborative direction, rather than a restrictive one. If proper synergy can be established between policy formulation, technological innovation, and regulatory balance, India stands poised to play a significant global role in the realms of the blockchain-based digital economy and public technology infrastructure.

Suggestions

1. India should formulate a comprehensive and dedicated blockchain regulatory framework to reduce legal uncertainty and encourage responsible innovation.
2. Clear distinctions should continue to be maintained between blockchain technology and speculative crypto assets to promote non-financial blockchain applications.
3. Regulatory authorities should issue sector-specific compliance guidelines for industries adopting blockchain technology.
4. Businesses using blockchain platforms should implement strong cybersecurity measures, data protection standards, and compliance systems.
5. Legal recognition and enforceability standards for smart contracts should be clarified through legislative reforms and judicial interpretation.
6. Government agencies should encourage blockchain research, innovation, and public-private collaboration for digital governance projects.
7. Awareness and training programs should be introduced for legal professionals, regulators, businesses, and developers regarding blockchain compliance and risk management.
8. International cooperation and alignment with global regulatory standards should be strengthened to address cross-border blockchain transactions and digital asset governance.

CONCLUSION

Blockchain technology represents a transformative digital innovation capable of reshaping governance, financial systems, data management, and public infrastructure in India. The Indian legal framework currently regulates blockchain through a combination of existing laws relating to information technology, taxation, anti-money laundering, cybersecurity, data protection, and financial regulation rather than through a single codified statute. While blockchain technology itself is not prohibited in India, its legal treatment depends largely on the nature of its application and the risks associated with financial activities, digital assets, and decentralized systems.

India's regulatory approach reflects an attempt to balance innovation with financial stability, consumer protection, and national security concerns. Government institutions and regulatory bodies are increasingly supporting blockchain adoption in areas such as governance, healthcare, supply chain management, land records, and digital identity systems. At the same time, stricter scrutiny is being applied to cryptocurrency-related activities, tokenized investments, and decentralized financial services.

As blockchain adoption expands, legal challenges concerning smart contracts, jurisdiction, cybersecurity, data privacy, taxation, and dispute resolution are likely to become more prominent. Therefore, businesses and developers must prioritize legal compliance, transparency, cybersecurity, and responsible governance practices. The future of blockchain law in India will continue to evolve through judicial interpretation, policy reforms, technological advancements, and international regulatory developments. With a balanced and progressive legal framework, India possesses the potential to emerge as a significant global leader in blockchain-based digital governance and innovation.

REFERENCES

Books

- Antonopoulos, A. M. (2017). *Mastering Bitcoin: Programming the open blockchain* (2nd ed.). O'Reilly Media.
- Drescher, D. (2017). *Blockchain basics: A non-technical introduction in 25 steps*. Apress.
- Narayanan, A., Bonneau, J., Felten, E., Miller, A., & Goldfeder, S. (2016). *Bitcoin and cryptocurrency technologies: A comprehensive introduction*. Princeton University Press.
- Tapscott, D., & Tapscott, A. (2018). *Blockchain revolution: How the technology behind Bitcoin and other cryptocurrencies is changing the world*. Portfolio Penguin.
- Wright, A., & De Filippi, P. (2018). *Blockchain and the law: The rule of code*. Harvard University Press.

Journal Articles

- Atzori, M. (2017). Blockchain technology and decentralized governance: Is the state still necessary? *Journal of Governance and Regulation*, 6(1), 45–62.
- Casino, F., Dasaklis, T. K., & Patsakis, C. (2019). A systematic literature review of blockchain-based applications: Current status, classification and open issues. *Telematics and Informatics*, 36, 55–81.
- Christidis, K., & Devetsikiotis, M. (2016). Blockchains and smart contracts for the Internet of Things. *IEEE Access*, 4, 2292–2303.
- Crosby, M., Pattanayak, P., Verma, S., & Kalyanaraman, V. (2016). Blockchain technology: Beyond Bitcoin. *Applied Innovation Review*, 2, 6–19.

Blockchain Technology in the Indian Legal Context: Regulatory Framework, Compliance, and Emerging Challenges

- Iansiti, M., & Lakhani, K. R. (2017). The truth about blockchain. *Harvard Business Review*, 95(1), 118–127.
- Kshetri, N. (2018). Blockchain's roles in meeting key supply chain management objectives. *International Journal of Information Management*, 39, 80–89.
- Lemieux, V. L. (2016). Trusting records: Is blockchain technology the answer? *Records Management Journal*, 26(2), 110–139.
- Pilkington, M. (2016). Blockchain technology: Principles and applications. *Research Handbook on Digital Transformations*, 225, 225–253.
- Swan, M. (2015). Blockchain: Blueprint for a new economy. *Journal of Financial Transformation*, 41, 94–101.
- Yermack, D. (2017). Corporate governance and blockchains. *Review of Finance*, 21(1), 7–31.

Reports and Government Documents

- Government of India, Ministry of Finance. (2022). Taxation provisions relating to virtual digital assets under the Finance Act, 2022. Government of India.
- NITI Aayog. (2020). Blockchain: The India strategy—Towards enabling ease of business, ease of living, and ease of governance. Government of India.
- Reserve Bank of India. (2023). Annual report 2022–23. RBI Publications.
- Ministry of Electronics and Information Technology (MeitY). (2021). National strategy on blockchain. Government of India.
- Financial Intelligence Unit–India (FIU-IND). (2023). Guidelines for reporting entities under PMLA relating to virtual digital assets. Government of India.

Case Laws

- Internet and Mobile Association of India v. Reserve Bank of India, (2020) 10 SCC 274.
- Shreya Singhal v. Union of India, (2015) 5 SCC 1.
- K.S. Puttaswamy v. Union of India, (2017) 10 SCC 1.
- Anvar P.V. v. P.K. Basheer, (2014) 10 SCC 473.
- Faheema Shirin R.K. v. State of Kerala, AIR 2020 Ker 1.

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Conflict of Interest

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