
ENFORCEABILITY OF DECENTRALISED ARBITRAL AWARDS: LEGAL HURDLES AND PROSPECTS OF REFORMS IN INDIA'S ARBITRATION FRAMEWORK

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INTRODUCTION

“In the DeFi world, trust is algorithmic, until it breaks. Arbitration is the human patch that keeps the system fair.” - Federico Ast, Co-Founder, Kleros

The Arbitration and Conciliation Act, 1996, essentially works as the basic link in the pro-arbitration system in India, drawing strength from three basic tenets: party autonomy, identifiable tribunals, and awards delivered at a designated seat that could be enforced subject to limited judicial review under Parts I and II. This structure, in sync with the New York Convention, has formed the bedrock for efficient cross-border dispute resolution for decades, premised on procedural certainty and a territorial link.

However, the rapid evolution of blockchain technology subverts this construct by making possible decentralized justice systems-such as **Kleros** and **Jur-** which render arbitral awards. It works by way of distributed consensus rather than designated neutral arbiters. These innovations, powered by smart contracts and cryptoeconomic incentives, promise ostensibly borderless and low-cost adjudication for the growing ecosystem of digital transactions ranging from freelance bounties to DAO governance disputes.¹

Some of blockchain's essential characteristics- namely, decentralization, immutability, and pseudonymity- create significant enforceability challenges within the territorial and procedural boundaries of the Act, making such awards vulnerable to nonrecognition and setting aside.²

This essay argues that pseudonymity and procedural delocalisation are the most

¹ Magdalena Łągiewska, *New Technologies in International Arbitration: A Game-Changer in Dispute Resolution?*, 37 *Int'l J. Semiotics L.* 851, 855-58 (2024).

²Marco Giacalone, *AI and the Future of Private Dispute Resolution Mechanisms* (2025) (forthcoming in Amy J. Schmitz, Pietro Ortolani & Marco Giacalone (eds.), *The Cambridge Handbook on AI and Civil Dispute Resolution* (Cambridge Univ. Press)), SSRN <https://ssrn.com/abstract=5083207>.

important impediments to the enforcement of decentralized awards in India, but can be surmounted through specific reforms: the recognition of "digital seats" and the adoption of hybrid risk frameworks, thereby aligning India's framework with global innovations.

DECENTRALISATION OF ARBITRAL AWARDS: A GLOBAL AND INDIAN PERSPECTIVE

❖ WORKING OF BLOCKCHAIN BASED DECENTRALISED DISPUTE RESOLUTION MODELS

Blockchain technology has given rise to innovative dispute-resolution models, including decentralized systems such as Kleros, which produce outcomes through smart contracts and collective decision-making by network participants rather than through deliberation by individually appointed arbitrators.³ These mechanisms, while capable of efficiently addressing common digital disputes-such as those arising from online freelance engagements or decentralised autonomous organisation (DAO) governance-meet with formidable barriers within the current regime of the Arbitration and Conciliation Act, 1996. ODR could potentially resolve over **50%** e-commerce disputes in India, more so with the use of technologies proposed.⁴

Decentralised awards usually originate on a smart contract on a blockchain, with funds kept in escrow until obligations are met. A dispute arises- for instance, work is submitted but does not meet the standards; and thus a decision process should be activated by a panel of online jurors. Participants stake native tokens, such as **Pinakion (PNK)**, to serve, risking economic loss for possible rewards. The random selection of jurors in proportion to stake reviews the submissions and then votes. Rewards for aligning with the majority are given, while penalties for divergence are imposed, taking advantage of the concept of the **Schelling point** whereby the fairest outcome is what rational actors coordinate on. In this way, the award results from cryptoeconomic consensus rather than from the reasoned determination of named, individually accountable arbitrators.⁵

³ Zhuk, A., 2023. *Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system*. International Cybersecurity Law Review, 4(3), pp.351-364.

⁴ NITI Aayog, Designing the Future of Dispute Resolution: The ODR Policy Plan for India from 2020-2025, at 45-52 (2020), <https://www.niti.gov.in/sites/default/files/2023-03/Designing-The-Future-of-Dispute-Resolution-The-ODR-Policy-Plan-for-India.pdf> (last visited Jan. 3, 2026).

⁵ Kadioglu Kumtepe, C.C., 2020. A brief introduction to blockchain dispute resolution. *J. Marshall LJ*, 14,

Authors like Ast⁶ and Deffains⁷ recognize three key primitives that form the backbone of such schemes: community-driven rules designed to ensure procedural fairness, financial rewards designed to incentivize diligent and honest participation, and decisions based on group notions of justice. This aligns with UNCITRAL's 2025 Blockchain notes⁸, emphasizing consensus as a procedural innovation.

Kleros-like systems have indeed been put to work in real-world settings; reportedly, over 1,500 disputes were decided on the Kleros system, from copyright infringement to event verification, and these systems are well-suited for low-value, time-sensitive disputes in which traditional arbitration is frequently too slow and too expensive. From an Indian perspective, these attributes accord with the policy objective of improving access to justice in digital markets, but they conflict with statutory concepts that presuppose a more traditional arbitral framework.⁹

❖ DOCTRINAL TENSIONS UNDER THE INDIAN ACT

The enforcement of decentralised awards under the Indian Act raises a number of doctrinal and practical difficulties. As explained, the Act proceeds on the basis that an arbitral award emanates from a process before identifiable arbitrators who sit in a particular legal jurisdiction. Sections 34-36, setting aside and enforcing domestic awards, assume a system where parties can identify the tribunal itself, contest the constitution of the tribunal, and challenge its members for alleged bias or procedural misconduct.

The Supreme Court in the 2025 *Gayatri Balasamy v. ISG Novasoft Technologies Ltd.*¹⁰ judgement while explaining the scope of Section 34¹¹, clarified that courts can exercise limited modifying power in cases of substantial injustice while setting aside arbitral awards. However, the cryptographic immutability of blockchain-derivative awards brings with it a peculiar limitation; even such constrained judicial modification is impossible, considering any such

p.138.

⁶ Ast, F., George, W., Kamalova, J., Sharma, A. and Aouidef, Y., 2023. *Decentralized justice: state of the art, recurring criticisms and next-generation research topics*. *Frontiers in Blockchain*, 6, p.1204090.

⁷ Aouidef, Y., Ast, F. and Deffains, B., 2021. *Decentralized Justice: A Comparative Analysis of Blockchain Online Dispute Resolution Projects*. *Front. Blockchain* 4: 564551. doi: 10.3389/fbloc.1.

⁸ UNCITRAL Secretariat, Guidance Note on Legal Issues Relating to the Use of Distributed Ledger Technology in Trade, ¶¶ 1-10, U.N. Doc. A/CN.9/WG.III/WP.XX (July 7-18, 2025), <https://uncitral.un.org/sites/uncitral.un.org/files/1222.pdf>.

⁹ Jindal, T., 2024. *Court vs. Code: Why India Needs Blockchain Arbitration to Survive the Decentralised Era*. *GNLU SRDC ADR Mag.*, 5, p.18.

¹⁰ *Gayatri Balasamy v. ISG Novasoft Technologies Ltd.* 2025 INSC 605.

¹¹ Arbitration and Conciliation Act, 1996, § 34(2)(b)(ii), No. 26, Acts of Parliament, 1996 (India).

modification of hashed records breaks the chain and renders the entire chain invalid. This inflexibility increases the tendency toward a total set-aside under Section 34(2) without any remedial adjustment, thus demonstrating the apparent tension between established notions of finality in enforcement and the abiding permanence characteristic of decentralized systems.

Part II, which incorporates the New York Convention, does so on the assumption of a territorial "seat" and an identifiable tribunal, as reflected in **Article V(1)(a)**¹², with its reference to the law of the country where the award was made.¹³

Decentralised awards are made on distributed ledgers that have no conventional seat, with decision-makers being pseudonymous or entirely anonymous. This secrecy leads to enhanced difficulty in verifying independence and impartiality, potentially inviting judicial scepticism or rejection on grounds of procedural unfairness, especially in those cases where a court is asked to enforce such a result as an arbitral award.

Recent Indian jurisprudence highlights the courts' awareness of arbitral process ambiguity. In *Cox and Kings Limited v. SAP India Private Limited*¹⁴, the Supreme Court set aside an award partly due to ambiguity relating to the applicable arbitration arrangement and process. Similarly, a decentralised process, whereby a constantly changing group of anonymous token holders decides a dispute, may be considered as being in contradiction with the parties' understanding of the Act and with the imperative procedural requirements, including that on challenge to arbitrators.

More important, the direct financial nexus between the jurors and the outcome-as they will gain or lose tokens depending on whether they align with the majority-raises potential conflicts of interest and unfair influence concerns. Such features have the potential for being in contravention of public policy as defined in **Section 34(2)(b)(ii)**¹⁵ or attracting the "patent illegality" doctrine as developed in *Associate Builders v. Delhi Development Authority*¹⁶, more so in domestic awards where review is wider.

¹² Convention on the Recognition and Enforcement of Foreign Arbitral Awards, art. V(1)(a), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3.

¹³ Senapati, P. and Anand, P., 2025. *When Codes Meet Courtrooms-Examining the Enforceability of Blockchain Based Arbitral Awards under the New York Convention and Indian Law*. Ind. Arb. L. Rev., 7, p.95.

¹⁴ Cox and Kings Limited v. SAP India Private Limited 2023 INSC 1051.

¹⁵ Arbitration and Conciliation Act, 1996, § 34(2)(b)(ii), No. 26, Acts of Parliament, 1996 (India).

¹⁶ Associate Builders v. Delhi Development Authority 2015 (3) SCC 49.

At the enforcement stage for foreign-derived decentralised awards, **Section 48**¹⁷ would also be subjected to scrutiny of due process and public policy, with identity verification issues magnified by the risk of impersonation or sybil attacks in digital contexts lacking secure, non-fungible identifiers and conflicting jurisprudence on issues of arbitrability. Furthermore, public policy across High Courts may perpetuate uncertainty, eroding the Act's character as a predictable and reliable legal regime - a characterization recently pronounced by the *Vidya Drolia v. Durga Trading Corporation*¹⁸ judgment. These tensions manifest as specific hurdles discussed below.¹⁹

MAJOR HURDLES TO ENFORCEABILITY

Building on the doctrinal tensions discussed above, there exist serious obstacles to the enforcement of decentralized arbitral awards through blockchain platforms like Kleros and Jur under the governing regimes such as the Arbitration and Conciliation Act, 1996, of India and the New York Convention.

The first big hurdle is the lack of a fixed seat. **Article 1 of the New York Convention**²⁰ insists that recognition of awards shall be granted within the territory of a contracting state.²¹ Awards created on the blockchain lack an identifiable seat, making them practically stateless, for all practical reasons, and therefore difficult to enforce extraterritorially. Platforms often fail to designate a seat, which goes against established legal expectations.

A further major concern is adherence to formal procedural requirements. **Article IV(1)(a) of the New York Convention**²²-and, accordingly, **Article 31(1) of the UNCITRAL Model Law**²³-requires that the original award is made out in writing and signed. To the extent that

¹⁷ Arbitration and Conciliation Act, 1996, §48, No. 26, Acts of Parliament, 1996 (India).

¹⁸ *Vidya Drolia v. Durga Trading Corporation* 2021 2 SCC 1.

¹⁹ Samal, M., 2024. *Addressing Challenges in the Enforcement of International Arbitral Awards Rendered in Smart Contract Disputes on the Blockchain*. Indian Rev. Int'l Arb., 4, p.25.

²⁰ Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. I, June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3, <https://www.newyorkconvention.org/english>.

²¹ Ren, R., 2024. *The dichotomy between jurisdiction and admissibility in international arbitration*. International & Comparative Law Quarterly, 73(2), pp.417-446.

²² Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. IV(1)(a), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3, <https://www.newyorkconvention.org/english>. Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. IV(1)(a), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3, <https://www.newyorkconvention.org/english>.

²³ Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. IV(1)(a), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3, <https://www.newyorkconvention.org/english>. Convention on the Recognition and Enforcement of Foreign Arbitral Awards art. IV(1)(a), June 10, 1958, 21 U.S.T. 2517, 330 U.N.T.S. 3, <https://www.newyorkconvention.org/english>.

crypto signatures might qualify as electronic under the **Information Technology Act of India, Section 72²⁴**, and **Section 10A²⁵**, the use of pseudonymous, stake-based votes by jurors (e.g., via PNK tokens) falls far short of any fairness test or disclosure of the identity of disputing parties, thus risking denial on public policy grounds under **Section 34(2)(b)(ii)**.

Procedural misalignments add to the enforcement problems. Random selection of jurors based on stake and secret voting, based on economic incentives rather than explicit rules of law, is contrary to the **UNCITRAL Article 28²⁶** preference for a governing law or for *ex aequo et bono*. The jurisprudence in India, starting with *Cox and Kings v. SAP India*²⁷, where the process was not explicit, and *Associate Builders*²⁸, where illegality was explicit, suggests that courts would refuse to enforce awards tainted by financial motives or undeclared processes.

Pseudonymity also produces jurisdictional gaps. The parties are represented only by wallet addresses, making the application of traditional tests such as *lex loci contractus* or minimum contacts difficult to apply, while misrepresentation without any robust verification poses risks. In the absence of legislative reform, on-chain automatic enforcement is likely to terminate at the boundary of the blockchain, thereby restricting utility to purely crypto-centric disputes.²⁹

WAY FORWARD

Targeted reforms could address these challenges and allow a more constructive integration of decentralised mechanisms into India's arbitration landscape. The amendments could be made to **Section 2(1)(c)** to expressly recognize awards rendered through digitally constituted tribunals or "digital seats," anchored to blockchain timestamps and protocol governance rules, taking inspiration from instruments such as the **United Kingdom's 2021 Digital Dispute Resolution Rules³⁰**, which provide for anonymous collective adjudication within predefined parameters. The procedural flexibility implicit in **Section 19³¹** may be clarified to permit a

²³ Model Law on Int'l Com. Arbitration art. 31(1), U.N. Doc. A/40/17, annex I (June 21, 1985), amended by U.N. Doc. A/61/17, annex I (2006), https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-54671_ebook.pdf.

²⁴ Information Technology Act, 2000, §7, No. 21, Acts of Parliament, 2000 (India).

²⁵ Information Technology Act, 2000, §7, No. 21, Acts of Parliament, 2000 (India).

²⁶ Model Law on Int'l Com. Arbitration art. 28, U.N. Doc. A/40/17, annex I (June 21, 1985), amended by U.N. Doc. A/61/17, annex I (2006), https://uncitral.un.org/sites/uncitral.un.org/files/media-documents/uncitral/en/06-54671_ebook.pdf.

²⁷ Supra Note 9.

²⁸ Supra Note 10.

²⁹ Supra Note 6.

³⁰ UK Jurisdiction Taskforce, Digital Dispute Resolution Rules(2021).

³¹ Arbitration and Conciliation Act, 1996, § 19, No. 26, Acts of Parliament, 1996 (India).

tribunal or the courts, as appropriate, to draw upon decentralised panels as expert-like bodies for addressing particular issues, such as determining “reasonable performance” in technology-intensive contracts, without delegation of the adjudicatory function as a whole.

A systemic, risk-based approach could differentiate between: (i) purely digital disputes, where direct enforceability of decentralised outcomes may be acceptable with minimal judicial intervention; (ii) hybrid disputes involving both digital and offline elements, where a conventional arbitrator may adopt the recommendation of a decentralised panel, as in the reported Mexican rental dispute which integrated Kleros inputs; and (iii) high-stakes or public interest matters, where recourse to traditional arbitration and broader judicial safeguards is essential.

International guidance- including the work during 2022 of the United Nations Commission on International Trade Law on blockchain and electronic commerce-provides a basis for harmonising such reforms with emerging global standards and developing a coherent “digital jurisprudence” that surmounts the limitations of the New York Convention in this context. The decentralized prizes from an Indian perspective express the mismatch between a pre-digital statutory framework and an economy increasingly characterized by rapid, borderless transactions. In the absence of legislative adaptation, courts are likely to remain hesitant to treat such outcomes as arbitral awards for the purposes of the Act, confining their utility to narrow, contractual, or platform-specific contexts.

CONCLUSION AND RECOMMENDATIONS

BDR uses distributed ledger technology and smart contracts to enable on-chain, decentralized dispute adjudication. Various platforms develop a suite of game-theoretic incentives, crowd wisdom, and collective intelligence with anonymous voting mechanisms. These approaches put in question traditional notions of judicial legitimacy and procedural fairness.

Empirical evidence suggests that decentralized dispute resolution is viable, and its viability is further demonstrated by the data on growing lack of public confidence in courts, inadequate access to justice compared to ADR alternatives, and huge backlogs in enforcement. Smart contracts that are self-executing and carry an inbuilt mechanism for dispute resolution help address these lacunae at the system level-relevant especially for India.

Despite this potential, BDR also shows some significant limitations. The technology is suitable primarily for simple, low-complexity disputes and fails to satisfy core requirements of the Arbitration and Conciliation Act, including **Section 34**³² due process protections, **Section 12**³³ impartiality standards, and the parties' right to be heard. These shortcomings reflect broader concerns surrounding pseudonymity and procedural delocalisation discussed throughout the analysis below.

There is a dilemma in regulatory design. Strict legal frameworks risk compromising decentralization, whereas a regulatory vacuum creates a risk of Section 34 public policy issues. Soft-law solutions such as non-legislative guidelines by UNCITRAL and codes of conduct by arbitration institutions-offer the best route for incorporating BDR without the sacrifice of autonomy.

BDR shows distinct advantages, in particular much better cybersecurity compared to the classic systems of online dispute resolution. Currently, it is best utilized as a complement to traditional arbitration in cases of low-value disputes. Due to platform heterogeneity, uniform regulation is impossible; empirical research should be carried out concerning effectiveness, user satisfaction, and enforcement outcomes.

❖ RECOMMENDATIONS

- I. Amendments to the Arbitration and Conciliation Act to provide for timestamp-authenticated "digital seats" under Section 2(1)(c) for disputes of a value less than ₹5 lakhs;
- II. Develop Hybrid models using anonymous juror panels serve as expert witnesses under Section 19 in traditional seated arbitration;
- III. Harmonization of BDR with limitations under the New York Convention through soft-law instruments led by UNCITRAL;
- IV. Collaboration among stakeholders involving arbitration councils, platforms, and non-governmental organizations;

³² Arbitration and Conciliation Act, 1996, § 34, No. 26, Acts of Parliament, 1996 (India).

³³ Arbitration and Conciliation Act, 1996, §12, No. 26, Acts of Parliament, 1996 (India).

- V. Empirical research comparing BDR outcomes to traditional arbitration; specifically how often blockchain decisions get overturned under Section 34 to standard awards; to determine what works best in practice.

Thus, BDR emerges as a valuable adjunct to India's arbitration ecosystem, however, appropriately, calibrated regulation is required to balance technological innovation with essential fairness safeguards.

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