



The Indian Journal for Research in Law and Management

Open Access Law Journal – Copyright © 2026

Editor-in-Chief – Dr. Muktai Deb Chavan; Publisher – Alden Vas; ISSN: 2583-9896

This is an Open Access article distributed under the terms of the Creative Commons Attribution-Non-Commercial-Share Alike 4.0 International (CC-BY-NC-SA 4.0) License, which permits unrestricted non-commercial use, distribution, and reproduction in any medium provided the original work is properly cited.

BLOCKCHAIN MEDIATION: A NOVEL APPROACH TO RESOLVING SMART CONTRACT DISPUTES

~Prathamesh Wagh

1. ABSTRACT

As someone who has been closely following the rapid advancements in blockchain technology, I can't help but be fascinated by the emergence of smart contracts. These innovative digital agreements are pushing the envelope of what's possible in the digital age, and I believe they have the potential to transform the way we conduct transactions and manage contracts.

Unlike traditional e-contracts, which are essentially digital versions of paper-based agreements, smart contracts are a whole different beast. They are essentially computer code that automatically execute the terms of a contract when certain predefined conditions are met. This automation is a game-changer, as it eliminates the need for human intervention and reduces the potential for errors or delays. But what really sets smart contracts apart is their decentralized nature. They are built on the foundation of the blockchain, a distributed ledger that is spread across a network of computers rather than being centralized in a single system. This decentralization is a key factor in making smart contracts nearly unhackable. The blockchain's structure makes it incredibly difficult for malicious actors to tamper with the code or the data stored within it.

1

Moreover, the blockchain's immutability is a crucial aspect of smart contracts. Once deployed, the terms of a smart contract are stored immutably on the blockchain, meaning that the code generally cannot be altered. This "append-only" nature of distributed ledgers allows parties to add information but not modify it, fostering data safety and integrity. By leveraging the

¹ Lewis, A. (2018). *The Basics of Bitcoins and Blockchains: An Introduction to Cryptocurrencies and the Technology that Powers Them*.

inherent security features of blockchain, organizations can safeguard sensitive information and reduce the likelihood of data breaches or unauthorized access.

Furthermore, blockchain-based smart contracts have the potential to create efficiencies and resolve issues of transactional trust². By automating the execution of contractual terms, smart contracts eliminate the need for intermediaries and reduce the risk of disputes arising from ambiguous or incomplete agreements. This trust-building aspect of smart contracts is particularly valuable in industries where parties may not have a long-standing relationship or may be geographically dispersed.

However, it's important to note that smart contracts are not necessarily "smart" in the traditional sense. They require careful programming and attention to detail to ensure that they function as intended. ³The legal status of smart contracts is also still evolving, and there are ongoing discussions about their enforceability and regulatory implications. The immutable nature of blockchain and the complexity of smart contract code have given rise to new challenges in resolving disputes. Traditional legal frameworks and court systems may struggle to effectively address the unique characteristics of smart contract conflicts. The decentralized and technical nature of smart contracts can make it difficult for non-technical parties, such as judges or arbitrators, to fully comprehend the intent and terms of the agreement. Furthermore, the immutable nature of blockchain makes it challenging to amend or clarify smart contracts once they are deployed. In light of these challenges, new approaches to dispute resolution will be necessary to effectively manage smart contract conflicts.

Alternative dispute resolution methods, such as mediation, may offer more flexible and tailored solutions compared to traditional court proceedings. Mediation can help the disputing parties navigate the technical complexities of the smart contract code and work towards a resolution that preserves the underlying intent of the agreement, in a more efficient and cost-effective manner. We will discuss potential solutions to these challenges will be discussed.

² Tapscott, D., & Tapscott, A. (2016). *Blockchain Revolution: How the Technology Behind Bitcoin Is Changing Money, Business, and the World*.

³ *Solidity Programming Essentials: A Beginner's Guide to Build Smart Contracts for Ethereum and Blockchain*.

2. INTRODUCTION

The rapid growth of blockchain technology and the widespread adoption of smart contracts have transformed the landscape of commercial transactions and dispute resolution.⁴ Smart contracts are self-executing digital agreements encoded on the blockchain which offer the promise of increased efficiency, transparency, and security. However, the immutable nature of blockchain and the complexity of smart contract code have also given rise to new challenges in resolving disputes.⁵

There are numerous definitions of smart contracts. The U.S. National Institute of Standards and Technology describes a smart contract as a ‘collection of code and data (sometimes referred to as functions and state) that is deployed using cryptographically signed transactions on the blockchain network.’⁶

The core concept of smart contracts involves encoding a contract as a software program. This code executes for the contract's duration and automatically triggers specific actions, such as financial transactions, when predefined conditions are met. This process leverages blockchain technology and incorporates contract ware, which enables the transformation of traditional analog contracts into digital programs. The complexity and technical maturity of blockchain and contractware determine how detailed a contractual relationship can be represented digitally and which contract parameters are controlled or covered by the smart contract.⁷

As the global economy becomes increasingly digitized and decentralized, the need for innovative and adaptable dispute resolution mechanisms has never been more pressing. Smart contracts, with their ability to automate contractual agreements and reduce the need for intermediaries, have the potential to streamline various industries, from finance to supply chain management⁸. Yet, the very characteristics that make smart contracts appealing – their self-

⁴ The Use of Blockchain Mediation in Resolving Smart Contract Disputes at <https://www.researchgate.net/publication/373693211>

⁵ Blockchain, Smart Contracts and Alternative Dispute Resolution <https://www.gide.com/en/news/blockchain-smart-contracts-and-alternative-dispute-resolution>

⁶ Dylan Yaga and others, ‘Blockchain Technology Overview’ (NISTIR Internal/Interagency Report 820254, 2018).

⁷ Eliza Mik, ‘Smart Contracts: A Requiem’ (2019) *Journal of Contract Law* 2; Klaus Eschenbruch and Robert Gerstberger, ‘Smart Contracts’ (2018) *Neue Zeitschrift für Baurecht*

⁸ Jiang, X., & Wang, Y. (2018). An exploratory study of smart contracts in the Ethereum blockchain. 3(2), 45-62.

executing nature and the decentralized structure of blockchain – also present unique challenges when disputes arise.

Coding errors or unintended consequences in smart contract code can lead to unexpected contract execution, potentially causing financial losses or other adverse outcomes for the parties involved. Modifying or terminating a smart contract can be difficult, as the immutable nature of blockchain makes it challenging to override or cancel an automated contract, even when the original contractual agreement no longer reflects the parties' intentions due to changing circumstances or evolving business needs. Moreover, the decentralized structure of blockchain can complicate the determination of liability and the applicable legal jurisdiction in smart contract disputes, making it a complex and time-consuming process to identify the responsible parties and the appropriate legal framework to address the conflict.⁹

3. THE ROLE OF MEDIATION IN SMART CONTRACT DISPUTES

As smart contracts and blockchain technology continue to revolutionize the way we conduct business transactions, the need for effective dispute resolution mechanisms has become increasingly crucial. Traditional court systems, designed for a pre-digital era, may struggle to interpret the technical language of smart contracts and lack the specialized knowledge required to navigate the intricacies of blockchain technology¹⁰. The anonymity and decentralization of blockchain can also make it difficult for courts to establish jurisdiction and determine the applicable law, further complicating the dispute resolution process. Therefore the Traditional legal frameworks and court systems may struggle to effectively address the unique characteristics of smart contract conflicts .

Regrettably, the existing judicial system is markedly slow and inefficient. The burdensome costs associated with extensive discovery, exorbitant fees for expert witnesses, and the significant time and financial resources required to educate judges in technological principles and smart contracts collectively contribute to the deficiencies of effective smart contracts litigation..

Given these limitations, alternative dispute resolution (ADR) mechanisms, such as mediation,

⁹ Cong, L. W., & He, Z. (2019). Blockchain disruption: Blockchain technology as a disruptive force for business model innovation. 32(5)

¹⁰ Hewa, T., Yliantila, M., & Liyanage, M. (2020). Smart contracts: Opportunities and challenges.

have emerged as viable options that offer several advantages. Mediation, in particular, has the potential to provide a more flexible and specialized approach to resolving smart contract disputes, leveraging the expertise of neutral third parties who can help the parties reach a mutually acceptable settlement. ¹¹

One of the primary advantages of mediation in smart contract disputes is its ability to preserve business relationships. Smart contracts are often used to facilitate ongoing business relationships between parties, and the adversarial nature of litigation can strain these relationships. Mediation, on the other hand, encourages the parties to find mutually acceptable solutions, allowing them to maintain their working relationship and potentially explore creative resolutions that may not be available through traditional legal channels.

Another key benefit of mediation in this context is the ability to ensure compliance and enforceability of the settlement agreement. Smart contracts can be programmed to automatically execute the terms of a mediated settlement, reducing the risk of future disputes and ensuring that the parties fulfill their obligations. This level of integration between the mediation process and the smart contract itself can provide a seamless and efficient way to resolve disputes.

The transparency and data integrity provided by blockchain technology can also enhance the mediation process. By storing the mediated agreement on the blockchain, the parties can be assured of the security and immutability of the record, addressing concerns around privacy and data tampering¹². Additionally, the decentralized nature of blockchain can make the mediation process more accessible and globally available, creating a truly universal judicial system for smart contract disputes.

Furthermore, the integration of AI-powered tools can significantly improve the efficiency and effectiveness of the mediation process. These tools can analyze communication patterns, predict outcomes, and suggest negotiation strategies to help the parties reach mutually beneficial agreements. ¹³This can be particularly valuable in the context of smart contract

¹¹ Mediation: an effective way of resolving blockchain disputes
<https://wandsworthmediation.co.uk/mediation-blockchain-disputes/>

¹² Ortolani, P. (2019). Resolving Smart Contract Disputes Through Blockchain Arbitration. *Arbitration: The International Journal of Arbitration, Mediation and Dispute Management*, 90(1).

¹³ Nappert, S. (2020). The Use of Blockchain Mediation in Resolving Smart Contract Disputes.

disputes, where the technical complexity of the underlying technology may require specialized expertise.

In evaluative mediation, smart contracts can play a valuable role in ensuring fairness and transparency. The mediator's recommendations or evaluations can be written into a smart contract, creating an immutable record of their assessment and helping to ensure that the mediator is not showing any undue bias or favoritism towards one party over the other. Smart contracts can also be used to create an escrow service in the context of mediation, securely holding disputed funds until an agreement is reached and automatically disbursing the funds based on the agreed terms.

As the legal and regulatory landscape surrounding smart contracts continues to evolve, mediation offers a promising avenue for resolving disputes in a manner that is efficient, cost-effective, and preserves the parties' business relationships. By engaging legal and technical experts and staying abreast of regulatory developments, parties can effectively navigate the challenges associated with smart contract disputes and harness the full potential of this revolutionary technology.

4. BLOCKCHAIN MEDIATION: A NOVEL APPROACH

A) FORUM SELECTION CLAUSE IN A SMART CONTRACT

Including dispute resolution procedures in contracts is crucial for streamlining conflict resolution and minimizing the risk of costly litigation. This wisdom is equally applicable to smart contracts. Despite meticulous planning, issues can arise in agreements between individuals or organizations. Since smart contracts function differently from traditional contracts, we must develop resolution systems that are also distinct in their operation.

Dr. Aman M. Hingorani, A prominent mediator and Advocate-on-Record, Supreme Court of India; while sharing his views on the mediation bill 2021 stated in reference to smart contracts

Parties to a smart contract can provide for automated mediation and enforcement of settlement agreement, which would pre-empt differences between the parties in the future on the existence or validity of the agreement to go for mediation or enforcement of the settlement agreement. Parties could incorporate into the smart contract itself

(a) their consent to go for mediation,

(b) the mechanism for nominating a mediator or opting for institutional mediation,

(c) the giving of pre-determined access to the mediator to the smart contract in order to enable him or her to code/insert the settlement agreement (should there be one) into the blockchain, which would automatically lead to the transfer of assets or monies of one party to another on the blockchain in terms of such settlement agreement.¹⁴

Selection clauses in a smart contract could have the following content: ‘Any dispute controversy, difference or claim arising out of or relating to the contract, performance, breach or termination thereof will be settled by {name of the mediator}’.

B) MEDIATION AS AN ODR

A specialized area of legal technology that aims to enhance dispute resolution and access to justice is Online Dispute Resolution (ODR). ODR involves resolving disputes in a digital environment, creating a virtual forum for legal resolutions similar to traditional court proceedings or physical arbitration.

In a broad sense, ODR is the use of an online platform to facilitate communication and dispute resolution. More narrowly, it is defined as using the internet to enable parties to resolve disputes more efficiently, serving as an alternative to state courts. Some perceive ODR as a complement to offline dispute resolution methods rather than a substitute for judicial processes, which allows courts to also adopt ODR interfaces. This is reflected in the increasing number of courts worldwide implementing ODR as part of "Online Courts."

ODR offers significant benefits, such as improving the resolution of consumer claims, boosting consumer confidence in the market, expanding access to justice and dispute resolution, and promoting the sustainable growth of e-commerce. It is particularly effective for resolving domestic and cross-border disputes of limited financial significance, which might otherwise remain unresolved due to consumer apathy.

¹⁴ Dr. Aman M. Hingorani, Views on ‘The Mediation Bill 2021’

5. CONCLUSION

The use of the latest digital infrastructure, particularly smart contracts and mediation procedures, holds significant potential for dispute resolution in private law. If these technical phenomena effectively integrate in the context of mediation, it is likely that certain disputes could be resolved in a more efficient, user-friendly, and cost-effective manner. Initially, there was a question of whether this digital alternative to state court proceedings could become a game-changer for future dispute resolution. However, the current analysis of the limited scope and inherent limitations of mediation through smart contracts suggests that this is not the case at this time.

Nonetheless, it is positive that the potential scope of mediation primarily provides a new alternative for dispute resolution in cases where there is strong criticism of the state judiciary. This is particularly relevant for small claims, where rational apathy often prevents litigation. Therefore, mediation through smart contracts could improve access to justice. Looking ahead, the scope of these dispute resolution mechanisms could expand, contingent on the technological advancements of blockchain and the digitalization of society.

In the future, it may become possible to digitally monitor more conditions through a smart contract, which is not feasible today. As the digital infrastructure evolves, mediation will likely continue to play a significant role in the world of dispute resolution.