
CRITICAL ANALYSIS OF BLOCKCHAIN ARBITRATION

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ABSTRACT

Blockchain arbitration has gained a lot of attention in recent years due to its potential to drastically alter the way legal disputes are settled. This article examines the potential outcomes of using blockchain arbitration technology. Blockchain arbitration uses blockchain technology to facilitate transparent and efficient dispute resolution in the legal system. The blockchain is a decentralised ledger where all users have access to the same transaction history. Using cryptographic algorithms, blockchain technology ensures that all transactions on the distributed ledger remain private and unchangeable. Smart contracts, the legal framework of blockchain arbitration, automate certain procedures and penalize offenders. In this research article, the researcher looks at how blockchain arbitration can be an improvement over traditional methods by virtue of its lower costs, greater transparency, and easier accessibility. The paper also notes that although blockchain arbitration might drastically improve the resolution of legal disputes, doing so would entail extensive preparation and coordination. This article does more than just list the upsides of blockchain arbitration; it also examines its shortcomings and suggests ways in which they might be addressed, such as by working together to create open standards and investing in accessible technology.

Keywords: Blockchain Arbitration, Ledger, Smart Contracts, Dispute Resolution, Cryptography

INTRODUCTION

The blockchain is a decentralised ledger where all participants have access to the same transaction history. Since a majority vote is required to approve each given transaction, fraudulent ones are automatically rejected. Once a record has been verified by the blockchain, it can't be altered or deleted.[1]

Confidential and efficient, blockchain arbitration employs distributed ledger technology to resolve legal disputes. Traditional arbitration entails a neutral third party that listens to both sides and then issues a final, enforceable ruling. Blockchain arbitration is governed by smart contracts. Smart contracts are computer algorithms that can streamline and quicken the arbitration process. In some cases, they can do tasks autonomously. Arbitration on the blockchain A penalty may be imposed by the smart contract on the party that disobeys the arbitrator's decision.[2]

The time and money spent waiting for a human judge are avoided with blockchain arbitration. Second, blockchain technology promotes transparency in arbitration by providing identical data to all participants. At long last, blockchain technology can make arbitration available in previously underserved regions, such as rural and undeveloped communities. But if blockchain technology is used in arbitration, it might completely change the conflict resolution process.[3]

The United Nations has not formally accepted or authorized blockchain-based arbitration systems. The United Nations, however, recognises the potential of blockchain technology for conflict resolution and has initiated numerous programmes to explore the technology's viability in this area. The United Nations Commission on International Trade and Investment Dispute Resolution (UNCITRAL) is one group investigating blockchain's possible use in international trade and investment disputes. The working group is charged with researching the legal and technological ramifications of using blockchain for dispute settlement and developing guidelines and standards for blockchain-based dispute resolution procedures.

Contracts with automated performance structures are addressed in Article 2.1.1 of the UNIDROIT Principles of International Commercial Contracts, 2016. In such contracts, the parties agree on self-executing digital channels that do not require the participation of a natural person to secure performance. In addition, the United Nations Development Programme (UNDP) has launched a blockchain-based platform dubbed "Building Blocks" to standardise

the distribution of aid and monitor financial transaction in regions where people have been uprooted.

New approaches to resolving legal issues, each with its own vision of how law and government should function in the modern day, may be emerging in tandem with the rise of blockchain technology. Research has attempted to understand how blockchain functions as an "engine of alterity" in order to speculate on the socio-technical structure of a future society and to take into account the bigger social imaginaries of blockchain governance.

The use of cryptographic methods to guarantee the confidentiality and veracity of the data kept on the distributed ledger is largely responsible for the rapid and widespread adoption of Blockchain arbitration. The development of a blockchain relies on these algorithms. This makes it extremely difficult, if not impossible, to manipulate or change the data, increasing the level of security provided by the arbitration process.[4]

The author in this article:

- Provides Insights into the future of dispute resolution and its potential impacts on legal systems and society at large.
- In-depth investigation of blockchain arbitration technology and its ramifications have also been taken into account.
- Examines blockchain arbitration in comparison to conventional arbitration, highlighting its advantages in terms of cost savings, transparency, and usability. Technology implications of using blockchain for dispute settlement are also explored, as are the functions of national courts in enforcing arbitral judgements.
- Talks in detail about UNCITRAL's interest in investigating the potential of blockchain technology for use in settling legal disputes and its efforts to develop standards and guidelines for blockchain-based dispute resolution procedures.[5]

UNFOLDING THE TECHNOLOGY BEHIND BLOCKCHAIN ARBITRATION

The term "blockchain arbitration" refers to the process of using arbitration to resolve disputes that arise in the context of using blockchain technology. Blockchain justice includes elements

such as:

When conducting a blockchain transaction, "all parties must agree to use arbitration to settle any disputes that may arise." This agreement is a standard feature of every blockchain service's stipulations. The arbitrator or panel of arbitrators hearing a dispute is selected by mutual agreement amongst the parties involved. The arbiter needs to be impartial and fair, with sufficient knowledge of the issues at hand to resolve the dispute. The rules and procedures to be employed during arbitration must be mutually agreed upon by the parties. Some of these factors are the hearing's language, location, and duration. There needs to be evidence on all sides. Blockchain data, transaction logs, and other official documents may fall into this category. A decision will be reached by the arbitrator or panel of arbitrators based on the information presented and the procedures to which the parties have agreed. In most cases, the decision is final and must be adhered to. The decision must be implemented in accordance with the laws of the jurisdiction in which the arbitration was held. It's possible that the judges can have their way in some circumstances. Blockchain arbitration, as a whole, is "a fast, clear, and safe way to settle disagreements that arise in the context of blockchain transactions".

"Blockchain arbitration can offer several advantages over traditional arbitration. The first way in which smart contracts help save money and time is by reducing the amount of human intervention required. To continue, leveraging blockchain can facilitate the arbitration process for people and businesses in remote or less-developed areas by making it more transparent, secure, and accessible to all parties involved." [7]

Technology's extraordinary automation of contracts inspires the growth of private, self-enforcing arbitration systems. Self-enforcing adjudication based on blockchain technologies has the potential to undermine the role of national courts by avoiding the recognition and enforcement procedures through which states traditionally exercise control over arbitral rulings.[8]

Since the distributed ledger created by blockchain technology cannot be altered once it has been created, it may be used to permanently record all of the facts and circumstances surrounding a dispute, making it a viable option for conflict resolution [9]. This could include the evidence, the arguments, and the decision. This openness aids in fostering trust between those involved and lessens the likelihood that they may disagree about how to best go forward.

It is possible for blockchain-based arbitration to be carried out a significant amount quicker than more conventional kinds of arbitration. This is due to the fact that the technology eliminates the need for intermediaries, which enables the parties to conduct business and communicate directly with one another. As a direct result of this, the amount of time and money that are often invested in the use of traditional arbitration procedures will be cut down significantly.

There is no need for paperwork, manual processes, or any of the other inefficiencies that are involved with traditional arbitration, which is one of the primary reasons why blockchain arbitration is so much more efficient than its predecessor. Blockchain arbitration is also considerably more cost effective. 2009 marked the beginning of the development of blockchain arbitration. This suggests that the arbitration process may be carried out with greater speed and precision, which will lead to a quicker settlement of any conflicts that may have occurred as a result of the fact that this is the case.[11]

The advantages of harnessing blockchain technology for the purpose of arbitration make it a possible alternative to other methods of conflict resolution and more conventional forms of arbitration.

INTERVENTION OF BLOCKCHAIN TECHNOLOGY IN DISPUTE RESOLUTION

The author in this section discusses the role of blockchain technology and smart contracts in the modernization of the dispute resolution process.

Utilising blockchain technology in arbitration could generate an immutable, transparent, and tamper-proof record of the proceedings. Adopting blockchain technology has the potential to enhance the arbitration process's speed, security, and efficiency, as it enables parties to communicate information and evidence in a decentralised and secure manner.[12]

Smart contracts

A smart contract is a type of self-executing contract that can be constructed using a blockchain-based platform in the context of arbitration. A smart contract is a contract whose provisions are encoded expressly in computer code. The arbitration procedure may have its own rules and procedures, which may be included in the smart contract. These can include the selection of arbitrators, the presentation of evidence, and the distribution of compensation.[13]

The arbitration procedures can be recorded on the blockchain after the smart contract has been established and deployed. Each phase of the procedure, such as the presentation of evidence, selection of arbitrators, and distribution of incentives, can be recorded in a block on the blockchain. Each block is connected to the block before it via a cryptographic connection, creating an unbreakable chain of blocks. This chain of blocks provides a secure and transparent audit trail of the entire arbitration procedure.[14]

The blockchain is one of humanity's greatest assets in the annals of technology and finance. In 1991, Stuart Haber and Scott Stornetta, two cryptographers, developed the concept and mathematics underlying blockchain technology. In 2012, a group of anonymous programmers using the alias Satoshi Nakamoto implemented blockchain technology for the first time, based entirely on the work of Stuart Haber and Scott Stornetta.

The blockchain, also known as the time-stamping server or Distributed Ledger System (DLS), validates the hash of a block's transactions. The time-stamp demonstrates that the data existed at a specific time. A chain is formed when the data from each successive block is included in its hash. The hash algorithm assures that no two blocks contain identical data or values, making the data or values within a block hack-proof. Legal service providers can now securely store electronic copies of evidence and documents using blockchain technology. This database's integration with a cloud network enables legal prosecutors to access it from anywhere.[16]

Crypto courts

Kleros describes itself as a 'blockchain dispute resolution layer' incorporated in a smart contract that will provide rapid, open, and affordable justice for all'. When a dispute calls for arbitration, Kleros will issue a jury summons. Any user of their platform can respond to the dispute by staking a certain number of tokens. Although jurors are selected at random from the pool of responses, the greater a prospective juror's wager, the greater their odds of being selected. [15]

Jurors scrutinise the evidence presented by the parties and vote on a verdict after being selected. Jurors who voted with the majority are awarded a portion of the staked tokens, whereas those who voted with the minority lose their tokens. Kleros claims that penalising 'dishonest' or dissident jurors will encourage jurors to vote honestly. [17]

Cloud-based client management and evidence retrieval solutions, such as legal practice management software, are available to attorneys. If preserved on a blockchain, perpetrators would be unable to alter proofs. Blockchain technology is comparable to a global spreadsheet in that its openness enables accessibility from any device and location.

Nick Szabo, an American cryptographer and law graduate, theorised smart contracts using blockchain technology a few years after the blockchain theory was first proposed. Smart contracts, which are essentially digitised versions of traditional contracts, can automate nearly every stage of the contracting process once they are in place.

Using smart contracts and blockchain technology, for example, investors may find new applications for their real estate holdings. This can pave the way for a deeper connection between blockchain technology and the real estate market. Using this application, investors can obtain real estate market exposure without actually owning property.[18]

A crypto court's ability to function is predicated on a number of 'Shelling Points'-based economic assumptions about individual behaviour and its coordination. The Shelling Point is a concept in economic game theory that was originally developed by economist Thomas Shelling and later repurposed by cryptocurrency evangelists like Vitalik Buterin into Shelling Coins (2014).

In cases where members of the group do not trust or cannot communicate with one another, this theory proposes that monetary incentives can bring the members' behavioural expectations into line. The Kleros PNK token, which serves as an economic incentive to ensure that jurors vote consistently with a majority, is conceptually based on Shelling Points.

For Kleros, securing the processes of juror selection against risks like juror bias due to 'Sybil attacks' — in which an attacker attempts to influence the outcome of a decision by flooding the jury pool with multiple fake identities — is crucial to the efficacy of blockchain-based dispute resolution.

Kleros sees its PNK token and the need that jurors purchase it in order to be selected as a solution to the complexities of how to generate a pool of unbiased jurors utilising 'trustless' decision-making procedures. This line of thinking accords with Hayes'(2019) claim that

advocates of cryptocurrencies often see them as answers to socio- technical issues such the double-spending of digital money.

To rephrase, Kleros sees the financialization of crypto- courts as intrinsically linked to the greater socio-technical challenge of generating honest jurors. However, the resolution of this paradox depends on the application of unalterable crypto economic theories and laws to the conduct of jurors.

One of the main reasons we propose a combination of an off-chain registry and a block chain registry is the necessity of reliable property data. Governments need to oversee the monetary system and find ways to capitalise on the flows created by smart contracts.

Because of their forward-thinking and cutting-edge character, smart contracts are gaining traction in the law. Although traditional paper contracts have traditionally held sway in the legal world due to their enforceability, they fall far short of the possibilities and advantages that can be found in a smart contract.

In addition, blockchain can facilitate the enforcement of arbitration awards by establishing a transparent and secure payment system. By utilising cryptocurrencies, traditional payment methods, which can be slow and entail fees, can be rendered obsolete.

Arbitration can be conducted more efficiently and affordably when smart contracts are utilised. Instead of relying on an arbitrator to resolve their dispute, parties may construct a smart contract that autonomously initiates a settlement when certain conditions are met. This would lower their expenses. This could save time and money and eliminate the possibility of human bias and error.[19]

UNDERLYING CHALLENGES OF BLOCKCHAIN ARBITRATION

Disputes arising from blockchain-based transactions can be settled through a procedure known as "blockchain arbitration". Decentralized and impartial conflict resolution has gained appeal in recent years, but it is not without its critics and difficulties.

Arbitration on the blockchain is an emerging field, hence there aren't any established rules for how it should be governed. Since distinct arbitrators may have different points of view on the same issue, this might result in inconsistent and unpredictable rulings. Awards in blockchain

arbitration are enforceable by law, although their enforceability may be limited in some countries. This might make it difficult for a party to enforce the judgement or recover damages. Because of its technological complexity, understanding Blockchain technology thoroughly calls for a high degree of technical competence.

Without this background, arbitrators may fail to grasp the problems at hand and provide fair rulings.[20]

Private keys, a kind of digital identification, must be safeguarded to ensure the safety of assets in blockchains, which otherwise preserve anonymity and privacy. A private key can never be recovered from a lost or stolen device. As a result, the victim will lose all of their blockchain-based assets and the perpetrator will be impossible to track down.

The repercussions of offline identity theft, where third- party institutions (like credit card firms) or central authorities protect transactions, limit risks, detect suspicious activities, and help identify perpetrators, could be more severe.

Despite the fundamental openness of blockchain transactions, the arbitration process may be opaque. This raises questions of fairness, impartiality, and accountability. One of the major concerns with blockchain arbitration is the issue of jurisdiction. At present there is no central or standard law governing the jurisdiction of blockchain based dispute resolution.

Arbitration on the blockchain can be quite costly, especially in cases of extreme complexity. Because of the associated costs, it may be out of reach for certain people and smaller enterprises. Blockchain arbitration might drastically alter the dispute settlement process, but it also faces some serious obstacles and criticism. These concerns must be resolved as the field progresses if it is to achieve its potential and gain popular acceptance.[21]

CONCLUSION AND SUGGESTIONS

Traditional arbitration procedures are combined with blockchain technology in a relatively new notion called "blockchain arbitration." It might significantly alter the dispute resolution processes in several sectors, including the banking, insurance, and e-commerce sectors. Advantages of blockchain arbitration include its immutability, decentralization, and openness to all parties involved in a dispute. As a result of removing the middlemen and streamlining

the process, blockchain arbitration has the potential to be both quicker and cheaper than traditional arbitration.

However, blockchain arbitration is not without its own set of issues and restrictions. The absence of norms and laws for blockchain arbitration is a significant barrier to its widespread adoption. Therefore, the process runs the risk of being inconsistent and uncertain, which could damage the confidence and trust of those involved.

Stakeholders must collaborate to set uniform rules and guidelines for blockchain arbitration if it is to overcome these obstacles. The construction of regulatory frameworks to assure adherence to legal and ethical norms, as well as the development of best practices, guidelines, and procedures for conducting blockchain arbitration, might all fall under this category. In addition, resources should be allocated towards the creation of accessible and simple-to-use blockchain arbitration systems and tools.

The establishment of a centralised body analogous to the functioning of ICJ could be suggested for resolving the fundamental issues arising out of blockchain arbitrations and setting primary guidelines.[22]

In conclusion, blockchain arbitration has the potential to revolutionise the way legal disputes are settled, but it will take careful thought and teamwork to make it a reality. Stakeholders can unleash the full potential of blockchain arbitration and develop a more efficient and trustworthy way of dispute resolution by working together to set clear norms and regulations and investing in user-friendly tools and platforms.

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