

# The Future of Commercial Arbitration: Blockchain

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## Abstract

This article explores the potential of Kleros' blockchain arbitration in revolutionizing the field of alternative dispute resolution, especially in commercial arbitration. The understanding of blockchain arbitration became important for resolution in commercial dispute. Despite its promising attributes, blockchain arbitration faces challenges in the existing legal framework. The ambiguity of *lex arbitri* raises questions concerning its applicability over the entirely novel blockchain arbitration. The discussion starting in enforceability of blockchain arbitral awards is also in question. Additionally, confidentiality, a cornerstone of arbitration, poses a concern in blockchain arbitration. In light of this challenges, this article advises caution for disputing parties considering opting into a blockchain arbitration agreement.

**Keywords:** arbitration; applicability; blockchain arbitration; enforceability; legal challenges

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## 1. Introduction

There was an idea, the idea was to create a digital currency independent of conventional financial institutions, be they governments, central banks, and other stakeholders of similar nature. Thus, Bitcoin was created.<sup>1</sup> In conjunction with it, a blockchain system was created as well, as they go hand-in-hand. The creation of the blockchain technology and its adoption by Bitcoin would eventually inspire other parties to derive other uses out of it. But, what does blockchain have to do with arbitration a reader may ask. The answer lies in the importance of arbitration as a dispute resolution method generally preferred by the international trade community. The present global economy is heavily reliant on international commercial transactions. The number of transactions has only ever increased. Consequently, the number of international commercial disputes has risen as well. In light of such needs, the newly designed "blockchain arbitration" might very well be the next iteration of alternative dispute resolution needed by the arbitration community to satiate the ever-increasing need of a faster, more efficient, and economical dispute resolution process which could no longer be provided to its fullest extent by conventional arbitration.

The structure of the article is as follows. The Introduction chapter will explain the background and the key concepts crucial in understanding blockchain arbitration. It is followed by the Method chapter, in which this article presents the research methodology used and introduces the legal instruments to be used in analyzing the issue. The Discussion chapter reports the analysis of the issue, namely the applicability of present arbitration legislations and regulations over blockchain arbitration (1), the enforceability of blockchain arbitral award (2), and confidentiality (3). Lastly, the Conclusion chapter summarizes the findings of this article.

### 1.1. Key Concepts - Blockchain

Cryptocurrency is a nomenclature used to refer to any digital currency which utilizes the blockchain technology, of which there are many. But the most prominent and the precursor of them all is Bitcoin. Due to its decentralized nature, arose then a question of bookkeeping. In conventional economic system, the banks keep track of the larger picture of currency ownership. Devoid of a central authority, cryptocurrency delegates this task to what is called as "blockchain". Indeed, blockchain serves as a digital ledger in which every transaction that occur within a particular cryptocurrency ecosystem is recorded and validated.<sup>2</sup> In doing this, two distribution models are available for a blockchain ecosystem to choose from, although both uses the computational power of nodes (in layman's understanding, a node can be but not always a computer unit), they differ in how the nodes are governed. These distribution models are namely, distributed ledger and centralized ledger.

#### 1.1.1. Distributed Ledger

Within the distributed ledger model, the process of validation and record-keeping is not conducted centrally but rather through the participation of many interconnected nodes.<sup>3</sup> From the available pool of nodes, one node is

<sup>1</sup> Nakamoto, S. (2008). *Bitcoin: A Peer-to-Peer Electronic Cash System*. www.bitcoin.org, p. 1.

<sup>2</sup> Narayan, A., Bonneau, J., Felten, E. W., Miller, A., Goldfeder, S., & Clark, J. (2016). The Long Road to Bitcoin. In *Bitcoin and Cryptocurrency Technology A Comprehensive Education*. Princeton University Press, pp. xxiii–xxvii.

<sup>3</sup> Ortolani, P. (2019). The impact of blockchain technologies and smart contracts on dispute resolution: Arbitration and court litigation at the

chosen to validate a new transaction, either through proof-of-work or proof-of-stake method. The newly verified transaction results in the creation of another “block” of data, hence the name “blockchain”.<sup>1</sup> To reward the chosen node for the expenses it has accrued (in other words, the node’s computational effort), the blockchain ecosystem will then reward said node with some amount of cryptocurrency.<sup>2</sup> Distributed ledger is the typical choice of distribution model for a blockchain ecosystem.

#### 1.1.2. Centralized Ledger

In contrast to the previous model, for record-keeping purposes, the centralized ledger uses only one central node to validate transactions. The other nodes connected to this particular blockchain ecosystem are only allowed to submit transactions to be validated by the central node and to read the eventual updates to the blockchain. There is a certain irony to this, given one of the core tenets of a blockchain system is to remove a central authority.<sup>3</sup> Not to mention, the notion of a centralized ledger in the context of blockchain is somewhat moot, given the goal could easily be achieved with a conventional database.

Regardless, these two models are what is called as a “peer-to-peer” network due to the interconnected-ness between nodes and their ability to influence the network, albeit with varying degrees.

### 1.2. Key Concept – Blockchain Arbitration

Along with the rising popularity of cryptocurrencies, the blockchain as the technological foundation behind it, is continuously developed, fostered, and promoted by a number of interest groups, including by legal practitioners to be used within the scope of arbitration.<sup>4</sup> Therefore, it is to be understood that a blockchain arbitration is not a dispute concerning blockchain or cryptocurrency, but rather the use of blockchain to facilitate an arbitral proceeding. In connection with the ever-increasing number of international commercial transactions and its disputes, blockchain arbitration may offer several benefits unfound in conventional arbitration, all of which are attributable to its adoption of the blockchain.

For one, the decentralized ledger used by the mechanism is operated on a peer-to-peer network, this means that the network will not likely to fail, as there will always be backup, i.e., the data is not stored in a single computer but rather in the thousands of computers that joined the network rendering it to be more transparent, efficient, and secure (difficult to tamper). Additionally, the decentralized nature of a blockchain network that is without a central authority cuts the cost of the operation, necessitating less compensation for a “middle-man”, resulting in a cheaper workflow. It is rather easy then to understand why blockchain arbitration might entice some people to choose it over conventional arbitration.<sup>5</sup> Last but not least, it offers a very topical advantage over its conventional competition. Due to its digital and decentralized nature, blockchain arbitration may prove more resilient against unexpected challenges such as COVID-19, against which conventional arbitration tried their best to adapt by moving online the proceedings.<sup>6</sup> All of which are attractive traits forever sought after by the arbitration community.

Presently, there are several prominent blockchain arbitration services (“**providers**”). The minutia between them differs, but the core principle and mechanism remain the same. Shared amongst them is the use of the distributed ledger blockchain and the involvement of “juror” in a quasi-judicial role as opposed to conventional arbitrators to determine over the legal issues at-hand.<sup>7</sup> The followings are some of the most prominent providers along with their brief description.

#### 1.2.1. Kleros

Kleros, at the moment, is the most prominent provider and one of the few currently operational. As such, it is the main subject of research for this article. Founded in 2017 and incorporated as incorporated as a Société Coopérative d’Intérêt Collectif in France, the service has been operating since 2018, it has received several awards, most notably as the winner of the “Blockchains for Social Good Prize” awarded by the European Union’s Horizon 2020 research and innovation program. Presently, there are more than 760 active jurors on the

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crossroads. *Uniform Law Review*, 24(2), 430–448. <https://doi.org/10.1093/ulr/unz017>.

<sup>1</sup> Martino, P., Wang, K. J., Bellavitis, C., & DaSilva, C. M. (2019). An Introduction to Blockchain, Cryptocurrency and Initial Coin Offerings. In A. Quas, Y. Alperovych, C. Bellavitis, I. Paeleman, & D. S. Kamuriwo, *New Frontiers in Entrepreneurial Finance Research* (pp. 181–206). WORLD SCIENTIFIC. [https://doi.org/10.1142/9789811202766\\_0007](https://doi.org/10.1142/9789811202766_0007).

<sup>2</sup> Martino, Wang, Bellavitis, & DaSilva, 2019, p. 1.

<sup>3</sup> Martino, Wang, Bellavitis, & DaSilva, 2019, p. 1; Nguyen, G.-T., & Kim, K. (2018). *A Survey about Consensus Algorithms Used in Blockchain*. <https://doi.org/10.3745/JIPS.01.0024>, pp. 101–103; Schär, F., & Berentsen, A. (2020). *Bitcoin, Blockchain, and Cryptoassets: A Comprehensive Introduction*. The MIT Press, pp. 69–72; Werbach, K. (2018). *Trust, but Verify: Why the Blockchain Needs the Law*. <https://doi.org/10.15779/Z38H41JM9N>, p. 507.

<sup>4</sup> 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. <https://doi.org/10.1016/j.tele.2018.11.006>, pp. 60–68.

<sup>5</sup> Bergolla, L., Seif, K., & Eken, C. (2021). Kleros: A Socio-Legal Case Study Of Decentralized Justice & Blockchain Arbitration. *Ohio State Journal on Dispute Resolution*, 37(1). <https://doi.org/10.2139/SSRN.3918485>, pp. 6–7.

<sup>6</sup> Scherer, M. (2020). Remote Hearings in International Arbitration: An Analytical Framework. *Journal of International Arbitration*, 37(4), 407–448. <https://doi.org/10.54648/JOIA2020020>, pp. 407–408.

<sup>7</sup> *Arenson v. Casson Beckman Rutley & Co.*, [1977] 1 AC 405 (HL) (House of Lords 1977), para. 436.

platform providing their service in more than 20 sub-courts. Kleros claims to have adjudicated cases worth over millions of dollars with the most notable ones being prediction market disputes.<sup>1</sup>

#### 1.2.2. Aragon

Unlike the other providers, which rely on a more traditional governance model, Aragon is designed as a Decentralized Autonomous Organization (“DAO”), aimed not to require human involvement at all in its behind-the-scenes working. In terms of the dispute resolution process, it employs the typical blockchain arbitration mechanism. Aragon prides itself in having an additional measure to encourage a fair and impartial proceeding. In the event either party attempts bribery, the jury is incentivized to vote for the other party; if both do, the jury is to dismiss the case.

#### 1.2.3. Jur.io

Whilst offering the same mechanism as the other two providers, Jur.io simultaneously offers an alternative blockchain mechanism which they dub as the “Court Layer”. This mechanism is offered in the hope that it may alleviate the issue concerning the enforceability of blockchain awards before national courts by involving conventional arbitrators. Essentially, it uses the conventional arbitration mechanism, but the deliberation process is left completely to the Jur.io blockchain mechanism. In essence, the arbitrator’s only duty is to convert the digital blockchain award into a conventional one.<sup>2</sup>

Evidently, there are interests to make use of the blockchain technology in arbitration as proven by the numerous provides that came to be. That said, blockchain arbitration at the moment is mostly used to resolve disputes of smaller scale whose subject-matter tend to be technological in nature, e.g., software development contract dispute.<sup>3</sup> There is however, an aim to open up the mechanism for disputes of larger scale and of other natures, including the typical international commercial transactions. Kleros, in their whitepaper stated, “*Kleros is a decision protocol for a multipurpose court system able to solve every kind of dispute*”.<sup>4</sup> Which is then further reiterated in their yellowpaper, “[Kleros] acts as a decentralized third party capable of providing decisions on the correct result when applying a set of rules to questions ranging from simple to highly complex.”<sup>5</sup> Their whitepaper and yellowpaper both envisioned Kleros to be potentially used in a broad range of disputes and that their “multipurpose dispute resolution protocol [is] capable of supporting a large number of applications in e-commerce, finance, insurance, travel, international trade, consumer protection, intellectual property, and academia amongst many others.”<sup>6</sup>

Naturally as with all things novel, blockchain arbitration comes with its own set of unanswered questions, which this article will attempt to address.

## 2. Method

Against the background and the issues that have been presented, this article will conduct descriptive analytical research using a juridical normative approach. The approach was selected as it is meant to be used in conjunction with library research whose main source is secondary data. In Secondary data in the legal field are further classified into primary legal material, secondary legal material, and tertiary legal material. This article will look into and discuss the following primary legal materials:

- The UNCITRAL Model Law on International Commercial Arbitration
- The Singapore International Arbitration Act 1994
- The French Code of Civil Procedure

## 3. Discussion

### 3.1. Kleros Blockchain Arbitration Mechanism

It is only apt for the author to first discuss as to how arbitration is conducted in blockchain arbitration. In doing so, this article chooses to discuss blockchain arbitration as provided by Kleros as its primary subject of research. Other than providing a blockchain arbitration service, Kleros is fundamentally a cryptocurrency and blockchain business as well. They sell what is called as the Pinakion token (“PNK”). The name refers to the Ancient Athenians’ personalized token, usually in the form of bronze plaque or wooden plate, signifying the Athenian citizen’s jury membership.<sup>7</sup> By itself, the PNK token are free to be purchased and sold on a number of online

<sup>1</sup> Kleros. (2023a, May 22). Kleros FAQ. *Kleros*. <https://docs.kleros.io/kleros-faq>.

<sup>2</sup> Bergolla, Seif, & Eken, 2021, pp. 10–13; Chevalier, M. (2021). From Smart Contract Litigation to Blockchain Arbitration, a New Decentralized Approach Leading Towards the Blockchain Arbitral Order. *Journal of International Dispute Settlement*, 12(4), 558–584. <https://doi.org/10.1093/JNLIDS/IDAB025>, pp. 567–568.

<sup>3</sup> Aouidef, Y., Ast, F., & Deffains, B. (2021). Decentralized Justice: A Comparative Analysis of Blockchain Online Dispute Resolution Projects. *Frontiers in Blockchain*, 4, 3. <https://doi.org/10.3389/FBLOC.2021.564551>, p. 3.

<sup>4</sup> Lesaege, C., Ast, F., & George, W. (2019). *Kleros Short Paper v1.0.7*. Kleros, p. 1.

<sup>5</sup> Lesaege, C., George, W., & Ast, F. (2021). *Kleros Long Paper v2.0.2*. Kleros, p. 1.

<sup>6</sup> Lesaege, George, & Ast, 2021, p. 54.

<sup>7</sup> Edwin Carawan. (2016). Court Reform, Klērōtēria, and Comic Testimony. *The Classical Journal*, 111(4), 385.

cryptocurrencies exchanges. The price of a token fluctuates in accordance with the market demand, which presents the speculative side of the enterprise.<sup>1</sup>

Less cynic view lies on the other side of the argument, Kleros lists a number of reasons as to why PNK token is needed, amongst which is to protect them from Sybil attacks. Sybil attacks itself is a form of malicious tampering in which a bad faith actor undermines its target system by creating a significant number of illegitimate multiple identities, thus enabling the actor to significantly influence a peer-to-peer network, where a dominant number of nodes is needed to steer the network.<sup>2</sup> Other than to prevent a Sybil attack, PNK token makes Kleros “forkable”, that is to say the entire ecosystem – should the ecosystem participants agree – will be created new by copying an earlier state where the bad actor had yet manipulated the system. However, this would create a significant disruption as users must migrate to this new instance. The PNK Token also serves as the form of payment given to incentivize potential jurors in participating in the ecosystem, and in general as the “ticket” to allow users to vote in the Kleros governance.<sup>3</sup> As such, users interested in participating either as a juror or a disputing party in the Kleros blockchain arbitration ecosystem must first exchange their cryptocurrencies of choice into PNK tokens, which will then will grant them full access to the Kleros blockchain arbitration ecosystem.

At the time of the writing, Kleros provides several interconnected services. Most notable is the Kleros Court, which the users may use to “*arbitrate disputes in every kind of contract, from very simple to highly complex ones.*”<sup>4</sup> The Kleros Court is supplemented by Kleros’ own escrow service. Structurally, Kleros is divided into a number of sub-courts, which are specialized in their own particular topic. Atop these sub-courts, sits the “General Court” which acts as an appellate court for all the sub-courts below it.

In broad strokes, Kleros divides its typical dispute proceeding into the following stages:<sup>5</sup>

- Evidence, disputing parties submit their evidence. Whilst this is happening, a drawing is conducted by the system to select the jurors from the available pool.
- Commit, after reviewing the submitted evidence, jurors are to submit a hashed vote. A hashed vote is a vote that has been processed through a hash function, in order for a computer to generate a unique value that is different to the value of the initial vote. This unique value is then submitted into the Kleros system. Attempts to alter the vote would result in a different hash value, notifying the system of potential tampering. To put simply, in the context of Kleros, a hashed vote is a vote processed through a mathematical algorithm to ensure the integrity of the votes and to maintain how a juror votes, i.e., the confidentiality of a juror’s vote. If the disputing parties opted to have a proceeding without confidential votes, this stage is eliminated.
- Vote, the jurors cast their vote. Accordingly, the jurors will reveal their individual vote if the proceeding is without confidential votes.
- Appeal, the disputing parties are given the opportunities to appeal.
- Execution, the collected PNK token are redistributed in accordance with the vote result and the ruling is executed.

### 3.2. The Problems Faced – Applicability of Current Arbitration Regulations

Margaret Moses posited that the regulatory framework of international commercial arbitration is represented in the form of an inverted pyramid. Within each level of the pyramid is a legal instrument, with the uppermost instrument being the most expansive, whose scope and applicability is beyond the legal instrument underneath it. The order from the uppermost is as follows: (1) international treaties, (2) international arbitration practices, (3) national laws, and (4) arbitration rules.<sup>6</sup> Suffice to say that presently there is no international treaties regulating blockchain arbitration, and given that *lex arbitri* are the legal instruments that empower the party to enter into a

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<https://doi.org/10.5184/classicalj.111.4.0385>, pp. 385–386; Leena Pietilä-Castrén. (2016). A Lost Pinakion Rediscovered. *Hesperia: The Journal of the American School of Classical Studies at Athens*, 85(1), 201. <https://doi.org/10.2972/hesperia.85.1.0201>, p. 201; Sing, R. (2010). *Investing in Democracy: The Practice and Politics of Jury Pay in Classical Athens*. The University of Western Australia, School of Humanities, Classics and Ancient History, p. 93; Third Meeting. (1932). *The Cambridge Classical Journal*, 148, 3–4. <https://doi.org/10.1017/S0068673500008403>, p. 3.

<sup>1</sup> Kleros. (2023d, May 22). PNK Token. *Kleros*. <https://kleros.io/en/token/>.

<sup>2</sup> Douceur, J. R. (2002). The Sybil Attack. In P. Druschel, F. Kaashoek, & A. Rowstron (Eds.), *Peer-to-Peer Systems* (Vol. 2429, pp. 251–260). Springer Berlin Heidelberg. [https://doi.org/10.1007/3-540-45748-8\\_24](https://doi.org/10.1007/3-540-45748-8_24), p. 251.

<sup>3</sup> George, W. (2023, May 22). Why Kleros Needs a Native Token. *Kleros*. <https://medium.com/kleros/why-kleros-needs-a-native-token-5c6c6e39cdfc>; Kleros. (2023b, May 22). Kleros FAQ - PNK Token. *Kleros*. <https://docs.kleros.io/pnk-token>.

<sup>4</sup> Lesaege, George, & Ast, 2021, p. 1.

<sup>5</sup> Kleros. (2023c, May 22). Kleros FAQ - What Happens During a Dispute? *Kleros*. <https://docs.kleros.io/products/court/what-happens-during-a-dispute>.

<sup>6</sup> Moses, M. L. (2012). The Principles and Practice of International Commercial Arbitration. In *The Principles and Practice of International Commercial Arbitration* (Second). Cambridge University Press. <https://doi.org/10.1017/CBO9780511920073>, pp. 5–7.



valid and binding arbitration agreement, *lex arbitri* will be the primary lens through which this article is discussed.<sup>1</sup> The UNCITRAL Model Law (“**Model Law**”), the Singapore International Arbitration Act 1994 (“**IAA**”), and the French Code of Civil Procedure (“**FCCP**”) are the *lex arbitri* chosen as they are amongst the most widely used globally.

It is very much established that national arbitration legislation or *lex arbitri* provides the basic legal framework upon which international arbitration agreement, arbitral proceedings, and arbitral awards stand. *Lex Arbitri* is also the fundamental legal instrument from which the validity and effects of arbitration rise, along with the will of the parties.<sup>2</sup> Despite its entirely novel mechanism, blockchain arbitration chose to name and describe itself as an arbitration, albeit with the added blockchain descriptor. Consequently, it is only prudent to ask whether the current *lex arbitri* are applicable over blockchain arbitration, or whether it has any bearing at all. Immediately a major hurdle is apparent, which is that of identifying arbitration.

The Model Law for instance, defines an arbitration as “any arbitration whether or not administered by a permanent arbitral institution”.<sup>3</sup> Additionally it defines “arbitral tribunal” and “court”, while outlining the constituents for classifying an arbitration as international.<sup>4</sup> The Model Law does not go further than these. Readers should be aware of the circular definition of arbitration in the Model Law, where it is described as “any arbitration”. This renders the definition poorly constructed and unilluminating.<sup>5</sup>

Although the Singapore International Arbitration Act managed to avoid circular definition, it offered very little in elucidating as to what arbitration exactly is. Having been derived from the Model Law, the IAA only expanded the illumination of arbitration by defining the following terms, they are namely “arbitral tribunal”, “appointing authority”, “arbitration agreement”, “award”, “Model Law”, and “party”. Similarly, the French Code of Civil Procedure does not define arbitration, and only states that arbitration is international when international trade interests are at stake.<sup>6</sup> More importantly, it prescribes that an arbitration agreement shall not be subject to any requirements as to its form. Thus, expanding the forms that might be used in constructing an arbitration agreement.<sup>7</sup> Constituent elements may be defined, but in none of these legal instruments are expressly and sufficiently defined as to what an arbitration exactly is. It is then left to the readers to infer from what little there is.

Evidently the aforementioned *lex arbitri* define arbitration poorly and we must look elsewhere. In the rare cases where a limited number of *lex arbitri* defines arbitration, the definition would be along the line of, “arbitration is a dispute resolution process conducted by a non-governmental institution, chosen by the parties to render a binding decision over disputes between them in accordance with their agreed procedures that will allow the opportunities for both parties to be heard on the grounds the parties’ agreement or contract”.<sup>8</sup> As the readers can see, the definition is relatively non-descript and only reveals the general principle and idea behind arbitration. Scholars have attempted rectify the confusion by identifying the elements of arbitration instead of exclusively relying on definition. The elements generally identified are the existence of consensual agreement to arbitrate, the resolution of the disputes, appointment of non-governmental decision maker to adjudicate the dispute, the final and binding nature of the decision, and the use of adjudicatory procedures.<sup>9</sup> All of which happen to be fulfilled by blockchain arbitration.

The limited definition is presumably to provide room for party autonomy in conducting the arbitral proceeding, but on the other hand, this same room allows for a significant gap when the legislation is faced with an entirely novel mechanism, such as the blockchain arbitration, not that this is a common occurrence. Indeed, blockchain arbitration is perhaps an event that the drafters could not have foreseen, especially considering the practice of arbitration which has been relatively unchallenged and stayed the same throughout history.<sup>10</sup> The elements often found in arbitration are found in blockchain arbitration as well. Although this could support the argument that blockchain arbitration may be covered by conventional *lex arbitri*, such a view would not be certain until the issue is expressly addressed. Ultimately, devoid of regulations exclusively governing blockchain arbitration, blockchain arbitration is ironically a lawless alternative dispute resolution method.

And so, it remains unclear whether blockchain arbitration could be governed by *lex arbitri* currently in force. Strict interpretation by way of definition neither succinctly defines arbitration nor rules out blockchain arbitration. Although elements often found in arbitration are found in blockchain arbitration as well, until arbitration is defined more thoroughly and precisely in *lex arbitri* or regulations drafted are exclusively to

<sup>1</sup> Born, G. B. (2021). *International Commercial Arbitration* (3rd Edition). Kluwer Law International B.V., Chapters 1, 1.04, [B], [1].

<sup>2</sup> Born, 2021, Chapter 1.04, 2.01.

<sup>3</sup> UNCITRAL Model Law on International Commercial Arbitration, (2006), art. 2(a).

<sup>4</sup> UNCITRAL Model Law on International Commercial Arbitration, 2006, arts. 1–2.

<sup>5</sup> Greenberg, D. (2022). The Avoidance of Circularity. *Statute Law Review*, 43(1), iii–iv. <https://doi.org/10.1093/slr/hmac001>.

<sup>6</sup> French Code of Civil Procedure, Decree No. 2011-48 (2011), art. 1504.

<sup>7</sup> French Code of Civil Procedure, 2011, art. 1507.

<sup>8</sup> Born, 2021, Chapters 2, 2.02, [C], [1], [a].

<sup>9</sup> Born, 2021, Chapters 2, 2.02, [C], [1], [b].

<sup>10</sup> Born, 2021, Chapters 1, 1.01, [B], [9].

address blockchain arbitration, the legal certainty will remain elusive.

### 3.3. The Problems Faced – Enforceability of Blockchain Arbitral Awards

Most blockchain arbitral awards are self-enforced, as the assets being disputed are often in the form of cryptocurrency and or token, and thus can be executed automatically and the assets distributed in accordance to the jurors' votes.<sup>1</sup> Seemingly a major advantage, this automated practice leaves little to no choice for the disputing parties but to comply. In contrast to conventional arbitration wherein negotiation, settlements, and challenges are the norm. Restricted to this specific environment, there seems to be no problem, if anything, such mechanism of enforcement is evidently better as it gives more assurance to the disputing parties that they will receive what is theirs after a dispute is concluded.<sup>2</sup> However, arbitral equations vary by the disputes. Hypothetically speaking, what if the blockchain arbitral proceeding were to include tangible and physical assets? How would a blockchain arbitral award of such dispute be enforced?

As with all things tangible, the enforcement is ultimately left to the parties' compliance, and if this proves to be insufficient – the enforcement relies heavily on court's order. Domestic courts base their judgement on their respective *lex arbitri*, as such it's only natural to ascertain blockchain arbitral awards enforceability by assessing whether it complies or fulfills the requirements prescribed in the *lex arbitri*. When it comes to enforcement, the Model Law requires that the arbitral award in question be submitted to the competent court – in the appropriate language – and that the court may refuse only

- If the other disputing party provides proof that:
  - A party was under incapacity when the arbitration agreement was made and or the arbitration agreement was invalid;
  - There was a lack of proper notice or inability to present the case during the course of the proceeding;
  - The award dealt with a dispute beyond the submission and or containing decisions beyond its scope;
  - There was a non-compliance with the agreed-upon tribunal composition or procedural rules;
  - The award was not yet binding, set aside, or suspended by a competent court.
- Or if the court finds that:
  - The dispute is not arbitrable under the state's law;
  - Recognition or enforcement of the award would contravene the public policy of the state.<sup>3</sup>

Singapore via the IAA prescribes that an enforcement application to submit the arbitral award itself and the arbitration agreement, it noted that these documents must be in English. Having adopted the Model Law, the IAA stipulated the same grounds of refusal.<sup>4</sup> Meanwhile for an enforcement in France, under the caveat that the award is not contrary to international public policy, the FCCP only prescribes the parties to prove the existence of said award by producing the original award along with a French translation, should the original award be not in French already.<sup>5</sup> In none of these *lex arbitri* are prescribed specific requirements as to the form of the award itself, which could make the case that blockchain arbitral award is not excluded by these legislations.

In practice, there has only been one circumstances in which a blockchain arbitral award is enforced by a domestic court. In 2020 a dispute happened between a real estate lessor and a lessee in Mexico, having agreed to an arbitration agreement, they submitted said dispute to an arbitrator. Although the dispute was submitted to a conventional arbitral institution and arbitrator, in place of the arbitrator's own deliberation, the parties directed the arbitrators to use Kleros blockchain arbitration instead in deliberating the dispute, to which the arbitrators dutifully agreed. The eventual arbitral award was then transferred into a conventional award by the arbitrators and the parties submitted this for an enforcement before the Mexican court, which the Court accepted to enforce.<sup>6</sup>

In conclusion, there are no provisions in the aforementioned *lex arbitri* to prevent blockchain arbitral award from being enforced by domestic courts, as apart from requiring the applicants to file the arbitral award, the relevant arbitration agreement, and translation thereof when appropriate, the *lex arbitri* don't require anything

<sup>1</sup> Bergolla, Seif, & Eken, 2021, p. 60.

<sup>2</sup> Bergolla, Seif, & Eken, 2021, p. 60.

<sup>3</sup> UNCITRAL Model Law on International Commercial Arbitration, 2006, art. 36.

<sup>4</sup> International Arbitration Act 1994, (2020), arts. 29, 31.

<sup>5</sup> French Code of Civil Procedure, 2011, arts. 1514–1515.

<sup>6</sup> Bonomi, A., Lehmann, M., & Lalani, S. (Eds.). (2023). *Blockchain and private international law*. Brill/Nijhoff, Chapter X; Chevalier, M. (2022). Arbitration Tech Toolbox: Is a Mexican Court Decision the First Stone to Bridging the Blockchain Arbitral Order with National Legal Orders? *Kluwer Arbitration Blog*. <https://arbitrationblog.kluwerarbitration.com/2022/03/04/arbitration-tech-toolbox-is-a-mexican-court-decision-the-first-stone-to-bridging-the-blockchain-arbitral-order-with-national-legal-orders/>.

else.

### 3.4. The Problems Faced – Confidentiality

Last but not least of the challenges facing blockchain arbitration is its confidentiality. There is no consensus and uniform application between jurisdictions concerning the nature of confidentiality. Several jurisdictions hold that confidentiality is embedded and inseparable from arbitration. In contrast, others rule that confidentiality must be expressly agreed upon by the parties to take effect. Additionally, some jurisdictions are silent on the matter.<sup>1</sup> While confidentiality provisions vary by *lex arbitri* and arbitration rules, it remains one of the most associated traits of arbitration. A significant number of disputing parties attribute their selection of arbitration to confidentiality.<sup>2</sup> Regardless of express provisions, or the lack thereof, in *lex arbitri*, it is clear that there is a clear appetite for confidentiality in arbitration. It would not be remiss to think that the general public would expect the same of blockchain arbitration.

Unfortunately, confidentiality may not have been met yet by Kleros. The authors will discuss this issue at length in a future article. But for the moment, the blockchain arbitration mechanism – in particular as provided by Kleros – does not bind any participants to the obligation of confidentiality. Additionally, blockchain arbitration is conducted on public, distributed ledger accessible by the general public, increasing the chance that the confidential information to be irresponsibly disclosed, deliberate or otherwise.<sup>3</sup> These conditions severely limit the demographic of potential users and the use of blockchain arbitration itself. Disputes of international nature between parties with significant stakes often require the production of confidential information in resolving them.

Coupled with the already uncertain application of confidentiality between jurisdictions, parties whose dispute necessitate the production of confidential information would do well to steer clear of blockchain arbitration.

## 4. Conclusion

The increasing global trade has led to a positive correlation between international commercial transactions and its disputes, with a growing trend expected. Economic actors prefer arbitration to resolve these disputes, but the rising costs and time requirement call for a revised method. In pursuit of a faster, more affordable, efficient, and secure arbitration, Kleros' blockchain arbitration which utilizes the blockchain technology may be the answer needed, however it faces a number of challenges.

**First**, it is uncertain whether the existing arbitration legislations are applicable over blockchain arbitration. By definitions provided in a number of *lex arbitri*, blockchain arbitration is not necessarily excluded. That is to say, the generally un-descriptive definitions of arbitration do not rule out blockchain arbitration as a form of arbitration. It may be that thus far, there has never been a need to thoroughly define arbitration, as the form of arbitration stayed relatively the same throughout history, making it self-evident mechanism.<sup>4</sup> That one would be able to recognize when a dispute resolution is an arbitration just by seeing it. However, this has led to a significant legislation gap and confusion when the existing regulations are faced with an unprecedented and entirely novel mechanism such as blockchain arbitration. Unless fixed, the uncertainties that stemmed from the applicability of *lex arbitri* over blockchain arbitration will permeate into other facets of arbitration, such as its enforceability. In the interest of legal certainty, there is a need to properly regulate blockchain arbitration.

**Second**, enforceability of blockchain arbitral award is limited. Of blockchain arbitral awards that have been produced, due to the nature of the ecosystem and the assets disputed, the majority of these awards are automatically self-enforced by a computerized system outside of domestic court's influence. Barring arbitral awards being brought before competent court thus establishing case law and or initiatives from lawmakers to fill the legislation gap, the enforceability of blockchain arbitral award before national court systems will remain unclear for the foreseeable future. If the disputing parties insist on using blockchain arbitration to settle their dispute while at the same time wanting the assurance of conventional arbitration system, the parties may direct conventional arbitrators to delegate their deliberation to blockchain arbitration, as evidenced by the Mexican case. However, this is only a stop gap method.

**Third** is the matter of confidentiality. Indeed, it must not be forgotten that parties opting for arbitration, often do so under the impression they will be provided confidentiality, a perception which happens to be shared by the general public as well, so much so that it is thought that confidentiality is inherent, intertwined, and

<sup>1</sup> Merkin, R. M., & Hjalmarsson, J. (2016). *Singapore arbitration legislation: Annotated* (Second edition). Informa Law from Routledge, p. 97; Onyema, E. (2010). *International Commercial Arbitration and the Arbitrator's Contract* (First). Routledge, pp. 141–142.

<sup>2</sup> Reyes, A. (2018). *The Practice of International Commercial Arbitration: A Handbook for Hong Kong Arbitrators* (First). Informa Law from Routledge, p. 8.

<sup>3</sup> Rana Sajjad, A. (2023). Blockchain Arbitration: Promises and Perils. *The American Review of International Arbitration - Columbia Law School*. <https://aria.law.columbia.edu/blockchain-arbitration-promises-and-perils/>.

<sup>4</sup> Born, 2021, Chapters 1, 1.01, [B], [9].

inseparable from arbitration. However, as this article has found out, confidentiality is another facet of arbitration yet to be surmounted by blockchain arbitration. Exemplified by Kleros, blockchain arbitration does regulate confidentiality in any capacity. Parties whose dispute necessitate the production of confidential information should be wary of opting into blockchain arbitration at the moment.

To conclude, there is a plethora of challenges to be surmounted and legal nuances to be solved if Kleros were to be taken as equal and viable alternative to that of conventional arbitration. Taking note of the legal uncertainties surrounding it, disputing parties should refrain from resorting to blockchain arbitration for the time being.

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