

UNLOCKING BLOCKCHAIN EVIDENCE IN INTERNATIONAL ARBITRATION

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1. ABSTRACT

In this article, the authors explore the relevance and benefits of using blockchain evidence, before analyzing whether the current international arbitration rules allow for its admissibility. They suggest that, although the current international arbitral framework is vague enough to allow for blockchain evidence, new express rules or guidelines in this matter should be created to minimize parties' transaction costs, to increase certainty in the proceeding, and to position international arbitration at the technological forefront of dispute resolution forums.

2. THE NATURE AND OPERATION OF BLOCKCHAIN TECHNOLOGY

Blockchain was conceived in 2008 by a person or group of people using the name Satoshi Nakamoto as the enabling technology of bitcoin, a cryptocurrency that sought

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to avoid the shortcomings of traditional transaction systems.¹ The concept was so disruptive that most people, including some technology experts, were unable to fully grasp it.

Twelve years later, and after having had significant impact on multiple industries and markets, there is still a general lack of understanding of what blockchain is and how it works. This is remarkable, given that cryptocurrencies and smart contracts—the most visible applications of blockchain—have become popular alternatives to traditional financial and legal contractual mechanisms. Although defining the nature and operation of blockchain is not an easy task, it is obviously an essential first step in any academic paper (legal or otherwise) that aims to analyze what blockchain could—or should—be used for.

Blockchain’s innovation—and intricacy—lies on the fact that it is a distributed ledger, so storing information in the system only happens once the information has been validated and accepted, not by a central controlling authority, but by a global network of computers known as “nodes.” Once a piece of information has been validated, it is replicated by every node, and stored in a “block.” Subsequent transactions or data loaded in the system will undergo the same process, thus creating the self-named “block”-chain.

A simple way to understand blockchain would be to say that it is essentially a database initially used to track and safeguard economic transactions but that now allows storage of other data and documents. Perhaps the most valuable feature of a blockchain is that information it contains is time-stamped, immutable and tamper proof. In other words: once the data has entered the blockchain, it cannot be retroactively modified without alteration of all subsequent blocks, which requires consensus of the network majority.

¹ Note, however, that the term “blockchain” was not mentioned in Satoshi Nakamoto’s original paper “Bitcoin: A Peer-to-Peer Electronic Cash System” (2008).

The reason behind this is what is called “hash cryptography.” Every block that stores information on the chain has a certain “hash,” which is a value generated by a mathematical algorithm codifying the original data. The next block on the chain must contain the hash number of the previous block. Therefore, if someone wanted to modify the information on the chain, the hash produced by even a slight change would essentially be different, and the hashes of the subsequent blocks would no longer match. Since every node includes a duplicate of the chain history, any attempt to modify a node that makes it inconsistent with the chain history will automatically be disregarded and not be recorded in the chain.

The above elements of blockchain technology offer multiple uses. Smart contracts, cryptocurrencies, crowdfunding and supply chain auditing are just some of the many applications of blockchain, but it is safe to say that others will soon come up. Governments have already passed legislation promoting blockchain development and use. However, the increasing importance of this technology in markets, industries and governance raises the question of whether the legal system is ready to embrace blockchain applications.

3. USING BLOCKCHAIN AS EVIDENCE: IMPACT AND CHALLENGES

a. RELEVANCE OF BLOCKCHAIN IN DISPUTE RESOLUTION MECHANISMS

Although there is extensive literature on the commercial and business impact of blockchain, the effects that it may have on the legal system have not been thoroughly discussed. This does not imply that the legal field can sidestep this technology. In fact, there is plenty of evidence to the contrary. Some of the ways blockchain is already influencing dispute resolution mechanisms can be summarized below:

- (1) Blockchain as a new object of litigation. The rise in popularity of blockchain technology inevitably translates into increasing litigation regarding its application and use in many markets and industries² and on whether it can even be trademarked (which, in a way, relates to its very nature).³

- (2) Blockchain as the trigger to creating specialized fora. The ever-growing caseload is a concern for courts in many countries, some of which have already set up specialized courts (e.g., China)⁴, or are currently considering it (e.g., Spain),⁵ for the litigation that typically arises between

² For instance, find a more detailed outlook on litigation trends over cryptocurrencies in Robert Kim, Jason Gottlieb, Daniel Isaacs, Christopher Pendleton and Yelena Dunaevsky's "Crypto Enforcement Actions and Litigation Report" (*Morrison Cohen*, 2018) <https://www.morrisoncohen.com/siteFiles/files/Crypto%20Enforcement%20Actions%20and%20Litigation%20Report%202018.pdf> last accessed August 1, 2020.

Regarding smart contracts, the Singapore International Commercial Court ruled on its nature in the landmark case *B2C2 Ltd v Quoine Pte Ltd* [2019] SGHC(I) 03, while other jurisdictions are expecting a rise in litigation on the matter soon. In words of Sir Geoffrey Vos, current Chancellor of the High Court of the United Kingdom, "[t]he one thing I can promise, however, is that there will be litigation about smart contracts when they become ubiquitous in the industries that are served by the Business and Property Courts". (Sir Geoffrey Vos in the Annual COMBAR lecture "Future Proofing for Commercial Lawyers in an Unpredictable World" held on Tuesday 12th November 2019 at 5.30pm. Transcript available at https://www.judiciary.uk/wp-content/uploads/2019/11/COMBAR_lecture2019.final_.pdf last accessed August 1, 2020). To help lawyers navigate the matter, the UK Jurisdiction Taskforce issued in 2019 the "Legal Statement on Cryptoassets and Smart Contracts."

³ Cases have been filed on whether the term "blockchain" can be trademarked and whether blockchain technology is a trade secret by nature. Some examples are, respectively, *Blockchain Luxembourg S.A v Paymium, SAS, No. 18-cv-08612 (S.D.N.Y, August 7, 2019)* and *Invisible Dot, Inc. v DeDecker, 2:18-cv-08168 (C.D. Cal, February 6, 2019)*. For other examples of litigation involving blockchain: Barrington E. Dyer, "Blockchain Litigation Year in Review (Part 1): Lessons From 2019 And What's Ahead For 2020" (*The National Law Review*, 2020) <https://www.natlawreview.com/article/blockchain-litigation-year-review-part-1-lessons-2019-and-what-s-ahead-2020> last accessed July 24, 2020.

⁴ China has established Internet Courts in Hangzhou, Beijing and Guangzhou focused on resolution of cases related to internet and new technologies, generally through online hearings.

⁵ Fernando Quirós, "España: analizan la conveniencia de crear juzgados especializados en Blockchain" (*Cointelegraph*, May 11, 2020) <https://es.cointelegraph.com/news/spain-they-analyze-the-advisability-of-creating-specialized-blockchain-courts> last accessed 7 June 2020.

companies operating with blockchain that must submit blockchain records to prove their case.

Moreover, the need for specific *fora* for resolution of blockchain-related disputes manifests itself outside the judicial system, with the creation of specialized arbitral tribunals (*e.g.*, the Arbitration Court of the Blockchain and New Technologies of the Chamber of Commerce in Poland) and the inclusion of dispute resolution mechanisms in blockchain platforms such as Confideal or JuryOnline.⁶

- (3) Blockchain as a new litigation platform. Besides becoming the object of legal proceedings, blockchain has also entered the legal field as a mechanism for dispute resolution. Researchers in Japan have recently designed a “digital court” operating through a blockchain system, in which the consensus of the nodes decides whether a party in a dispute has breached its agreement with a counterparty.⁷ Likewise, in 2019, China’s Internet Courts built their own blockchain platforms through which more than three million litigation activities were settled that year.⁸

International dispute resolution is also slowly opening up to the use of blockchain, with critics voicing their discomfort and their apparent

⁶ Hafez Virjee, masterclass on “The future of arbitration in technology,” Lagos Court of Arbitration First International ADR Summit, which took place on 17 September 2019, (*Delos Dispute Resolution*, 2019) https://delosdr.org/index.php/2019/09/26/introduction-to-blockchain-smart-contracts/#_ftn1 last accessed July 24, 2020.

⁷ Hitoshi Matsushima and Shunya Noda, “Mechanism Design with Blockchain Enforcement” (*Center for Advanced Research in Finance*, March 2020) <https://www.carf.e.u-tokyo.ac.jp/admin/wp-content/uploads/2020/03/F474.pdf> accessed May 22, 2020.

⁸ Yan, “China reforms judicial courts using internet technologies: white paper” (*Xinhuanet*, 5 December 2019), last accessed July 24, 2020; and Joeri Cant “Chinese Courts increasingly use blockchain technology to settle cases” (*Cointelegraph*), last accessed July 24, 2020.

reluctancy to digital change the practice.⁹ The creation of blockchain platforms for alternative dispute resolution such as Kleros¹⁰ and the existence of working groups researching the necessary steps for traditional institutions to take advantage of blockchain prove we are in the early stages of the digital remodeling of dispute resolution mechanisms.

- (4) Blockchain as a way of safeguarding information. This technology may also be useful in simplifying the custody and handling of evidence by the authorities.¹¹ The Head of Digital Architecture and Cybersecurity at the United Kingdom’s Ministry of Justice has recently announced a blockchain pilot program aimed at managing digital evidence by maintaining a foolproof audit of the chain of custody.¹² In that, the United Kingdom has drawn inspiration from Estonia, considered the world’s most

⁹ Marike Paulsson, vice president of the Global Institute for Peace and on the board of the Miami Blockchain Group, voiced that “*the world is moving beyond the digital era and entering the fourth industrial revolution – but international arbitration is not keeping up. Cases are often still conducted in hard copy and in real time, with volumes of documents put before the tribunal.*” Global Arbitration Review ‘Is blockchain the future’ (*Global Arbitration Review*, March 14, 2018) <https://globalarbitrationreview.com/article/1166627/is-blockchain-the-future> last accessed May 18, 2020.

¹⁰ Kleros has won Blockchains for Social Good Prize awarded by the European Commission, which describes it as “*a platform for resolving consumer disputes in e-commerce or collaborative economy, where both jury selection and rulings are regulated by blockchains.*” European Commission, “Blockchains for Social Good” (*EC.Europa*, 2020) https://ec.europa.eu/research/eic/index.cfm?pg=prizes_blockchains last accessed July 20, 2020.

¹¹ Virjee (n 6). Vijay Rathour, “Undisputed: Strengthening links in the evidential chain” (*Grant Thornton*, 2016) <https://www.grantthornton.co.uk/globalassets/1.-member-firms/uk-kingdom/pdf/publication/2016/undisputed-strengthening-links-in-the-evidential-chain.pdf> last accessed July 24, 2020. Dr.S. Harihara Gopalan, S. Akila Suba, C. Ashmithashree, A. Gayathri, V. Jebin Andrews, “Digital Forensics Using Blockchain” (2019) *International Journal of Recent Technology and Engineering* Vol.8 Issue 2S11 <https://www.ijrte.org/wp-content/uploads/papers/v8i2S11/B10300982S1119.pdf> last accessed July 24, 2020.

¹² Balaji Anbil, “How we’re investigating Digital Ledger Technologies to secure digital evidence” (*Inside HM Courts & Tribunals Service Blog*, August 23, 2018) <https://insidehmcts.blog.gov.uk/2018/08/23/how-were-investigating-digital-ledger-technologies-to-secure-digital-evidence/> last accessed July 20, 2020.

digital country, which relies on blockchain to safeguard highly protected data such as its citizens' health records.¹³

b. CURRENT USES OF BLOCKCHAIN AS EVIDENCE

Without underrating the impact of blockchain on dispute resolution mechanisms, some people consider that the admissibility of blockchain evidence in litigation is central to its overall avail.¹⁴ Others find it *virtually useless* if unreliable in court.¹⁵ However, the value of blockchain evidence is undisputable and arises from its immutability, encryption and time stamping features. The evidentiary value of blockchain systems is as twofold:

- (1) As proof of transactions carried out within the system. The existence of a transaction can be proved through a blockchain receipt, as it is tracked, validated, registered and time-stamped in the chain through a hash. If admissible at trial, it would be verified proof of the time, place and nature of the transaction.

- (2) As an authentication system for information produced outside the blockchain. Deploying information on the blockchain, which functions as a tamper-proof, timestamping database, has a huge impact on the pre-constitution of evidence. For instance, uploading a design on a blockchain platform would be proof that it existed at a certain time, a piece of

¹³ Peter High, "Lessons from the most digitally advanced country in the world" (*Forbes*, 15 January 2018) <https://www.forbes.com/sites/peterhigh/2018/01/15/lessons-from-the-most-digitally-advanced-country-in-the-world/#2e11302521ac> last accessed May 18, 2020.

¹⁴ Angela Guo, Blockchain Receipts: Patentability and Admissibility in Court, 16 Chi. -Kent J. Intell. Prop. 440, p.444 (2017) <<https://scholarship.kentlaw.iit.edu/ckjip/vol16/iss2/9>> accessed April 1, 2020.

¹⁵ Ibid, p. 444. Citing James Ching in "Is Blockchain Evidence Inadmissible Hearsay?" (Jan. 6, 2016). <http://www.law.com/sites/jamesching/2016/01/07/is-blockchain-evidence-inadmissible-hearsay/>.

information that would be key for any judge to deciding on its ownership.¹⁶ Some also argue that blockchain is the solution to a challenging problem: the uncertainty of the source, integrity and authenticity of digital data in relation to the original document.¹⁷ By comparing the hash of the original external document to the one deployed on a blockchain, an expert can determine whether they are exact copies.

The immutability of blockchain is widely recognized by technical experts, although lawmakers and the judiciary must be convinced of its reliability for substantive and procedural law to fully take advantage of this new, more efficient technology that may eventually make notaries unnecessary. And they must also understand that the value of blockchain will not be lessened by it not being acknowledged or used in court.

c. POTENTIAL DRAWBACKS OF THE ADMISSIBILITY OF BLOCKCHAIN EVIDENCE

Despite the particularities of every legal system and its possible drawbacks, many jurisdictions share concerns about the functioning and security of blockchain, and they are uncertain about how to present digital evidence in court.

The first drawback is that most lawmakers, law practitioners and courts are still not familiar with how blockchain works, which explains their skepticism—if not open reluctance—towards the admissibility of blockchain evidence, as they believe that immutability is not always granted. Since validation of data on the blockchain depends on the decision of the majority of the nodes, if a hacker attack affected or came from

¹⁶ Birgit Clark, ‘Blockchain and IP Law: A Match made in Crypto Heaven?’, (*World Intellectual Property Organization Magazine*, February 2018) https://www.wipo.int/wipo_magazine/en/2018/01/article_0005.html last accessed July 22, 2020.

¹⁷ Nimrod Tauber, ‘Blockchain and Evidence Law’ (*Legal Business World*, December 17, 2018) <https://www.legalbusinessworld.com/single-post/2018/12/17/Blockchain-and-Evidence-Law> last accessed June 23, 2020.

51% of these nodes, the blockchain information could be tainted. Studies show that the probative value of a blockchain platform also depends on the cost associated with such an attack.¹⁸ Law practitioners and judges must first understand how blockchain works and its potential limitations to be able to trust the platform that is storing the data; otherwise, it is unlikely that blockchain evidence will be admitted as evidence.

Another drawback is an obvious question that practitioners may have; *i.e.*, how to submit blockchain records in court. To date, the option that many countries have adopted is presenting the hash alongside an expert certification or statement, as we explain below.

Many of the obstacles and uncertainties surrounding blockchain evidence arise from the gap between traditional procedural law, usually based on documentary evidence, and the dominant digital world. Fortunately, States are already working on reducing this gap both through legislative changes and governmental actions, as we will see in the next section.

4. BLOCKCHAIN AND JURISDICTION: A COMPARATIVE ANALYSIS OF THE ADMISSIBILITY OF BLOCKCHAIN EVIDENCE IN NATIONAL COURTS

a. CHINA

*“The technologies like blockchain should not be dismissed or the standard of determination thereof should not be raised because they are novel and complex technical means at present, nor should the standard of determination thereof be lowered because it is difficult to tamper with or delete the technology.”*¹⁹

¹⁸ Dominique Guegan, Christophe Hénot. “A probative value for authentication use case blockchain.” (*Digital Finance*, 2019) <https://doi.org/10.1007/s42521-019-00003-0> last accessed July 25, 2020.

¹⁹ Hangzhou Huatai Yimei Culture Media Co., Ltd. v. Shenzhen Daotong Technology Development Co., Ltd. (2018) Zhe 0192 Civil Case, First Court No. 81. Translated version available in https://go.dennemeyer.com/hubfs/blog/pdf/Blockchain%2020180726/20180726_BlogPost_Chinese%2020180726.pdf

With this ruling, China reportedly became the first country to admit blockchain evidence in court.²⁰ This was soon confirmed by China’s Supreme Court, which established that Internet Courts will confirm the authenticity of electronic data, if collected through electronic signature, time stamps, hash value verification, blockchain or other tamper-proof verification methods.²¹

Although admissibility of blockchain evidence is not expressly provided in China’s Civil Procedural Law and Criminal Procedural Law, some argue that their current wording allows for it.²² Both procedural laws recognize electronic data as a statutory class of evidence. The question is whether this electronic data is proven trustworthy, since it cannot benefit from any legal presumption of validity or authenticity. Even if current regulations do not expressly accept the validity of evidence obtained from blockchain, some authors suggest the extraction of electronic data includes the collection of related information such as electronic signatures or authentication certificates.²³ If these can be deemed to verify electronic data, then so can blockchain.

[20Court%20is%20first%20to%20accept%20Blockchain%20Judgment%20EN%20Translation.pdf](#) last accessed June 25, 2020.

²⁰ Dr. Richard Brunner, “Chinese court is first to accept blockchain as means of evidence”, (*Blog Dennemeyer*, July 27, 2018) <https://blog.dennemeyer.com/chinese-court-is-first-to-accept-blockchain-as-means-of-evidence> last accessed July 24, 2020.

²¹ Article 11 of Chinese Supreme People’s Court’s “Rules on trial of cases by Internet Courts,” effective on September 7, 2018.

²² Sylvia Polydor, “Blockchain Evidence in Court Proceedings in China – A Comparative Study of Admissible Evidence in the Digital Age (as of June 4, 2019)” (*Stanford Journal of Blockchain Law & Policy*, 2020) <https://stanford-jblp.pubpub.org/pub/blockchain-evidence-courts-china/release/1> last accessed July 25, 2020.

²³ *Ibid.*

b. UNITED STATES

The United States has a two-tier legislative and judicial system, with federal government and courts on the one hand, and state governments and their respective courts on the other.

Where the Federal Rules of Evidence (“FRE”) apply, accepting evidence depends on its relevance, reliability and rightness. Thus, accepting blockchain evidence can be opposed on the grounds that it may not always fulfil these last two requirements:

- (i) The “reliability” of blockchain evidence may be questioned as hearsay (*i.e.*, an out-of-court statement used to prove the truth of the matter asserted) given that the blockchain system relies on subjective input of information.²⁴ However, some authors argue that it could fall under the hearsay exception of business records (FRE 803(6)).²⁵
- (ii) The “rightness” of evidence relates to authenticity.²⁶ Recent amendments to the FRE and relevant caselaw establish that the self-authentication of a blockchain record (*i.e.*, no extrinsic evidence of authenticity is required)

²⁴ Grant Autrey and Gary Marchant’s presentation on “Admissibility of blockchain evidence”, held on November 3, 2018 at the Beus Center for Law and Society in Arizona as reported in Daniel J. Neally and Maria L.Hodge, “First Annual Dennis Karjala Memorial Workshop: “Blockchain in the Courts””, (*Arizona State University College of Law*, 2018) <http://blogs.asucollegeoflaw.com/lsi/files/2018/12/First-Annual-Karjala-Workshop-Report.pdf> last accessed July 24, 2020.

²⁵ Among others: (i) Jason Tashea, “Some states are allowing people and companies to use blockchain to authenticate documents”, (*ABA Journal*, September 1, 2019) <https://www.abajournal.com/magazine/article/best-evidence> last accessed on June 24, 2020; (ii) Concord Law School, “The admissibility of blockchain as digital evidence” (*Concord Law School*, April 23, 2019) <https://www.concordlawschool.edu/blog/news/admissibility-blockchain-digital-evidence/> last accessed on June 24, 2020
Guo (n 14).

²⁶ Polydor (n 22).

may be upheld if accompanied by an expert’s certification of authenticity (FRE 902(13)).

Several states have pioneered legislation that expressly allows for the introduction of blockchain evidence in their court systems.²⁷ The first one to do so was Vermont in 2016, establishing that digital data extracted from a blockchain would be admissible and deemed self-authenticating if submitted together with a written statement by a qualified expert confirming the transaction details.²⁸

Likewise, the Illinois Blockchain Technology Act provides that blockchain data can be used in proceedings if authenticated. This, together with the Illinois Rules of Evidence, which state that authentication is granted by submitting electronic data with a qualified person’s affidavit, confirms that Illinois has also set a blockchain-friendly environment for its practitioners.²⁹

Other states have followed similar paths (e.g., Delaware, Arizona and Ohio), although some expressly recognizing only the “*legal effect, validity or enforceability*” of blockchain, without specifying its status as evidence.³⁰ As acknowledged by professor Goodenough, the importance of express regulation on admissibility of blockchain data in legal proceedings cannot be underestimated, even in common law countries like the United States, since “*relying on common law processes of case-by-case adjudication to work this through would be time-consuming.*”³¹

²⁷ For a brief analysis see Alexia Pollaco, “The Interaction between Blockchain Evidence and Courts – a cross-jurisdictional analysis” (*Blockchain Advisory*, April 23, 2020) https://bca.com/mt/blockchain_court_evidence/ last accessed on July 23, 2020.

²⁸ An act relating to miscellaneous economic development provisions H.868 (2016).

²⁹ George Geo Bellas ‘Blockchain as Evidence’, Newsletter of the Illinois State Bar Association’s Section on Civil Practice and Procedure, Vol 66 n° 3 (*Illinois State Bar Association*, 2019), <https://www.isba.org/sites/default/files/sections/civilpracticeandprocedure/newsletter/Civil%20Practice%20and%20Procedure%20November%202019.pdf> last accessed June 25, 2020.

³⁰ Polydor (n 22).

c. EUROPEAN UNION

The European Commission is striving to position the EU at the vanguard of blockchain innovation through several initiatives such as the European Blockchain Partnership and the European Blockchain Observatory and Forum. The goal of these two initiatives is to advance the development of blockchain ecosystem within the EU through, *inter alia*, promoting a more certain legal framework for blockchain and distributed ledger technologies.³²

Although it is true that the EU has yet to approve harmonizing legislation regarding the legal recognition of blockchain data, EU Regulation 919/2014 on electronic identification and trust services for electronic transactions dated July 23, 2014 (“eIDAS”), which establishes the legal treatment for electronic signatures, has been deemed somewhat applicable to blockchain.³³

Thus, an analysis on the similarities between electronic signatures and blockchain records leads to the conclusion that the eIDAS implicitly grants legal standing to the data contained in a blockchain registry or contract. This thesis has been explicitly enshrined in Italy’s recent Act 12/19,³⁴ which establishes that data stored in distributed ledgers like blockchain must have the same legal treatment granted to electronic time stamps as defined by the eIDAS.

³¹ Oliver Goodenough, professor at Vermont Law School, in Tashea (n 25).

³² European Commission “Shaping Europe’s digital future. Policy: Blockchain Technologies” (*EC Europa*, 2020) <https://ec.europa.eu/digital-single-market/en/blockchain-technologies> last accessed June 26, 2020.

³³ Alice Barbet-Massin, “Reflections on the legal recognition of blockchain timestamping by the Italian lawmaker” (*Actualités du droit – Wolter Kluwer*, March 27, 2019). Polydor (n 22).

³⁴ Legge n. 12/19 del 11 febbraio 2019, GU n. 36 del 11 febbraio 2019 / Act 12/19 enacted on February 11, 2019, published on the Official Gazette n. 36 (February 11, 2019)

Cross-referencing to the eIDAS is not flawless, though. This regulation provides three levels of legal recognition of electronic time stamps: simple, advanced and qualified. While only qualified timestamps enjoy a presumption of accuracy, blockchain systems do not usually meet the criteria to be deemed as such, since qualified timestamp systems need the intervention of a so-called Trust Service Provider, which blockchain systems, by design, do not provide.

The French National Assembly seems to agree with this criticism. In fact, in December 2019 it confirmed through an official statement that “*upon the eIDAS regulation (...), in order for the presumption of reliability to be applicable in matters of signature and time stamping, a trusted third party must be presented, and blockchain technology does not provide it.*”³⁵ France is reluctant to regulate blockchain as evidence due to concerns about validity, although it seems to enable judges to assess by themselves the probative value of this data, thus confirming that its digital nature cannot be the only reason to reject it.³⁶

The European Blockchain Observatory and Forum itself has also acknowledged that blockchain timestamps do not currently benefit from the highest standard treatment under the eIDAS but, foreseeing that this may change soon, it entrusts judges to evaluate on a case-by-case basis whether blockchain-based timestamping solutions qualify under the eIDAS framework.³⁷

³⁵ Recheck, “The French National Assembly says Digital Proofs on Blockchain are Admissible in Court” (*Recheck*, January 27, 2020) <https://recheck.io/blog/french-national-assembly-blockchain-records/> last accessed June 26, 2020.

³⁶ Assemblée nationale, “Question écrite n° 22103 de M. Daniel Fasquelle” (2019), Assemblée nationale <<<http://questions.assemblee-nationale.fr/q15/15-22103QE.htm>>> accessed 26 June 2020.

³⁷ European Union Blockchain Observatory and Forum, “Thematic Report: Legal and Regulatory Framework of Blockchains and Smart Contracts” (*EU Blockchain Forum*, September 27, 2019) https://www.eublockchainforum.eu/sites/default/files/reports/report_legal_v1.0.pdf last accessed July 24, 2020.

Other States that are currently debating this issue are Germany, the United Kingdom and Spain. The German government is examining “*how data, secured in blockchain-based applications, can (first) be provided to courts or (where applicable) official verification bodies, in order for the data to function as proof, and (secondly) whether it is thereby possible to guarantee tradeability (sic), as law requires.*”³⁸

The United Kingdom’s government, without specifically analyzing legislative changes on admissibility of evidence, is piloting a blockchain project of evidence storage for the management of courts, which may entail future express recognition of the secured data.³⁹

Similarly, Spain has set up a research group within the General Counsel of the Judiciary (*Consejo General del Poder Judicial*), whose activities include discussing the probative value of blockchain evidence in the current legal system.⁴⁰

5. BLOCKCHAIN EVIDENCE AND INTERNATIONAL ARBITRATION

a. DESIRABILITY OF BLOCKCHAIN EVIDENCE IN INTERNATIONAL ARBITRATION

The question of whether it is desirable for blockchain evidence to be admissible in international arbitration can be approached from two different perspectives: (i) at the

³⁸ Bundesministerium der Finanzen and Bundesministerium für Wirtschaft und Energie “Blockchain Strategy of the Federal Government : We set out the course for the Token Economy’ Strategy Paper on the Use of Blockchain Technology” p.3 (*Bundesministerium für Wirtschaft und Energie*, September 2019) https://www.bmwi.de/Redaktion/EN/Publikationen/Digitale-Welt/blockchain-strategy.pdf?__blob=publicationFile&v=3 lastly accessed July 21, 2020.

³⁹ Anbil (n 12).

⁴⁰ Yolana Ríos López, Webinar on “Blockchain y Administración de Justicia”, (*Blockchain Intelligence Law Institute and Consejo General de la Abogacía Española*, May 7, 2020) <https://www.abogacia.es/formacion/webinar-blockchain-y-administracion-de-justicia/> last accessed June 24, 2020.

micro level, from the perspective of the litigant; and (ii) at the macro level, from the perspective of the industry.

At the micro level, it may be helpful for litigants who usually operate with blockchain platforms to have the option of submitting evidence extracted from them.

In “Deloitte’s 2020 Global Blockchain Survey”, 88% of the respondents believe that blockchain will achieve mainstream adoption, while 86% state that their executive teams are considering its use in their company or organization.⁴¹ This means that the number of companies operating with blockchain will gradually increase in the future, which in turn means that their interest in submitting blockchain evidence in their disputes will also increase.

Submitting blockchain evidence may also be time-efficient since the inherent value of the tamper-proof, time-stamped, authentic evidence will speed up the probative process, perhaps even suppressing the need to undergo long witness hearings or to present large documentary evidence. Furthermore, unlike what would typically happen in court, and provided the parties choose arbitrators who understand the nature and particularities of this data, their assessment of blockchain evidence will not need further explanations on the operation of this technology.

From the perspective of the industry, blockchain evidence may also be desirable. Indeed, its admissibility in international arbitration is no longer only a question of how desirable it is for litigants—which is unquestionable at this point—but rather how necessary it is for the *forum*’s evolution and growth.

⁴¹ Deloitte, “Deloitte’s 2020 Global Blockchain Survey. From promise to reality”, (*Deloitte*, 2020) https://www2.deloitte.com/content/dam/insights/us/articles/6608_2020-global-blockchain-survey/DI_CIR%202020%20global%20blockchain%20survey.pdf last accessed July 23, 2020.

International arbitration has historically been the preferred dispute mechanism for cross-border disputes. According to the well-known annual survey of international arbitration conducted by Queen Mary University of London, in 2015, international arbitration was the preferred dispute resolution mechanism for 90% of respondents.⁴² The same source indicates that, in 2018, 97% of respondents expressed the same preference.⁴³ This preference may be further enhanced if, as expected, the tech industry increases its use of international arbitration in the near future.⁴⁴

Furthermore, more technologically advanced proposals for arbitration currently being discussed would gain weight if blockchain evidence were expressly considered admissible. Notably, the relation between new technologies and arbitration has been a hot topic over the past couple of years.⁴⁵ Much of the discussion has been centered on *inter alia*, whether fully automated arbitration platforms are a viable option, whether an award stored on a blockchain would fulfil the requirements for recognition and enforcement under the New York Convention, and whether artificial intelligence could supersede the role of arbitrators.⁴⁶ Surprisingly, admissibility of blockchain data

⁴² Queen Mary University of London, School of International Arbitration, White and Case, “2015 International Arbitration Survey : Improvements and Innovations in International Arbitration”, (*Arbitration Queen Mary University of London*, 2015) http://www.arbitration.qmul.ac.uk/media/arbitration/docs/2015_International_Arbitration_Survey.pdf last accessed July 22, 2020.

⁴³ Queen Mary University of London, School of International Arbitration, White and Case, “2018 International Arbitration Survey : The Evolution International Arbitration”, (*Arbitration Queen Mary University of London*, 2018) [http://www.arbitration.qmul.ac.uk/media/arbitration/docs/2018-International-Arbitration-Survey---The-Evolution-of-International-Arbitration-\(2\).PDF](http://www.arbitration.qmul.ac.uk/media/arbitration/docs/2018-International-Arbitration-Survey---The-Evolution-of-International-Arbitration-(2).PDF) last accessed July 22, 2020.

⁴⁴ *Ibid.*

⁴⁵ Nevena Jevremović, “2018 In Review: Blockchain Technology and Arbitration”, (*Arbitration Blog Kluwer Arbitration*, January 27, 2019) http://arbitrationblog.kluwerarbitration.com/2019/01/27/2018-in-review-blockchain-technology-and-arbitration/?doing_wp_cron=1595060073.4639549255371093750000 last accessed July 23, 2020.

⁴⁶ See, *inter alia*: Jevremović (n 46), Mauricio Duarte, “Could Blockchain Help the Recognition of International Arbitration Awards?” (*Arbitration Blog Kluwer Arbitration*, April 20, 2018) <http://arbitrationblog.kluwerarbitration.com/2018/04/20/blockchain-help-recognition-international->

as evidence has not been overly addressed, despite the fact that blockchain applications are being discussed as part of more radical proposals towards automation in arbitration. This may prove that the admissibility of blockchain evidence is inherently necessary to further the more advanced discussions that are currently taking place.

Of course, admitting blockchain evidence also has its own shortcomings. Besides the already tackled hurdles of the system itself (*e.g.*, uncertainty surrounding the identity or authenticity of the original information inserted in the chain, or fear of hacking attacks), the fact that this technology is still unfamiliar to both litigants and arbitrators, alongside the difficulty to master the practical matters related to filing this data, may concern the arbitration community just as much as they concern the judiciary.

b. DO CURRENT INTERNATIONAL ARBITRATION RULES ALLOW FOR THE ADMISSIBILITY OF BLOCKCHAIN EVIDENCE?

Although the international arbitration community may be open to the idea of applying blockchain to advance this dispute resolution mechanism, explicit rules regarding admissibility of data extracted from a blockchain have not yet been enacted. However, there are three main reasons to consider that the current arbitral framework may already allow for this.

First, one of the most distinctive features of arbitration is flexibility, meaning that the parties can agree on most procedural aspects of the proceeding and that the arbitrators

[arbitration-awards/?doing_wp_cron=1596317468.3858270645141601562500](#) last accessed August 1, 2020.

Lucas Bento, "International Arbitration and Artificial Intelligence: Time to Tango?" (*Arbitration Blog Kluwer Arbitration*, February 23, 2018) http://arbitrationblog.kluwerarbitration.com/2018/02/23/international-arbitration-artificial-intelligence-time-tango/?doing_wp_cron=1596317644.7302150726318359375000 last accessed August 1, 2020.

are granted a certain degree of discretion to apply procedural rules. Thus, it would not be unreasonable to think that where the admissibility of blockchain evidence is not prohibited by the parties' agreements or the rules applicable to the proceeding, the arbitral tribunal may allow blockchain data to be filed as evidence.⁴⁷ In fact, article 1.5 of the International Bar Association (“**IBA**”) Rules on the Taking of Evidence in International Arbitration (the “**IBA Rules**”),⁴⁸ article 19 of the International Chamber of Commerce (“**ICC**”) Rules⁴⁹ and article 17.1 of the UNCITRAL Arbitration Rules⁵⁰ are based on the same rationale; *i.e.*, leaving unregulated matters to the discretion of the arbitrator.

Second, the main rules and guidelines on admission of evidence in international arbitration do not explicitly prohibit admitting blockchain records. On the contrary, their wording seem to allow it. For instance, the IBA Rules define “*document*” for the purposes of evidence submission as “*a writing, communication, picture, drawing, program or data of any kind, whether recorded or maintained on paper or by*

⁴⁷ Francisco Uríbarri Soares, “New Technologies and Arbitration”, *Indian Journal of Arbitration Law*, Volume VII Issue I (2019), 84.

Also, without specifically mentioning blockchain, but “metadata”, Veronika Pavlovskaya, “Digital Evidence in International Commercial Arbitration: High Time or High Hopes?” (*Arbitration Journal by the Arbitration Association, Arbitration.ru*, February 7, 2019) <https://journal.arbitration.ru/analytics/digital-evidence-in-international-commercial-arbitration-high-time-or-high-hopes> last accessed on July 20, 2020.

⁴⁸ “*Insofar as the IBA Rules of Evidence and the General Rules are silent on any matter concerning the taking of evidence and the Parties have not agreed otherwise, the Arbitral Tribunal shall conduct the taking of evidence as it deems appropriate, in accordance with the general principles of the IBA Rules of Evidence.*”, Article 1.5, IBA Rules.

⁴⁹ “*The proceedings before the arbitral tribunal shall be governed by the Rules and, where the Rules are silent, by any rules which the parties or, failing them, the arbitral tribunal may settle on, whether or not reference is thereby made to the rules of procedure of a national law to be applied to the arbitration.*” Article 19, ICC Arbitration Rules, in force from 1 March 2017.

⁵⁰ “*Subject to these Rules, the arbitral tribunal may conduct the arbitration in such manner as it considers appropriate, provided that the parties are treated with equality and that at an appropriate stage of the proceedings each party is given a reasonable opportunity of presenting its case. The arbitral tribunal, in exercising its discretion, shall conduct the proceedings so as to avoid unnecessary delay and expense and to provide a fair and efficient process for resolving the parties’ dispute.*” Article 17.1, UNCITRAL Arbitration Rules (as revised in 2010).

*electronic, audio, visual or any other means.*⁵¹ Commentators argue that such innocuous description allows for the recognition of blockchain data.⁵²

Another key instrument of soft law regarding the taking of evidence in international arbitration are the Prague Rules, which do not expressly define “*document*”. However, digital evidence seems to be included through article 4.7, which allows submissions in electronic form.⁵³ Moreover, even if there were doubts that their wording allow the admissibility of electronic data as evidence, an overall interpretation of the Prague Rules also indicates that these submissions could be accepted by an arbitral tribunal, mainly because e-discovery is envisaged, and must be understood as the request or search for Electronically Stored Information or “ESI” (which includes blockchain records).⁵⁴ Likewise, the ICC also seems to grant admissibility to electronic documents and metadata,⁵⁵ which must mean that blockchain records could also be admissible.

Third, even if rules offer little guidance on the admissibility of blockchain evidence and mainly rely on the arbitrator’s discretion, evidence is not usually rejected by arbitrators because of possible challenges to the award if unreasoned refusal occurs,⁵⁶

⁵¹ Definitions in IBA Rules.

⁵² Uribarri (n 49),

⁵³ Pavlovskaya (n 49).

⁵⁴ Tom O’Connor, “Understanding blockchain and its impact on Legal Technology. Part Five”, (*E-Discovery Daily Blog, Cloudnine*, <https://cloudnine.com/ediscoverydaily/electronic-discovery/understanding-blockchain-and-its-impact-on-legal-technology-part-five/> last accessed July 20, 2020.

JD Supra, “Distributed Ledger Technology & eDiscovery” (*JD Supra*, September 20, 2018) <https://www.jdsupra.com/legalnews/distributed-ledger-technology-ediscovery-56014/> last accessed August 1, 2020.

⁵⁵ ICC Arbitration Commission Report on Managing E-Document Production.

⁵⁶ Not specifically regarding blockchain, but evidence-taking practices in arbitration: Anna Magdalena Kubalcyk, “Evidentiary Rules in International Arbitration – A Comparative Analysis of Approaches and the Need for Regulation”, *Groningen Journal of International Law*, vol 3(1) (2015), 85-109.

which may be a good enough reason to believe that blockchain records will often be admitted as well.

**c. PROPOSALS REGARDING ADMISSIBILITY OF
BLOCKCHAIN EVIDENCE IN INTERNATIONAL
ARBITRATION**

From all that has been discussed above, it is submitted that international arbitration ought to explicitly regulate the admissibility of blockchain evidence either through (i) a multilateral legal instrument on the taking of digital evidence, or (ii) the modification of the current arbitral rules and guidelines.

This proposal is based on the premise that a clearer regulatory instrument would (i) significantly minimize the parties' transaction costs when choosing to use evidence based on blockchain technology, which *per se* is a welcomed consequence; (ii) grant further certainty to litigants with regards to the requirements for filing blockchain evidence; and (iii) position international arbitration at the technological forefront of dispute resolution forums.

Regarding the first aspect of this premise, we consider it uncontroversial that the creation of a clear set of rules on the taking, use and submission of blockchain evidence would ease the parties' negotiation process when deciding on procedural matters, and thus would minimize the parties' transaction costs. It is argued that referral to rules and guidelines help to achieve a cost and time-efficient process. Take for instance the 2010 IBA Rules. Shortly after their adoption, 85% of litigants already considered them useful, and a vast majority of arbitrations were conducted referring to them,⁵⁷ which proves that the IBA Rules decreased parties' transaction costs when they were negotiating the procedural matters of their proceedings.

⁵⁷ Queen Mary University of London, School of International Arbitration, White and Case, "2012 International Arbitration Survey: Current and Preferred Practices in the Arbitral Process", (*Arbitration Queen Mary University of London*, 2012)

As far as the second part of the premise is concerned, the uncertainty that litigants face when intending to submit blockchain evidence (especially regarding the requirements and formalities that should be followed when filing it) calls for further regulation. The fact that the ICC Commission Report on Managing E-Document Production, an institutional document thought out to shed some light on the production of electronic evidence, has no mention on how to handle, submit and assess evidence produced in distributed ledger technologies or blockchain, indicates the utter lack of guidance on the matter.⁵⁸

Moreover, just as the IBA Rules helped neutralize procedural issues when litigants came from different legal backgrounds,⁵⁹ the issuance of clear and express rules regarding blockchain evidence could provide certainty to parties coming from jurisdictions with different perspectives regarding the admissibility of blockchain evidence.

Truth be said, when talking about the application of new technologies in arbitration, *“even if we, as the arbitration community, opt for “no”, the market may still decide “yes”*. Indeed, according to recent surveys, 76% of tech companies and 71% of financial services’ providers already operate with blockchains or are planning to do so in the immediate future.⁶⁰ Coincidentally, these two industries specifically

http://www.arbitration.qmul.ac.uk/media/arbitration/docs/2012_International_Arbitration_Survey.pdf last accessed July 22, 2020.

⁵⁸ Jevremović (n 46).

⁵⁹ The IBA Arbitration Guidelines and Rules Subcommittee, “Report on the reception of the IBA arbitration soft law products” (*International Bar Association*, 2016) downloaded from https://www.ibanet.org/LPD/Dispute_Resolution_Section/Arbitration/Publications.aspx last accessed July 31, 2020

⁶⁰ Jonathan Holdowsky, Nakul Lele, Geoff Lougheed, Michael Prokop, Lisa Simpson, “Many paths lead to blockchain adoption, and no two are alike”, (*Deloitte*, 2019) <https://www2.deloitte.com/us/en/insights/topics/understanding-blockchain-potential/global-blockchain-survey-2019/2019-adoption-by-industry.html> last accessed July 31, 2020.

highlight the need for sector-specialized rules in international arbitration as a way to make the forum more suitable to the resolution of their disputes, with technology companies even placing it as their preferred change for the development of arbitration.⁶¹

Therefore, if international arbitration is to remain relevant among these industries, it must try to evolve alongside its users by offering them certainty on whether, and how, the technologies they usually operate with will be recognized in their dispute resolution proceedings.

Lastly, we believe that the establishment of a clear and express framework on the admissibility of blockchain evidence would position international arbitration at the forefront of technologically advanced dispute resolution mechanisms. In the current times of ever-changing technological developments and political aversion to international and regional integration, arbitration has once again the chance to position itself in the vanguard of legal innovation by being the first cross-border dispute resolution forum to regulate and detail the recognition, submission and assessment of blockchain evidence.

Indeed, while domestic courts generally require thorough legislative changes in order to adapt and benefit from new technologies, the flexible nature of arbitration makes its reshaping much easier. The inherent self-regulatory, multi-party character of international arbitration would certainly help achieve mainstream regulation of blockchain admissibility in proceedings, paving the way for jurisdictions that struggle to detangle the matter by themselves.

⁶¹ Queen Mary University of London, et al (n 43).

6. CONCLUSION

The authors submit that, given the increasing use of blockchain solutions in the business world, the international arbitration framework needs to be revised to expressly provide for the admissibility of evidence based on blockchain. This is notwithstanding the fact that the current rules and guidelines are broad enough to consider that blockchain evidence is admissible in international arbitration.

This will be beneficial to litigants for several reasons. First, a solid framework on the admissibility and use of blockchain-based evidence will decrease the parties' transactions costs when deciding to submit evidence based on that technology. Second, a similar benefit will take place at the stage of producing such evidence: knowing in advance what requirements evidence produced through blockchain means must fulfil to be used in arbitration proceedings will give the parties and the practitioners a high degree of certainty, gradually turning into best practices.

This will also be beneficial to the *forum* itself, because it will lure into international arbitration the increasing number of companies that are implementing blockchain solutions in their business processes.