



# **KLEROS AS A GATEWAY TO DECENTRALIZED JUSTICE FOR LOW-COST CLAIMS. AN ANALYSIS FOCUSED ON HOW BLOCKCHAIN DISPUTE RESOLUTION CAN IMPROVE THE COLOMBIAN JUDICIAL SYSTEM AND TECH SECTOR**

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## Abstract

Developing self-executing agreements called smart contracts seemed futuristic and unlikely.

Nevertheless, those pieces of code deployed on blockchain are currently boosting online agreements by reducing governance failures, preventing corruption, reducing operational costs, increasing process transparency among many different aspects.

However, we cannot ignore the fact that disputes are inevitable and likely to arise at any given moment, especially when humans are faced with complex and new situations, which lead to misunderstandings, conflicts and unforeseen circumstances.

Kleros, a decentralized autonomous organization, is a platform with great benefits for the resolution of disputes on smart contracts, particularly for low-value claims.

All the above will be analyzed in the Colombian commercial sector, where new upcoming disputes are expected to emerge. The benefits of using smart contracts, academic expert's opinions on blockchain dispute resolution and an interesting approach of how and why Kleros could be considered a private legal system, which could positively impact commercial transactions and agreements in developing countries like Colombia.



# Introduction

The fact that business negotiations and activities such as agreements or transactions could be coordinated in a non-centralized way was unfeasible a few years ago. Blockchain created a way to do it, providing the tools necessary so that all transactions and agreements could be recorded immutably and efficiently through a decentralized network without the need to rely on a centralized third party.

One of the main applications of this technology are the smart contracts built on the Ethereum blockchain. This software generates the possibility of transcribing obligations (sometimes contractual) into codes that, in turn, are self-executing.

This paper aims to establish the impact and possible uses of this technology in Colombia. For this purpose it will be divided into two main parts.

On the one hand, there will be a brief statistical review of important data of Colombia about their unsatisfied legal needs, the importance of the commercial sector in the country and possible implementation of technology and blockchain.

On the other hand, from a legal approach, some scholars' opinions will be provided on how smart contract disputes should be resolved, either with traditional mechanisms such as courts, national and international arbitration, or whether a decentralized private justice system can also "adjudicate or arbitrate" smart contract disputes.

From the latter perspective, I will address some thoughts on the possibility to consider Kleros as a private legal system, which in Colombia (and in general for countries) will be beneficial for low-value claims involving blockchain technology and smart contract issues. It will be more accessible to users to have Kleros as a forum instead of relying on conventional arbitration or national courts.

Additionally, this paper presents a brief summary of the discussion of why smart contracts might be in conflict with the traditional scheme of justice since all three branches (legislative, judicial, and executive) , have a tendency to create mechanisms parallel to government mechanisms that manage justice privately and in a decentralized way.



# 1. The Current Situation of Access to the Justice System in Colombia

Worldwide, two-thirds of the population do not have access to basic justice services<sup>1</sup>. In Colombia, the statistics do not vary much.

The Colombian National Department of Planning, which is the entity in charge of planning strategies, designs, and evaluations in the social, economic, and environmental fields of the country published a report in 2017 alongside the World Bank where it is shown that 3 out of 5 Colombians do not have access to justice<sup>2</sup>.

The reasons for this are mainly the time and procedures required, the thought that the dispute is irrelevant or unimportant, costs and lack of knowledge.<sup>3</sup>

Consequently, 70% of the people in Colombia prefer not to file a claim rather than having to deal with the judicial system<sup>4</sup>.

Some experts have stated that the above is the consequence of a model of justice that is not designed to address cultural differences<sup>5</sup>, or in other words, that seems as if it only analyzes the problems in large cities and does not take into account, for example, the great variety of ethnic and population groups that are poor and/or possibly have little knowledge of the judicial system. Those groups do not believe in the system and/or prefer to take action on their own.

Additionally, there is also a deficit of free counsel that increases the percentage of unclaimed disputes.

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<sup>1</sup> New York: Center on International Cooperation, 2019, *Task Force on Justice, Justice for All – Final Report*. available at <https://www.justice.sdg16.plus/>

<sup>2</sup> National Planning Department. *Access to effective justice index 2017*. Available at: <https://dnpsig.maps.arcgis.com/apps/Cascade/index.html?appid=e9e93f31cd31497f8cd55629f6fbbed94>.

See also El tiempo. *Seis de cada diez que acuden a la justicia se declaran insatisfechos*. Available at:

<https://www.eltiempo.com/justicia/servicios/cifras-de-insatisfaccion-con-el-sistema-de-justicia-en-colombia-87806>

<sup>3</sup> Ibid.

<sup>4</sup> Ibid.

<sup>5</sup> Corporación excelencia en la justicia. *Caracterización de la justicia formal en Colombia y elementos para la construcción de una agenda estratégica para su mejoramiento*. Page 73. Available at:

<https://cej.org.co/wp-content/uploads/2019/07/Caracterizaci%C3%B3n-de-la-justicia-formal-en-Colombia-y-elementos-para-la-construcci%C3%B3n-de-un-agenda-estrat%C3%A9gica-para-su-mejoramiento-1.pdf>



To conclude, according to a 2016 World Bank's study, Colombia ranks 177th out of 189 countries in the category of contract compliance, which considers the effectiveness in resolving a dispute and the time it takes from the filing of the claim to the moment of payment<sup>6</sup>.

In Colombia, a claim takes approximately 1288 days to be resolved, compared to 736 days in Latin America and 538 days in OECD countries, which shows that there is clearly room for improvement<sup>7</sup>.

## a) Legal Needs in Colombia

According to the 2017 survey mentioned above, the health sector is where most claims arise, particularly for issues concerning the denial of services. The family and crime sector<sup>8</sup> are next.

Conversely, product/commercial claims represented 2.1% of the total filed claims<sup>9</sup> in 2016. Still, by 2018, digital transactions of online products and services represented 8.5% of the total Colombian GDP i.e, it increased four percent in the GDP's participation between 2013 and 2017<sup>10</sup>, and besides that, online sales increased from 6.4% in March 2019 to 30.5% in March 2020<sup>11</sup>, which means that conflicts in the online commercial sector have increased considerably and are expected to continue to do so in the coming years.

From the information above, we can conclude that legal needs in Colombia are still very connected to basic needs such as health or historically important problems such as crime. These are still central issues in the Colombian judiciary system. Thus, claims associated with trade or e-commerce are not part of the main government agenda.

However, it can't be ignored that the economic level, trade particularly has been the

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<sup>6</sup> Global finance. *Colombia GDP and Economic Data*. Available at :

<https://www.gfmag.com/global-data/country-data/colombia-gdp-country-report>.

<sup>7</sup> Corporación excelencia en la justicia. *Caracterización de la justicia formal en Colombia y elementos para la construcción de una agenda estratégica para su mejoramiento*. Page 73. Available at:

<https://cej.org.co/wp-content/uploads/2019/07/Caracterizaci%C3%B3n-de-la-justicia-formal-en-Colombia-y-elementos-para-la-construcci%C3%B3n-de-un-agenda-estrat%C3%A9gica-para-su-mejoramiento-1.pdf>

<sup>8</sup> Supra 2

<sup>9</sup> Ibid.

<sup>10</sup> La república. *Las transacciones digitales representaron 8,5% del PIB de Colombia para 2018*. Available at

<https://www.larepublica.co/empresas/las-transacciones-digitales-representaron-85-del-pib-de-colombia-para-2018-2891715>

<sup>11</sup> El tiempo. *Ventas online pasan del 6% al 30% frente a marzo del año pasado*.

Available at:

<https://www.eltiempo.com/tecnosfera/novedades-tecnologia/ventas-online-pasaron-del-6-al-30-por-ciento-en-2020-486816>



sector that has contributed the most to the economic growth of the country<sup>12</sup> in the last year and is very likely to grow. The following section will focus on this.

## b) The Commercial and Technology Sector in Colombia

In Colombia there are approximately 1.6 million registered companies, of which only 6793 are large businesses, 109 thousand are small/medium businesses, and 1.5 million are micro-businesses with no more than 10 workers and total assets of less than approximately 115,000 dollars<sup>13</sup>. Micro, small and medium sized enterprises are the backbone of the Colombian economy.

Small and micro establishments do not yet have innovation processes like large companies do, especially in the use of technology to make electronic transactions.

Nonetheless, the COVID-19 pandemic has "forced" companies and nations to perform online activities including sales, purchases of goods and services, transactions, contracts and employment. Hence, despite the great difficulties of the pandemic, it has become evident that technology is important in the lives of Colombians in different areas not previously explored.

Likewise, small companies have been advancing even in hiring freelancers, a modality not conventional years ago in Colombia. For instance, according to a study, of 2500 Colombians in 2015, 37% of them worked as freelancers apart from their full time jobs while 28% were freelancers as their main job.

The latter performed in areas such as programming, software development, systems engineering, and graphic design<sup>14</sup>. Additionally, the survey shows that six out of ten companies expected that by 2020, more than 50% of the Colombian workforce would be digital<sup>15</sup>.

Those non-conventional jobs benefit the small/medium companies by reducing operational costs and increasing the possibility of hiring more qualified professionals while saving money.

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<sup>12</sup> La república. *El comercio y el sector público impulsaron la recuperación del PIB nacional en 2019*.

Available at:

<https://www.larepublica.co/economia/el-comercio-y-el-sector-publico-impulsaron-la-recuperacion-del-pib-nacional-en-2019-2964980>

<sup>13</sup> Economía Aplicada. 2019: *¿Cuántas empresas hay en Colombia?*. Available at :

<http://www.economiaaplicada.co/index.php/10-noticias/1493-2019-cuantas-empresas-hay-en-colombia>

<sup>14</sup>Ibid.

<sup>15</sup> Ministry of Labor, Ministry of Technology and Telecommunications. *Primer estudio de trabajo 3.0 en Colombia*. Available at:

[https://www.teletrabajo.gov.co/622/articles-13459\\_recurso\\_1.pdf](https://www.teletrabajo.gov.co/622/articles-13459_recurso_1.pdf)



Additionally, the commercial sector (and especially the online one) has advanced considerably and represents a key sector for the country. This indicates that users have increased their confidence when making any transaction on the Internet.

To summarize, although commercial disputes are not on the main agenda among the main unsatisfied legal needs in Colombia such as health or education, this does not mean that the commercial area and its related disputes will not be a central issue in the future. Such disputes will require advanced knowledge in technology which will enable the solution of disputes in an efficient and low-cost manner.

If microenterprises generate high income for the national economy, as well as new job opportunities, the creation of justice mechanisms that help alleviate current and future claims is essential to keep the business sector strong. Besides, there will be more room for entrepreneurship with less risk and less fear of interacting with technology from the user's point of view.

### **c) How Blockchain and Smart Contracts can Help Industries in Colombia.**

As has been previously discussed, Colombia is still in an early stage when it comes to the use of new technologies in business. Therefore, it is not surprising that topics like Blockchain are clearly innovative and few companies dare to use them. For now, it has been used in the public sector, for instance for electronic student voting, land registration, and for academic certificates<sup>16</sup>.

At the moment of writing this paper there have been no projects or companies working with smart contracts mainly due to the same barriers that blockchain faces in Colombia: First, at the legal level, there is still no certainty. Although Law 134 of 2009 under the principle of technological neutrality allows the free adoption of technologies<sup>17</sup>, there are still no clear answers.

Even so, there is a bill (Law 028 of 2018) that is advancing in Congress which aims to regulate the civil and commercial transactions and operations of crypto-currencies or virtual currencies, as well as their monitoring and control<sup>18</sup>.

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<sup>16</sup> Chamber of Commerce Bogotá. *Así va el negocio de blockchain en Colombia*. Available at : <https://www.ccb.org.co/Clusters/Cluster-de-Software-y-TI/Noticias/2019/Agosto-2019/A-si-va-el-negocio-de-blockchain-en-Colombia>

<sup>17</sup> Law 134/2009. Available at: [https://mintic.gov.co/portal/604/articles-3707\\_documento.pdf](https://mintic.gov.co/portal/604/articles-3707_documento.pdf). See also: Colombia Fintech. *Colombia da el primer paso para regular Bitcoin*. Available at <https://www.colombiafintech.co/novedades/colombia-da-el-primer-paso-para-regular-bit-coin>

<sup>18</sup> Law 028 2018, Available at: <http://leyes.senado.gov.co/proyectos/images/documentos/Textos%20Radicados/proyectos%20de%20ey/2018%20-%202019/PL%20028-18%20Criptomonedas.pdf>



Second, there has been no monetary support from the government to fund projects. Last but not least, at the social level there is still very little understanding which hinders its development<sup>19</sup>.

However, the benefits of using blockchain are enormous. The self-executing code of smart contracts has been used worldwide in the financial, insurance and health sector, Also for supply chains, for employment, intellectual property, voting, among others.

Within its benefits, we find that it helps generate greater transparency in the supply chain and payment process with clear information because it is shared in an immutable record. It helps maintain control and tracking over the entire supply chain without fear of losing information. It also accelerates the contractual processes since the terms of the agreement and all the circumstances that may arise can be previously established, among many other advantages.

In the case of Colombia, the implementation of smart contracts would lead to increased confidence in transactions, more security and cost savings. All this would have a positive impact on key sectors of the economy that are in crisis (such as health or education) and would contribute to the growth of sectors such as trade, that will have a positive impact on the national economy.

Thus, the possible use-cases of blockchain in emerging countries such as Colombia are extensive. This technology can be implemented in:

- registration of land ownership (Colombia is working on this initiative<sup>20</sup>)
- delivering aid to vulnerable populations (an example of this is the pilot United Nations World Food Program launched in 2016 using blockchain technology to disburse aid to Syrian refugees living in Jordan<sup>21</sup>.)
- tracking physical goods through the supply chain, particularly for farmers. For instance, BanQu is a private blockchain which allows to record and authenticate any of the farmer's personal and financial transactions, for example property records, cash disbursements, the purchase of inputs, the quality of their harvests, health records, training records, or credit histories, which at the end allow them to

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<sup>19</sup> Superintendence of Industry and Commerce. *Center for Technological Information and Support to the Management of Industrial Property - CIGEPI*. Available at: [https://www.sic.gov.co/sites/default/files/files/Propiedad%20Industrial/Boletines\\_Tecnologicos/Boletin\\_Blockchain.pdf](https://www.sic.gov.co/sites/default/files/files/Propiedad%20Industrial/Boletines_Tecnologicos/Boletin_Blockchain.pdf)

<sup>20</sup> Kryptonews. *Colombian Government presents land registration pilot at Ethereum*. Available at: <https://www.cryptonoticias.com/seguridad-bitcoin/gobierno-colombia-presenta-piloto-registro-tierras-ethereum/>

<sup>21</sup> For more information, see: <http://innovation.wfp.org/project/buildingblocks>. According to the information provided in their website, they enable donors and aid organisations to send and receive funds around the world more efficiently, and to track those funds through the entire funding chain from initial donor to final recipient.





- have access to formal services<sup>22</sup>.
- automation of legal procedures, customs payments, ownership transfers, business transactions<sup>23</sup>.
- recording of citizenship and other forms of identities.
- registration of votes.
- transferring of subsidies/taxes.

And the list of applications could be endless.

But then the question will be if blockchain and/or smart contracts were used in Colombia, who would solve those disputes taking into account the huge judicial congestion? The next section will address this concern.

## 2. Blockchain Dispute Resolution

Smart contracts can reduce the scope for disputes due to their contract administration and automated payment processes incorporated in their decentralized, distributed ledger technology.

However, these pieces of code cannot fully encode (or at least not for the moment with the current artificial intelligence developments) law concepts such as good faith, unforeseeable circumstances, force majeure, among other legal concepts as well as they can not predict all the possible circumstances before the commencement of the contract.

Due to the above, a dispute resolution mechanism is necessary for the event of a potential dispute.

Allen et al. identified that this dispute resolution mechanism can be seen from two different approaches<sup>24</sup>:

The first one is a smart contract dispute resolution that can operate within the existing contract law structure and therefore can be adjudicated by courts, or existing

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<sup>22</sup> For more information see <https://banqu.co/>

<sup>23</sup> Kashif Choudhury. *What Blockchain Means for Developing Countries*. <https://medium.com/swlh/what-blockchain-means-for-developing-countries-1ec25a416a4b>

<sup>24</sup> Allen, Darcy & Lane, Aaron & Poblet, Marta. (2019). *The Governance of Blockchain Dispute Resolution*. Available at 10.13140/RG.2.2.31066.80327.



government alternative dispute resolution procedures<sup>25</sup>.

The second one aims to show smart contracts as independent tools which, in turn, can create a new, independent legal system that solves claims without depending on the government<sup>26</sup>.

Ortolani developed those two approaches for the Bitcoin adjudication system on what he calls "the tension between nationalism and transnationalism"<sup>27</sup>.

In other words, the notion of nationalism entails the idea that the government maintains a central role in the administration of justice and, therefore, must be protected from attacks, i.e., new ideas brought by "globalization" that seek to transform such traditional notions<sup>28</sup> (for example, decentralized justice mechanisms).

On the other side, transnationalists aim to question the traditional concept of justice<sup>29</sup>, which typically is unconsciously related to the government as the autonomous and legal system par excellence. Transnationalists believe that it is no longer the government (i.e. courts or arbitrators) that can exclusively shape an adequate regulatory framework for a globalized economy but, on the contrary, can coexist with new non-government orderings, which will break down the barriers between private and public international law<sup>30</sup>.

Thus, in the first approach it would be national judges or conventional arbitrators who would resolve those disputes, and in the second approach, private systems (such as Kleros), could be considered true mechanisms of justice that do not depend on the government but carry intrinsically the same objective: settle disputes.

## a) Main Features and Introduction of Kleros

Before diving into the analysis of Kleros as a private legal order, a short description of Kleros will be provided:

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<sup>25</sup> This first approach is covered by the following authors according to Allen et al : *De Filippi and Wright 2018; Governatori et al. 2018; Holden and Malani 2018; Raskin 2017; Sokolov 2018; Zaslowsky 2018. See also Kaulartz 2019 supra 40.*

<sup>26</sup> This second approach is covered by the following authors according to Allen et al: *De Filippi and Wright 2018; see also, De Filippi and Hassan 2018; Koulu 2016; Verstraete 2018; Werbach and Cornell 2017.*

*See also* Pietro Ortolani, *The Three Challenges of Stateless Justice, Journal of International Dispute Settlement*, (27 April 2016), 596-627.

<sup>27</sup> Pietro Ortolani, *The Judicialization of the Blockchain*, Published 2019 by Oxford University Press. Page 290.

<sup>28</sup> Ibid.

<sup>29</sup> Darcy W, Aaron, Marta Poblet, *The governance of blockchain dispute resolution*. Available at <https://www.researchgate.net/publication/331155400> *The Governance of Blockchain Dispute Resolution*

<sup>30</sup> Ibid.



Kleros is a blockchain-based smart contract dispute resolution platform that offers private dispute resolution services on top of the blockchain for parties who have a conflict over a smart contract or for disputes that do not originate on a smart contract, but parties selected Kleros as the forum for dispute resolution.

Moreover, those who will settle the conflict are not necessarily lawyers or judges but people who have the capabilities of resolving disputes in different areas, for instance, blockchain technicalities, freelancers, language specialists, marketing services, insurances, e-commerce, among others. To become a "juror" (which plays the same role as an arbitrator, judge, or private individuals with jurisdictional powers), applicants have to stake Kleros' tokens, and the more they stake, the more likely they are to be selected.

After jurors have voted which party won, Kleros provides an economic incentive for those who voted as the majority, compared to those who vote differently, who will lose their staked coins.

On the other hand, Kleros is a voluntarily opt-in system, i.e., parties must agree on their smart contract that, in case of a dispute, Kleros' court will solve it. If they consent to the above, all the processes, e.g., securing the evidence and the selection of the jurors will be held on the blockchain<sup>31</sup>; Finally, it will culminate with an award rendered through a Kleros' smart contract and enforced on-chain.<sup>32</sup>

Additionally, Kleros is a DApp, built on Ethereum, that for the moment is the only platform that privately adjudicates a variety of smart contract claims<sup>33</sup>.

A pivotal point to also mention here is that Kleros is also a DAO, i.e. it aims to be a truly decentralized network, that is to say, the network's developers do not control this platform, but all users collectively do. Its creators do not control who accesses, uses, or exits the application. It also allows anyone to see all the ongoing disputes, which generates trust and security.

Additionally, one of its key distinctions is the use of game theory with Thomas Schelling's concept of focal points<sup>34</sup>.

To summarize, the main advantages of Kleros are:

- Both disputed parties are confident that a neutral third party will resolve the

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<sup>31</sup> Clement Lesaege, Federico Ast, and William George, *Kleros White Paper* (Sept. 2019), <https://kleros.io/assets/whitepaper.pdf> [<https://perma.cc/4QG5-8XSH>].

<sup>32</sup> Ibid.

<sup>33</sup> Aragon Court is another project on cyberspace, which is also a blockchain-based dispute resolution protocol. Nevertheless, it is a court created for the Aragon Decentralized Autonomous organization. In contrast, Kleros court is a global decentralized BDR platform that serves any parties that need a dispute resolution mechanism for smart contract disputes.

<sup>34</sup> Supra 29.

In regards to the mandatory tokens that need to be staked to become a juror, game theory plays a fundamental role because those tokens will be returned if you vote consistently, in addition to your reward. Otherwise, you will lose those blocked stake tokens, and they will be distributed among the jurors who voted consistently.



dispute.

- The costs of these procedures are much lower.
- The claims are being decided more effectively ( it can be resolved in one or two weeks for example).
- There is no need for court proceedings to enforce Kleros' decisions as a smart contract will do it.
- Less chance of corruption exists, as none of the jurors know who their co-jurors are.
- It will generate a good reputation for companies offering services or products to have a neutral forum that will determine the dispute instead of the company's internal dispute resolution procedure.

## b) Can Kleros be Considered as a Private Legal Order?

According to Schultz<sup>35</sup> and Ortolani, non-government orderings will be considered legal if they are sufficiently formalized or what Herbert Lionel Adolphus Hart would describe as secondary rules<sup>36</sup>.

This formalization envisages the idea of three powers that are typically connected to governments but are not exclusive to them: the prescriptive, adjudicative, and executive powers<sup>37</sup>.

To address the topic above in detail is not the main purpose of this thesis, nevertheless, it has been argued that a private legal system could exist if the three powers - that are traditionally linked to the government - become evident without needing them.

In my opinion, Kleros can be seen as a private legal system as the three powers of justice are demonstrated, i.e a combination of a non-derivative normative power, the creation of governmentless mechanisms of adjudication, and the possibility of self-enforcement<sup>38</sup>. In other words, Kleros provides its own laws, mechanisms of adjudication and autonomous enforceability, Therefore it can be considered a private self-sufficient legal dispute resolution platform.

As far as the non-derivative normative power or applicable law, Kleros does not follow

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<sup>35</sup> Thomas Schultz, *Transnational Legality: Stateless Law and International Arbitration*. Oxford University Press 2014 and Thomas Schultz, 'Private Legal Systems: What Cyberspace Might Teach Legal Theorists' (2007) 10 Yale J L & Tech 151.

<sup>36</sup> Hart describes two types of rules: primary and secondary rules. The former are the duties or obligations imposed by laws and the last one includes rules of recognition, change, and adjudication.

In his view, in order to create a legal system, primary rules should be obeyed by the individuals, and the members of the adjudication community must accept the secondary rules as standards of official conduct.

<sup>37</sup> Pietro Ortolani, *The Three Challenges of Stateless Justice*, *Journal of International Dispute Settlement*, (27 April 2016), 596-627.

<sup>38</sup> Ibid. Ortolani reflects in his paper that in the context of Bitcoin, a private self-sufficient legal order is being created.



any government regulation<sup>39</sup>.

Nevertheless, Ortolani pointed out that another discussion will be whether this newly created law is considered "true law." In his opinion, he believes that at least in the Bitcoin adjudication scenario, it has the intention to be law, albeit, for some, it may not have such a connotation.<sup>40</sup>

It is my opinion that something similar to what happened with the *lex mercatoria* could start to be derived from these blockchain mechanisms.

Following the prescriptive power, the second step to address is the adjudication system that governs smart contract disputes. In this regard, there is no doubt that Kleros' main objective is to adjudicate disputes as a blockchain dispute resolution platform. Still, another discussion will be if it is the best adjudicative system in comparison to the government jurisdiction, but this will be discussed in the next section.

Finally, concerning the executive power, i.e. the way of forcing individuals to comply with rules<sup>41</sup> or in the smart contract dispute scenario, the way individuals will be forced to comply with the award, precisely one of Kleros' most significant advantages is that their awards/decisions are self-executing, that is, it does not depend on a coercive government apparatus to enforce its decision and therefore, the award will be enforced as soon as the smart contract is being deployed.

In other words, once the decision has been taken by the jurors, another smart contract (apart from the disputed one) will be created which will contain the award. Hence, as smart contracts are self-executed and follow the logic "if this, then that" after the condition occurs, i.e., a decision has been rendered, then the assets will be transferred to the winning party.

Certainly, the ease of self-execution is due to its very nature. It is not the same to execute a decision in public matters, for instance, a criminal law award, as it is to enforce a judgment that is generated in an internet and commercial environment.

In cyberspace, assets are located electronically and can be moved autonomously and quickly without needing the cooperation of government authority, while in the context of criminal law, it is imperative.

Nevertheless, do smart contracts have autonomous jurisdiction to enforce? In the context of Bitcoin, according to Ortolani, they do. And they do because the decision in the Bitcoin adjudication scenario coincides with its enforcement, hence, by not needing a third party

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<sup>39</sup> *Kleros: a Supreme Court for the Internet*. Available at: <https://blog.kleros.io/kleros-a-decentralized-supreme-court-for-daos/>.

<sup>40</sup> Pietro Ortolani, *The Three Challenges of Stateless Justice*, *Journal of International Dispute Settlement*, (27 April 2016), Page 608 Supra 33.

<sup>41</sup> Pietro Ortolani, *The Three Challenges of Stateless Justice*, *Journal of International Dispute Settlement*, (April 27, 2016). Page 602.



to allocate resources, that gives it the power to execute itself.

In the case of smart contracts, we are not facing a different scenario since their disputes usually refer to the distribution of resources between the parties, in consequence, it has autonomous jurisdiction to enforce.

Therefore, it can be concluded that indeed Kleros complies with the three powers of justice and therefore could be considered as a private dispute resolution system.

### c) Kleros as a Solution for Low-Cost Blockchain Disputes

There is no doubt that litigation will always be an option for solving a dispute, in this case, a smart contract dispute. Nevertheless, this adjudication model has been criticized for its associated costs, stress, delays, among others.

Mainly talking about government courts, Kaulartz and Kreis affirm that even if this forum can settle smart contract disputes, litigation will negate the efficiency that was gained in transactions. The objective of such software is to remove intermediaries and allow automatic enforcement if certain conditions are met<sup>42</sup>. With litigation, the process will be much slower and ineffective.

Additionally, particularly for low-cost disputes, there is no benefit in paying a filing fee, hiring a lawyer, attending court sessions, as well as handling the geographical, psychological, linguistic, and cultural barriers that involve going to court to resolve these type of disputes<sup>43</sup>.

Therefore, courts are not considered the best forum for resolving smart contract disputes.

Concerning arbitration, authors like Shehata (2018), Uribari (2018), Kaulartz & Kreis (2019) and Morgan (2018), suggest that arbitration is the most suitable forum for smart contract disputes, principally because it is a quicker process in comparison with litigation, it provides flexible rules of procedure, confidentiality in the proceedings, has trained individuals to resolve disputes on specific issues and the arbitral award produced by the private authority has the same possibility of being enforced as an ordinary judgment.

Nevertheless, the cost, the lack of effective sanctions to parties who employed dilatory tactics and the lack of power concerning third parties are the main concerns within in-house counsel, arbitrators, and private practitioners towards arbitration<sup>44</sup>.

<sup>42</sup> Falco Kreis and Markus Kaulartz, 'Smart Contracts and Dispute Resolution – A Chance to Raise Efficiency?', in Matthias Scherer (ed), *ASA Bulletin*, (© Association Suisse de l'Arbitrage; Kluwer Law International 2019, Volume 37 Issue 2) pp. 336 – 357.

<sup>43</sup> Ethan Katsh and Orna Rabinovich-Einy, *Online Dispute Resolution and Prevention: A historical Overview*. Chapter 2 Access to digital justice. Pages 39-43.

<sup>44</sup> White & Case. 2018 International Arbitration Survey: The evolution of international arbitration.



On the other side, considering the idea of a private legal order such as Kleros for resolving smart contract disputes, goes in line with the opinion that suggests that from time to time in some disputes neither the courts nor ADR mechanisms are the most appropriate<sup>45</sup>.

In the same line, Ortolani expresses that blockchain technology has the potential of creating its private legal system, disrupting the way justice is administered, as well as changing the perception of what traditionally is considered by the concept above<sup>46</sup>. Consequently, it defies the traditional government jurisdiction and centric enforcement concept, particularly on low-value disputes<sup>47</sup>.

He argues that if blockchain allows managing assets and resources in an autonomous, decentralized way, without the need of the government, this produces a marginalization of the government court and the corresponding development of a transnational system of adjudication.

However, such a statement would apply in his opinion to low-value disputes that fall under the category of consumer contracts, where neither courts nor arbitration but smart contracts may be the appropriate forum for resolving conflicts that occur in the blockchain<sup>48</sup>.

In other words, as far as high-value and complex disputes are concerned, there is no doubt that courts and arbitration are still appropriate mechanisms to solve such conflicts. Therefore, this privatization of legal orders, which is done through smart contracts, is currently based more on low-value disputes.

I consider that for low-value disputes, Kleros could be seen as a very appropriate mechanism for solving smart contract disputes instead of court or arbitration. Mainly because of its associated cost, since in Kleros the fees/cost will be minimal, and because its effectiveness, as rendering a decision in Kleros will take a few days compared to traditional adjudication proceedings where due to judicial congestion, the process can take several months (if not years in some cases).

Hence, it does not represent an advantage to pay high costs to hire a lawyer to represent them. Neither to wait long enough and not be sure that someone with blockchain knowledge can solve such a case.

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Available at:  
<https://www.whitecase.com/sites/whitecase/files/files/download/publications/2018-international-arbitration-survey.pdf>.

<sup>45</sup> Ethan Katsh and Orna Rabinovich-Einy, *Online Dispute Resolution and Prevention: A historical Overview*. Chapter 2 Access to digital justice.

<sup>46</sup> Pietro Ortolani, *The Judicialization of the Blockchain*, Published 2019 by Oxford University Press.

<sup>47</sup> Pietro Ortolani, *The Judicialization of the Blockchain*, Published 2019 by Oxford University Press.

<sup>48</sup> Ortolani refers exclusively to Bitcoin disputes, but this can also be applied to Ethereum disputes as previously discussed.



As we explained before, the jurors in Kleros are people specialized in different areas of blockchain, which have a limited timespan to solve the controversy (a few days), with a much lower cost than arbitration, which among them are unknown and once decided, the actions established will be executed immediately without the need of an intermediary.

In my personal opinion, I think that when more users feel confident with the technology and execution of smart contracts, Kleros could become the gateway to access to justice for low-value disputes.

As for the Colombian case, according to a report made by the most well-known arbitration institution in Colombia (Bogota Chamber of Commerce), commercial arbitration is the most recurrent type of arbitration in the country<sup>49</sup>, nevertheless, it is used mostly for high-value disputes.

This shows that access to such private mechanisms, which are more efficient than judges, still comes at a high price.

A figure called "social arbitration" was created to help people with fewer capabilities to access arbitration. Nevertheless, the main criticism that the above project has had is that it does not contain uniform rules for all the arbitral institutions and therefore, it is discretionary for each institution to place its requirements, which makes the process cumbersome and confusing.

As far as litigation, we have a delegation for jurisdictional matters in the Superintendence of Industry and Commerce, in charge of resolving intellectual property, data protection and consumer disputes. However, we have to take into account that although it is a free mechanism, it is not expeditious and requires the active participation of the user throughout the process. In addition, it does not guarantee that there will be trained personnel to resolve blockchain disputes.

To sum, both arbitration and government mechanisms such as courts and/or in the case of Colombia, Superintendence of Industry and Commerce, would detract from the effectiveness of resolving a dispute in a blockchain, and in fact with a private justice system, we could achieve similar ends at lower costs and in less time.

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<sup>49</sup> Chamber of Commerce Bogota, Available at: <http://info.minjusticia.gov.co:8083/Portals/0/MASC/Documentos/INFORME%20FINAL%20DIAGNOSTICO%20DE%20%20ARBITRAJE%20EN%20COLOMBIA%20VERSION%20FINAL.pdf>





### 3. Conclusions

In the smart contract dispute scenario, I believe that the tendency is not to depend so much on centralized institutions, such as courts or traditional alternative dispute resolution mechanisms, particularly for low-value claims.

Instead, in those cases, a decentralized organization, Kleros, is making headway and is considered an appropriate system for dispute resolution. Its principal aim is to arbitrate or adjudicate disputes in a non-conventional manner.

On the one hand, they use blockchain technology with its intrinsic characteristics, i.e., transparency, immutability, decentralization. On the other hand, they render "awards" which are translated into smart contracts that, due to their structure, are self-executing and do not depend on third parties.

The above means that blockchain technology revolutionizes the way justice is conceived since decisions can be executed without the need of government intervention. Additionally, it brings the possibility of access to justice at a more accessible cost, with more transparent processes, and with no delay.

This, however, does not mean that government institutions will be entirely displaced by blockchain-based dispute resolution organizations. On the contrary, those solutions seek to complement and alleviate government burdens as well as provide mechanisms for access to justice that allows disputes to be resolved quickly and at a lower cost.

Still, traditional arbitration remains a much more effective mechanism for dealing with higher value disputes than national courts.

Therefore, both Kleros and traditional arbitration are mechanisms that can coexist and resolve smart contract disputes. The use of one or the other will depend mainly on the associated costs and the confidence that users have in independent and decentralized systems of justice.

As far as smart contracts as private legal systems are concerned, it can be said that the three powers which are linked to traditional justice are also reflected in Kleros, at least gradually.

Regarding the prescriptive power, it is even early to talk about a governmentless law which is preferably applied rather than government law to resolve smart contract disputes; nevertheless, they render awards applying non-government law. It is expected that in the medium term, more information can be gathered on the applicable regulation for these types of disputes, as it is still a very new technology.



Regarding the judiciary power, more users are relying on decentralized dispute resolution layers such as Kleros to settle their disputes, instead of going to traditional arbitration or national courts.

Finally, concerning the executive power, in decentralized justice systems the need to request the enforcement of the award from a government authority is eliminated, which makes it truly innovative and captivating.

Therefore, a private legal system within smart contracts is being created, as it occurs with Bitcoin, where they allow parties to develop a dispute resolution mechanism and a private adjudicator will decide and enforce the decision in the same decentralized system.

Finally, smart contracts promise to be a digital revolution for the world, but that doesn't mean that neither the law nor traditional legal research will become obsolete. On the contrary, we are still facing very new scenarios.

Over time, both users, academics, and governments themselves will help chart the course to resolve disputes of this type of technology in the most effective way and with the fulfillment of guarantees and minimum fundamental principles.

In Colombia's case, the government has recognized the importance of blockchain technologies. Thus, its use will not be a question of if it will be implemented, but when. Blockchain is still considered a very incipient technology, however, as soon as its use starts to increase, the importance of having effective dispute resolution mechanisms for that technology will be key for its implementation and for its development in the country.



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