



Applying blockchain to the modern legal system: Kleros as a decentralised dispute resolution system

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Abstract This paper examines the use of blockchain technology in the legal system through decentralized online dispute resolution mechanisms, with a particular focus on Kleros. While Kleros offers a potentially more accessible, efficient, and fair way of resolving minor disputes, concerns have been raised about the potential bias caused by jurors accumulating cryptocurrencies. It is criticized that Kleros and similar decentralized systems are perceived to be a more accessible, quicker, cheaper, and fairer way to resolve disputes. However, important questions have been raised about the financial interest of jurors and how it may diminish the role of the rule of law and impede its evolution. Despite these concerns, the authors argue that Kleros has the potential to introduce blockchain into the national judicial system. To achieve this, measures such as allowing parties to select jurors with specific qualifications and setting a fee proportional to each juror's Pinakion (PNK) should be implemented. Furthermore, clear instructions on the use of cryptocurrencies and blockchain in the Kleros system should be provided to promote transparency and understanding for all participants. Overall, this paper contributes to the discussion on the use of blockchain technology in the legal system and highlights the need for careful consideration of its potential impact on the rule of law.

Keywords Online mediation · Trustless systems · E-justice · Crypto courts · Electronic arbitration

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1 Introduction

Blockchain technology can be called promising because, in theory, it is widely applicable in various areas of social life: in finance for banking and payments [34], in insurance regulating the relationship between the customer and the insurance company [6], which is in principle applicable to all areas of service provision, for contracts of purchase, provision of services, leasing, etc., for voting both at the micro level and on the governmental level [17, 22], to protect personal and sensitive information [41], etc.

The legal system is no exception, and blockchain, again in theory, could be applied across the board in the legal field, and in particular in the following three areas:

1. Verification and authentication of legal documentation thus replacing the notary system¹ [25];
2. Contracting, using smart contracts instead of paper contracts [35];
3. Dispute resolution, where instead of the traditional court system or alternative dispute resolution methods such as mediation, conciliation and arbitration, a decentralised method of dispute resolution is favoured [1].

However, for the purposes of this study, the focus will be on the use of blockchain for decentralised dispute resolution, which also builds on the already existing smart contracts and certified documentation. The scope of application is much broader when each area of law is considered separately, such as the registration and protection of intellectual property rights through blockchain [16, 40], the provision of blockchain-based digital evidence in criminal law [20], or dispute resolution and contract enforcement [28] in civil law, and digital public administration in administrative law [7].

2 Rethinking justice

The central tenet of advocates for the implementation of blockchain into the modern legal system is to rethink justice in the 21st century [10]. For instance, Ast and Sewrjugin argue that the digital revolution has transformed many industries and institutions without, however, affecting the legal system in any significant way [3]. According to the article by Ast and Sewrjugin, “recent developments in collective intelligence, open government, social epistemology and blockchain technology” should lead to significant changes in how courts operate, making them financially sustainable and more efficient [3]. Indeed, the courts have been criticised over the past decades for being inefficient, time-consuming, costly and difficult to access, leading to the emergence and relatively widespread use of alternative means of dispute resolution (“ADR”) [30].

¹ By the same token, in the Spanish legal system, the need for *procuradores*, who are intermediaries between the judge and the lawyer, can be completely eliminated.

The inefficiency of the courts is often linked to the time required to administer justice and the high cost of attorney fees and services [32], particularly in civil proceedings. For instance, in Spain, depending on the complexity of the case, the process can take up to a year. Despite the seemingly lengthy process, Spain ranks 30th out of 140 countries on the WJP Rule of Law Index® for the effectiveness of the civil process, which is above average and implies countries with low-performing justice systems, such as Cambodia, Venezuela, and Bolivia [36]. Efficiency is measured by the absence of discrimination and corruption, unreasonable delays in the delivery of justice, and the effectiveness of the enforcement of judicial decisions [36]. In the case of ADR, the process can take from several weeks to several months, depending on the complexity of the case, the number of arbitrators, and the institution in general. Thus, the argument concerning the inefficiency of the courts or the excessive delay of the process due to State bureaucracy can be a valid basis to begin searching for a possible remedy or ADR.

On the economic side, Ast and Sewrjugin argue that the courts are not financially sustainable institutions, which can be understood when one considers that, for example, in Spain court, lawyer and prosecutor fees must be covered just to file the suit. However, compared to ADR, courts are a less costly way of resolving disputes because private interests are not involved. In the case of arbitration fees are proportionate to the needs of the institution and arbitrator, as well as involve travel and rental costs for the negotiation premises in case of an international arbitration. Thus, at the International Centre for Settlement of Investment Disputes (“ICSID”), the filing fee is US\$25,000 and the administrative fee is US\$42,000 [33], in the Spanish courts, the cost is proportional to the value of the claim, making it less expensive. To evaluate the validity of this argument, the costs related to a decentralized dispute resolution system will be discussed later in this chapter. This is important in order to have a complete understanding of how such a system operates.

Regarding the difficulty of access related to physical presence in court, for example, in the case of the same international disputes where personal presence is required, in the case of online dispute resolution (“ODR”), which aim to solve this problem, the availability of electricity, Internet connection and technical equipment is an issue. The populations of many African countries are deprived of electricity [37, 38], many Asians and Africans remain unconnected (in India only 50% of the population and in China 41%) [39], and technical equipment [18]. Thus, from the outset, ODR becomes a very discriminatory means of dispute resolution, especially for much of the population of the least developed and developing countries. It also makes this mode of dispute resolution globally ineffective. Decentralized justice, rather than “bringing justice to unjusted”, may instead benefit a technocratic elite [10] and exacerbate the existing development gap.

The purpose of this study is to provide an objective analysis of how decentralised justice can be successfully incorporated into the modern legal system, making it more efficient and setting aside all “socio-technical imagination of cryptocurrencies and their judicial implications” [10].

3 Decentralised online dispute resolution

Decentralized ODR claims to address the growing demand for e-commerce dispute resolution that the existing judicial system cannot meet, especially with the large volume of small value claims across national borders [2]. In the early 2000s, ODR was designed to address specific problems in business-to-consumer e-commerce, such as misrepresentation, non-delivery of goods, difficulty in obtaining refunds, and legal uncertainty as to which jurisdiction was competent [9]. Currently, every e-commerce giant, such as eBay, Amazon, Alibaba, etc., has developed its own ODR system that incentivizes conscientious behaviour by sellers through customer satisfaction and a corresponding increase in sales.

For example, eBay has created a step-by-step process similar to arbitration systems, which starts with a problem determination, goes through stages of direct technological ODR, online mediation and finally the evaluation stage, where eBay decides the case if the parties cannot agree. The aim of such a system is to prevent as many disputes as possible amicably, and then to resolve the remaining ones as quickly and fairly as possible [31]. The system does not require any financial investment from the parties to resolve the dispute, as it is in the interest of the platform company to provide the least costly and most efficient solution so that both sellers and buyers expand their commercial ties. Thus, by narrowing the scope of the decentralised dispute resolution system to e-commerce business-to-customer only, the real potential of the initiative seems under-explored.

The very idea of decentralisation is based on the premise that judicial decisions are not subordinated to a specific institution, unlike in the case of a national judicial system. This system attracts the private sector, which is interested in efficiency and cost reduction, as well as technocrats who seek capital accumulation and libertarians who aim to avoid pervasive State control. Dylag and Smith highlight that this is an economisation of disputes which transform the “justice from a domain of experts engaged in deliberation, fact finding, and critique with a domain where experts are replaced by winners, and deliberation by free markets” [10]. A potential fusion of private initiative and government involvement could lead to greater implementation as well as financial contributions to project development, while avoiding direct government intervention. The Kleros decentralised justice project, for example, received the Blockchains for Social Good award from the European Union’s Horizon 2020 research and innovation programme [12], which elevates the project and underlines the importance of blockchain for societal development.

Decentralised dispute resolution systems have advantages over other digital courts, but they also have some disadvantages. One advantage is that they consist of a jury whose main motivation for dispute resolution is economic enrichment [2]. However, some argue that this turns justice into a prediction market, reducing it to jurors speculating on the probability that a party will win [10]. From a legal perspective, this is more about the application and interpretation of the law rather than determining who is “good” or “bad”. Legal disputes are complex social relationships that cannot be simplified in such a way. Artificial intelligence cannot replace lawyers and judges because smart contracts still fail to capture aspects that require interpretation [2]. The main argument in favor of decentralised dispute

resolution is that each juror will rule in good faith, expecting the same behavior from other jurors [23]. However, honesty is crucial for both sides in this system.

The national court system as well as ADR are criticised by representatives of decentralised systems for being expensive [2], which is a generalisation, as the cost varies considerably based on the value of the claim as well as the body which hears the dispute. Thus, as mentioned above, taking a dispute to a local Spanish court is not the same cost as taking a dispute to the ICSID. Moreover, the national court system has a reasoned and prescribed cost, which is often linked to the need to train the relevant personnel (i.e. lawyers and judges who undergo years of training and education to obtain their position, rather than simply being randomly selected), to maintain the functioning of judicial institutions (such as salaries for office workers and judges, which should make them impartial in dealing with each case) and finally to the system of enforcement of court decisions and the appeal instances. Judicial systems should rather be criticised for their complexity and messiness, which bureaucracy entails, rather than for their costliness.

The interpretation that the price of litigation is due to a “monopoly of lawyers and judges on their services” [2] is a distortion of reality and a tapping of facts to one’s preferred perspective. First, it is not a monopoly, to bring justice you need a special understanding and knowledge of the laws, thus it is logical to assume that anyone cannot make legal decisions without knowing the laws. Nevertheless, anyone, after receiving appropriate education, can become a lawyer and a judge. Second, following the logic of the argument, one could also argue that doctors have a monopoly on providing medical services, then it is worth asking, if a person needs surgery, will he/she go to a surgeon or a butcher? Contrary to the claim that decentralized justice platforms recognize the knowledge and work of individuals with specific expertise, these platforms tend to rely on technocrats who accumulate cryptocurrencies and boost their chances of being selected as jurors [10].

In 2020, the total number of users of decentralized justice systems was less than a thousand, which is due to the chicken and egg problem. According to Aouidef et al., this is a problem for all start-ups, which need to involve both clients (parties to the dispute) and service providers (juries), which are interconnected. Thus, a lack of juries slows down the decision-making process, which discourages parties, and a lack of disputes negatively affects the interest of juries, who do not profit [2]. However, this is not a problem for start-ups only, but for the entire legal sector, which is engaged in service provision and has remained highly competitive over the centuries, both among judges and lawyers. Those who have a strong reputation and credibility are of higher value and are therefore trusted more. For some reason, international judicial institutions are represented by highly qualified and recognized judges, and the cases are led by high-ranking lawyers.

The article cites Uber as an example and suggests that while the company may be successful in some countries, it remains banned in others, leading to segmentation into different providers depending on the region [2]. Encryption, which is part of smart contracts and cryptocurrencies and used in blockchain, is already subject to some restrictions or requires prior authorization in various countries around the world, such as Iran, China, Morocco, India, Colombia, and others [14]. This demonstrates that, at least in the initial stages of implementing a decentralized

dispute resolution mechanism, segmentation is inevitable, and the system itself is oriented towards the West, which has sufficient resources and favourable legislation to introduce such a system. This is not a disadvantage for further implementation of the system, but since decentralized dispute resolution is positioned as universal, “bringing justice to the unjust”, it is important to stress that this claim is not accurate enough.

For the purpose of this study, the paper will analyse three already existing decentralised justice systems: Kleros, Aragon and JUR, comparing their features; however, the focus will be on Kleros as it is to date the most theoretically and functionally developed mechanism [2].

According to Poblet and Casanovas [29], decentralised justice systems have emerged as a potential solution to some of the issues associated with traditional legal systems, such as high costs, slow and bureaucratic decision-making processes, and a lack of trust in the fairness and impartiality of the system. In this study, we will analyse three existing decentralized justice systems: Kleros, Aragon, and JUR, which have gained significant attention and popularity in the field. However, the special emphasis will be on Kleros, which is currently the most developed system, using crowdsourced jurors to adjudicate disputes on a blockchain-based dispute resolution platform.

Aragon is a platform that enables the creation and management of decentralized autonomous organizations (“DAOs”) with built-in dispute resolution mechanisms. JUR leverages blockchain technology to provide fast and transparent resolution of disputes [19]. Through our analysis, we aim to gain a deeper understanding of how decentralized justice systems operate in practice, their potential impact on the legal system, and how they could be improved in the future. Ultimately, our analysis could inform future developments in the field of decentralized justice and contribute to the broader conversation about the future of legal systems [29].

4 Kleros

Kleros, a decentralized justice mechanism, was launched in 2018. As of November 2021, it had resolved around 1000 disputes with 14,000 registered users [21]. The statistics associated with the project are transparent and continuously published on the website, providing an indication of how far the project has progressed and whether it holds promise for later, larger-scale implementation. The Kleros system is based on the Ethereum blockchain (“ETH”), meaning that to participate as a juror or party to a dispute, one must purchase ETH, which is subsequently exchanged for Kleros pinakion cryptocurrency (“PNK”) [26]. Thus, to participate in a dispute, one needs to know how to use a cryptocurrency wallet, buy cryptocurrencies, and exchange them efficiently. Since cryptocurrencies are volatile [4, 26], it is necessary to have sufficient knowledge of crypto stock markets; otherwise, significant financial losses can occur. As an illustration of the volatility of cryptocurrencies, consider the following statistics: in 2020, 1 ETH was €120; in 2021, 1 ETH was €638; and in 2022, 1 ETH was €2700 [15].

In the case of Kleros, jurors for dispute resolution are not chosen based on their knowledge and qualifications, but rather on the highest PNK bid. Typically, three jurors are selected, and they vote independently on a binary (yes/no) or non-binary level, depending on the contract. Each party involved in the dispute, as well as each juror, must pay a certain PNK fee to participate in the dispute resolution process. When the majority of the jury reaches a decision, they are reimbursed for the PNK fee, and the PNK of the juror in the minority (if any) is prorated. The losing party in the dispute is responsible for all costs related to the jury and court procedure, while the winning party is reimbursed the PNK. It is possible to appeal the jury's decision an unlimited number of times, depending on the parties' financial means, and each proceeding must be paid for by the parties involved [24].

The creators of Kleros have authored a number of articles that help to understand the technical aspects of how a decentralised dispute resolution system works, but also, importantly, to understand what the potential weaknesses of such a system are and how they can be avoided. For the purposes of this research, the author will address some of the issues in relation to the operation of the court and attempt to assess the entire system from a lawyer's perspective.

4.1 Jury composition

The jury in Kleros consists of three members to ensure a majority decision in any dispute. This system is efficient in binary disputes where parties have only two options to choose from. However, in non-binary disputes, each side may have a different opinion, such as a “yes if” statement. In national courts, the decision is made exclusively by a single judge, thus avoiding such a situation. In international courts, such as the International Court of Justice, the decision is made based on a majority, but the number of judges is much higher, and each judge has the right to express a separate opinion if they disagree with any part of the decision.

Compared to arbitration, where parties can decide how many arbitrators they prefer, Kleros provides no alternative, which eliminates potential disputes that cannot be resolved by a binary decision and calls into question the effectiveness of resolving disputes that may seem binary on the surface but are not. A possible solution to this problem could be to allow parties to determine how many jury members are needed to resolve a dispute or to tie the value of the dispute to the potential number of jury members. For example, high-value disputes could be reviewed by a jury of five members, and low-value disputes by one member of the jury.

4.2 Jury qualifications

No qualifications are required to become a jury member of a non-specialised dispute; the only requirement is a PNK bid. In specialised sub-courts, where special knowledge is required, jurors are expected to participate in specialized sub-courts within their area of expertise, avoiding those sub-courts which are beyond his or her competence. However, as the only thing known about the juror is his or her address from which the tokens were deposited, it is not possible to verify both identity and qualifications and experience [26]. For this reason, two problems arise:

An ambiguous relationship between the jury and the parties, as the parties cannot be sure that the jury is competent and qualified to decide their dispute and that the decision made by the jury is fair and in accordance with the law. The problem of an unfair decision could have been solved if the parties had been able to choose their own jurors on the basis of their skills and knowledge. Of course, this would require revealing the identity of the jurors to a certain extent. Alternatively, Kleros could pilot a program where jurors have the option to disclose their qualifications for consideration in specialized sub-courts: where the jurors are unknown, and where they voluntarily decide to disclose their qualifications. In case the second option is demanded between both the parties and the jury members, this could bring decentralised justice to the level of online arbitration.

Metzger emphasises that there is no guarantee that the jury will understand the complexity of the dispute and the applicable law. Thus, depending on each juror's country of origin, the common, civil or religious law system may be applicable [26]. Similarly, national and international law as well as general and special rules can be unreasonably chosen. If Kleros does not intend to completely rule out legal disputes but to stay with simple issues where there is a service and therefore there should be a payment, then Kleros should specify which law applies to each dispute and compile a list of qualified jurors and expect jurors not to select those outside their speciality or at least compile a list of jurors and their qualifications.

4.3 Evolution of the law

The Kleros practice is to penalise those members of the jury who do not vote consistently with the majority: they lose their bit as well as reduce their chances of being selected for the next dispute [26]. From a legal point of view, this could have a negative impact on the evolution of the law, as jurors will try to avoid applying novelties out of fear of being punished, which means that the same norms will be applied on an ongoing basis. Legal norms can tend to become obsolete, in that case the judge decides that a different rule should be applied, which creates jurisprudence and the subsequent evolution of the rules of law. In the case of Kleros, this becomes impossible, as the jurors will expect consistency from the other jurors.

Unfortunately, if we take into account that the main driver of decentralised systems is economic momentum, it becomes difficult to offer any solution to this problem other than not punishing whoever is in the minority.

4.4 Juror monopoly and right to appeal

There are currently 9024 PNK holders, of which the top one owns 11.6 per cent, the top two to four about 7.5 per cent and the top 17 and below less than 1 per cent [11]. This demonstrates that a limited number of jurors have a dominant PNK and that this allows them to be chosen to decide disputes overwhelmingly more times than other jurors, which is essentially the monopoly they accused lawyers and judges of having. This is especially relevant when one considers specialised courts, where only specialised jurors as such can presumably apply. Assuming that in a specialised

court the juror is a top one PNK holder, he or she is likely to be selected for every specialised dispute [26], including appeals.

In order to avoid a situation where the same jurors decide both a dispute and an appeal, a sufficient number of jurors with a similar number of PNK should be ensured. However, since everything is based on economic incentives, this seems unlikely. Alternatively, change the dispute fee and therefore the penalty in proportion to the amount of PNK, so that the fee for those who have a higher amount will be higher than for those who have less. Similar to taxation in European Union member states, this should discourage the accumulation of PNK by those who have more and inaccessibility to those who have little or none.

4.5 Access difficulties and volatility of cryptocurrencies

At the beginning of Metzger's paper, he emphasises that it is not easy to start participating in Kleros *per se*. First of all, to get started with the cryptocurrency exchange, you need to install a special browser that works with the Web3-enabled plugin, as commercial browsers such as Firefox or Google Chrome do not support this feature [26]. After that, the person wishing to purchase the cryptocurrencies will begin the process of creating a wallet for ETH and a wallet for the tokens to which ETH will be transferred to purchase the PNK [26]. The process is not that simple unless you know exactly how it works, and specific technical knowledge is required. Such a barrier is not only a problem for the jury, but also for the litigants, who are likely to need an intermediary, i.e., a lawyer with technical knowledge, to bring the case to the jury. Although Kleros argues for access to justice and the eradication of the monopoly of lawyers and judges, as quoted above, this is more akin to opening a monopoly niche for cryptocurrency professionals in the legal field.

To avoid this, clear and comprehensive guidance is needed, as well as training programmes on how to deal with cryptocurrencies. This also includes knowledge of the volatility of cryptocurrencies and the significant fluctuations in their exchange rates [4], which can cause financial losses even to those members of the jury who decide disputes in agreement with the majority.

5 Further development

Kleros, as a decentralised dispute resolution system, has a number of competitors in other decentralised and online dispute resolution systems, among them are Aragon, JUR, Delphi, Rhubarb, Jury Online, and OpenCourt [26]. Kleros is widely discussed in academia and has been positioned as one of the most developed of these [2], due to the fact that the creators have engaged widely with scholars to discuss the system, as well as engaging with the public actors, such as the European Union. To understand how Kleros differs from other decentralised justice systems, a schematic analysis of the main characteristics of such systems is provided below, touching on criteria such as the type of cases handled, the selection of jurors and specialised courts, the existence of a jury evaluation and appeal system, and the fees required. The characteristics of the three main decentralised dispute resolution systems proposed

Table 1 Comparative analysis of decentralised dispute resolution systems

| | Kleros | Aragon | JUR | Proposal |
|-------------------------|--------|--------|-----|----------|
| Binary cases | Yes | Yes | Yes | Yes |
| Non-binary cases | Yes | No | Yes | Yes |
| Jury quality selection | No | No | Yes | Yes |
| Specialised courts | Yes | No | No | Yes |
| Juror reputation | No | No | Yes | n/a |
| Appeal mechanism | Yes | Yes | No | Yes |
| Subscription fees | No | Yes | No | n/a |
| Dispute fees | Yes | No | Yes | Yes |
| Jury quantity selection | Yes | No | No | Yes |
| Proportional fee | No | No | No | Yes |
| Guidance on crypto | No | Yes | No | Yes |

by Aouidef et al. [2] are compared with a proposal to improve the Kleros system (Table 1).

Table 1 shows that there are no significant differences between the three main decentralised dispute resolution systems. While these systems may vary in some specific aspects, they function in a similar way. In each system, disputes are adjudicated by a jury, which can either be elected (JUR) or not (Kleros, Aragon), and they receive an economic incentive for their decision, as the parties to the dispute pay either a subscription fee (Aragon) or a dispute fee.

Three criteria could improve the functioning of decentralised dispute resolution: the possibility of choosing the number of jurors (which is possible in Kleros, but not very clear if in any dispute), charging a proportional fee depending on the PNK the juror owns, and providing comprehensive guidance on how to get a cryptocurrency wallet and how to buy and exchange cryptocurrencies (which to some extent exists in Aragon).

In terms of the subscription fee and the reputation of the jury, they appear to be irrelevant. In the case of the subscription fee, it may discourage parties from resolving disputes, and besides, it is impossible to predict whether disputes that can be resolved through a decentralised system will arise. In the case of the jury's reputation, on the one hand, it is impossible to select jurors by reputation, and on the other hand, economic gain incentivizes the behaviour of the jury and thus substitutes reputation.

The creators of Kleros acknowledge the need to improve certain aspects of the system [23]. For instance, if a jury cannot reach a decision supported by the majority, the subsequent distribution of the PNK is unclear. To address this, they propose creating a mechanism for the automatic distribution or return of the PNK to the jurors [23]. However, this solution may lead to subsequent frustration among the jurors. Instead of voting for the decision they think is correct, the jury may try to anticipate the decision of other jurors to avoid wasting time in a dispute whose decision may not be coherent and therefore will not bring any financial benefit. This situation is more likely to occur when there are only two or three jurors. One potential solution is to appoint one of the jurors as the lead juror who will make

the final decision, or to add an additional juror to break any ties. If the dispute remains unresolved, the PNKs will be refunded, which may leave both the jury and the parties dissatisfied. To avoid this dilemma, the number of jury members could be assigned based on the complexity of the dispute. More complex disputes may require more jurors for a fair and effective resolution.

Lesage et al. have proposed an improvement for Kleros whereby a juror can delegate their vote to another juror, which they call “liquid governance” [23]. However, it is unclear why a juror who intentionally applied for a specific dispute would want to delegate their vote to another juror (who may not even be human). As an example, they suggest delegating a decision on a tariff update based on market data to a smart contract [23]. This raises the question of why a human juror would be needed if a dispute could be resolved by a smart contract. Resolving a dispute involves economic costs for the parties and benefits for the jury, as well as the disclosure of confidential information to the juror. Ultimately, if a juror delegates their vote to a smart contract, it puts the parties to the dispute at a disadvantage and is not efficient. Therefore, disputes that can be decided by a smart contract should be identified at the outset and sent for resolution to the smart contract rather than to the jury.

Finally, Lesage et al. provide the following situation: “over the course of a series of appeals, the original parties to a dispute reach an agreement ... prematurely end the dispute resolution process. However ... jurors and fee funders, will have become financially interested ... Hence, it is necessary that the dispute be allowed to continue on, even in the absence of the original party” [23]. Such a perspective, where the financial interest of the jury is prioritised over the legitimate interests of the parties, questions the fairness of the Kleros proceedings as a whole. It also leaves a certain negative mark on those who aim at introducing decentralized and crypto technology into the legal system, eventually giving the impression that their only interest is financial enrichment by displacing the role of the state in the delivery of justice. The economic interests of the private sector certainly do exist, but it should not prevail over the law.

This leads to the conclusion that Kleros’ main competitor is no other decentralised dispute resolution systems, but the state, which can first support the initiative and then impose the technology itself. In terms of minor disputes, for example, the European ODR platform for consumer protection resolved 17,461 complaints in 2020, mostly related to the retail sector [13]. The Canadian Civil Dispute Tribunal is also involved in resolving disputes online in small claims up to \$5000 and strata property, encouraging a collaborative approach by the parties to resolve the dispute and taking the initiative to settle the dispute only if the parties are unable to reach an agreement [5]. Mexico has implemented Concilianet, a free ODR platform designed to resolve disputes between businesses and consumers by ordering contract compliance by merchants, but those seeking monetary damages must resort to lawsuits or other traditional claims processes [27]. With regard to online litigation, in 2021, China issued the Online Litigation Rules of the People’s Courts, which cover the branches of criminal, civil, administrative and other laws to promote and regulate online trials, improve online trial rules, protect the legal rights of parties and other litigants, and ensure impartiality and efficiency in the adjudication of cases [8].

Articles 16, 17, 18 regulate the submission of evidence by parties to a dispute via blockchain, thereby legally confirming its applicability [8]. China is currently the most advanced state in implementing ODR and using blockchain to resolve legal disputes, which, however, does not prevent other states from developing their own ODR systems and thereby creating significant competition to decentralised ODR.

6 Conclusion

Kleros is a decentralised dispute resolution system with high potential, aiming to use blockchain, smart contracts and cryptocurrencies to resolve disputes online. The system was created as an alternative to traditional courts, which have been criticised for being slow, costly and inefficient. At this point, Kleros raises some doubts about procedural fairness due to the fact that the jury's final decision is always determined by financial incentives rather than the law. Cryptocurrencies, which serve as the starting point of any dispute, are raising doubts about their accessibility to all justice-seekers, and not just technocrats aiming to accumulate financial resources.

Despite these disadvantages, Kleros has the potential to introduce blockchain into the judicial system, having a beneficial impact on the efficiency and accessibility of justice. For this purpose, it is essential to improve aspects such as the ability to choose the qualifications and number of jurors, to establish a fee proportional to each juror's PNK, and to provide detailed instructions on how cryptocurrencies and blockchain function within the Kleros system.

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