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A NOÇÃO DE SMART CONTRACTS, POSSÍVEIS PROBLEMAS E SUA UTILIZAÇÃO PELA ADMINISTRAÇÃO PÚBLICA

THE NOTION OF SMART CONTRACTS, POSSIBLE PROBLEMS AND THEIR USE BY PUBLIC ADMINISTRATION

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RESUMO

A pesquisa se dedica a conceber uma noção dos smart contracts, utilizando duas perspectivas com ligeiras distinções e possíveis exemplos para tanto. Ainda se expõem as bases essenciais e as características distintivas dos smart contracts. Seguidamente se adota uma perspectiva crítica para analisar essa categoria contratual que representa uma inovação tecnológica que precisa adaptar-se às leis vigentes e também aos poderes constitucionalmente constituídos, para que seja utilizada de forma justa e eficaz pela sociedade. Por fim, trata-se da possibilidade da utilização dos smarts contracts pela administração pública. Vislumbram argumentos para reforçar a necessidade de o Poder Público se modernizar no mesmo tempo que a sociedade. Ademais, os smart contracts poderiam auxiliar em questões atinentes ao Estado, como a ampliação da celeridade dos atos administrativos, mais transparência dos contratos, facilitação do controle pelos Tribunais de Contas, melhor gestão dos recursos e redução da corrupção, desde que se realizem adaptações na gestão pública e na normativa vigente.

Palavras-Chave: Smart Contracts. Problemas. Benefícios. Administração Pública.

ABSTRACT

The research is dedicated to conceiving a notion of smart contracts, using two perspectives with slight distinctions and possible examples for that. The essential bases and distinctive features of smart contracts are also exposed. Next, a critical perspective is adopted to analyze this contractual category that represents a technological innovation that needs to adapt to current

laws and also to the constitutionally constituted powers, so that it can be used fairly and effectively by society. Finally, it deals with the possibility of using smart contracts by the public administration. They envision arguments to reinforce the need for the Public Power to modernize at the same time as society. In addition, smart contracts could help with issues related to the State, such as increasing the speed of administrative acts, greater transparency of contracts, facilitating control by the Courts of Auditors, better management of resources and reduction of corruption, provided that adaptations are made in management public and current regulations.

KEYWORDS: Smart Contracts. Problems. Benefits. Public Administration.

1 INTRODUCTION

The present study will be dedicated to an analysis of Smart Contracts, in which different topics will be addressed, such as the relevance of artificial intelligence in today's society, its use for the management of contract risks and the possibility of using these contracts in the sphere of public administration.

Artificial intelligence and smart contracts are products of the latest technological innovation to become an object of use for people, without, however, having been the subject of deeper debates about their possibilities, limits, effects or consequences.

Thus, using the analytical-deductive methodology, through bibliographic research, at first, the research is dedicated to explaining what the conception of smart contracts is based on, trying to give some sphere of materiality by assorting concrete examples for its understanding. It also deals with the basic elements of this type of contract and its special characteristics.

In a second moment of the study, the focus is on establishing some concrete problems that can already be observed in the use of smart contracts and other possible problems, practically expected, since the nature evidenced empirically so far makes it clear that they will happen at some point if changes are not made in some aspects of the new technology. Although such problems are exposed, the research also seeks to provide some solutions to assist with a constructive vision.

Finally, in the last part of the research the debate is circumscribed on the application of smart contracts by the public administration in Brazil, in which some possible benefits arising from this technological innovation are listed.

2 THE DESIGN OF SMART CONTRACTS

Regarding the risk management of contracts, the modern technological framework requires society to use more contemporary tools to define the limits of contractual risks. Both artificial intelligence and smart contracts are part of the technological evolution that results in new instruments arising from the technological development of society (TEPEDINO; SILVA, 2020, p. 373).

It is necessary to give a notion of what is meant by artificial intelligence before delving into the question of its use in smart contracts. Thus, artificial intelligence could be understood in several ways, essentially as a system: (i) that thinks like a human being; (ii) that acts like a human being; (iii) that uses reason to think; and (iv) that acts according to reason. Thus, whether empirically or through the use of arithmetic calculations, these different approaches can be used for its study (HONORIO, 2010, p. 235).

Another way of looking at the subject would be to understand artificial intelligence as an adaptation of algorithms for system interaction without the need for human interference. Given this, one of the attributes of artificial intelligence would be the ability, through the complex information that would be inserted into it, to replicate in different ways and with the evolution of more intricate time. In this way, artificial intelligence can be included "from characteristics such as autonomy, social ability, cooperation, proactivity and reactivity. Such attributes indicate the aptitude of algorithms to act with or without human intervention" (TEPEDINO; SILVA, 2019, p. 111).

When using the term smart contracts, reference should be made to the cryptographer and computer scientist Nick Szabo, who, in 1994, elaborated this concept in the article "Smart Contracts: Building Blocks for Digital Free Markets". He named them so because he considered them more functional than the previous model that was formalized on paper. He identified them in this way, because in the face of the digital revolution, they would be identified as a set of bilateral obligations made explicit in digital format (GABARDO; KOBUS, 2019, p. 503).

Emerson Gabardo and Renata Carvalho Kobus in turn identify a mandatory link between smart contracts and blockchain technology[1], because they become self-executing. With this, they add as an essential characteristic of smart contracts the unnecessaryness of an intermediary diluting the power previously understood to these between the parties (GABARDO; KOBUS, 2019, p. 503).

These authors point out the specific distinctions of smart contracts in relation to contracts formalized on paper. Initially, they point out that smart contracts replace the previous legal language with a language based on computer programming, in which the codes establish the rule and the execution of the contract. Another differentiation would be its realization through the block chain technology, which results in the automatic obtaining and processing of information, leading to the automated conclusion of the contract (GABARDO; KOBUS, 2019, p. 504).

Smart contracts are based on concepts from civil law to establish that the contracting parties have the autonomy to establish the issues arising from the contract. Thus, the parties can previously determine what these incidental issues would be and also how they would be resolved (TEPEDINO; SILVA, 2020, p. 379).

This contractual freedom can be envisioned in the legislation of the country in current laws, such as the Economic Freedom Law (Law No. 13,874 of 2019) on the Civil Code. An example of this is Article 421-A, I of the Civil Code, which states that "the negotiating parties may establish objective parameters for the interpretation of the negotiating clauses and their assumptions for revision or termination" and the complementary stipulation of Article 421-A, II of the same Code, which states that "the allocation of risks defined by the parties must be respected and observed". In view of this, with regard to the so-called contractual remedies to solve any problems that may arise, the parties are allowed to freely decide on the conditions for contractual revision (TEPEDINO; SILVA, 2020, p. 379).

Moving on to the more characteristic theme of research into this freedom of contract, Gustavo Tepedino and Rodrigo da Guia Silva exemplify that artificial intelligence can be used to measure different rates and values on the stock exchanges of different countries. Thus, the result of a combination of various rates, whether predefined or not. In other words, the contract would

[1] Emerson Gabardo e Renata Carvalho Kobus conceituam o Blockchaim da seguinte forma: "O Blockchain pode ser conceituado como um conjunto de tecnologias distribuídas em sistemas computacionais descentralizados que se desenvolvem por meio de uma rede criptográfica. Por meio dessa tecnologia disruptiva as informações colocadas no sistema só imutáveis e executadas em todos os nós da rede, criando um rastro histórico sem fim" (GABARDO; KOBUS, 2019, p. 501).

have mobility in its stipulation of values, but without the need for a third party to do any math to achieve the result of what had previously been determined (TEPEDINO; SILVA, 2020, p. 375).

What can be deduced from this is that these parameters would not be typical of a strong artificial intelligence, but rather of a weak one[2], because your question was only to facilitate arithmetic calculations of little complexity.

In the case of the automatic adaptation clause, artificial intelligence would have the role of establishing the imbalance criterion authorizing the review or even to establish the parameter applicable to the specific case (TEPEDINO; SILVA, 2020, p. 381-382).

Reflecting on this hypothesis, it can be seen that in this case the use of artificial intelligence already enters into more complex contract parameters; however, the question would be the form and limits that smart contracts may involve. After all, there should be a distinct limitation for these contracts due to their automatic enforceability, or it would simply be understood as an option for the parties on the subject and the contract would continue under an argument based on freedom.

Once again, the teachings of Gustavo Tepedino and Rodrigo da Guia Silva are used to assert that artificial intelligence does not correspond to an obligation regarding the form of the legal transaction, but truly reveals its mode of execution. They point out that the practicable functionalities of smart contracts would be: (i) the automatic execution of the obligations of the parties; (ii) the implementation of self-executing acts as solutions in the event of contractual default (TEPEDINO; SILVA, 2020, p. 383-385).

Sthéfano Divino points out that the particularities of smart contracts are: (i) their electronic form (the parties would be obliged to use digital signatures or keys, since this contract is directly linked to the use of the digital format); (ii) reproduction and execution in software (the instrument needed to transfer the previous agreement into computer language) and hardware (to implement the electronic agreement); (iii) the greater possibility of contractual fulfillment due to its self-execution (because it does not contain any discretion or interference from people); (iv) it would be conditional in nature, as it would be imperative for some previous event to occur in order to activate the subsequent event foreseen for it to be automatically activated; (v) it also lists autonomy as a distinctive element, since the contract would be executed through the virtual environment; (vi) both the fulfillment and the execution of these contracts would be forced, i.e. the fulfillment or non-fulfillment of a previous condition would make the consequence imperative; (vii) there would be no reason to discuss trust between the parties or with intermediaries (DIVINO, 2018, p. 2789-27). 2789-2792).

The essential need to understand smart contracts, as quickly as possible, is evidenced by the example of the application of smart contracts in Brazil, where it can be seen that notaries across the country are already using this tool on a massive scale, to the point of having reported the authentication of 156,000 documents of this type, in 2021, in just four months (RUBSTEIN, 2021, n. p.).

Having established the parameters for understanding what smart contracts are, we will now discuss some of the possible problems observed with this type of contract in the face of current legislation and society.

2 Para compreender o que seria inteligência artificial forte e fraca pode-se utilizar a noção dada por Luiz Fernando Honório: "A asserção de que as máquinas talvez pudessem agir de forma inteligente é chamada hipótese de IA fraca pelos filósofos e a ascensão de que as máquinas que o fazem estão realmente pensando é chamada hipótese de IA forte. Por questões de éticas de seu trabalho, a maior parte dos pesquisadores de IA assume em princípio a hipótese de IA fraca, e não se preocupam com a hipótese da IA forte" (HONÓRIO, 2010, p. 236).

3 ISSUES TO BE EVALUATED ABOUT SMART CONTRACTS

In view of the fact that this is an institute in legal and social development, one cannot fail to observe some of the problems that have already been detected in its execution or subsequent effects.

At first, we should highlight the problem directly related to smart contracts, which would be the jurisdictional applicability of this contractual modality. As it is currently being executed through blockchain platforms, which have turned out to be, as previously mentioned, a decentralized system in such a way as to make it possible to use them in different countries and/or regions. The point to be highlighted would be the lack of legal binding to any locality for the resolution of any conflicts between the parties, according to the understanding of the blockchain platforms (FIGUEIREDO, 2021, p. 42-43).

Unlike previous contracts, in which there were rules determining where conflicts would be resolved, blockchain platforms would have their own way of resolving conflicts between the parties. Thus, the blockchain platforms themselves would take on the role of deciding on any contractual disagreements that may arise.

The issue becomes even more complex when we look at the current regulatory situation of blockchain platforms, since there would be no concern for their regularization before the States, acting as a parallel entity. This means that any interpretations of the contractual rules of smart contracts that are using the blockchain could end up creating a set of problems of their own, or even special legal understandings that would have nothing to do with previous forms of contract (FIGUEIREDO, 2021, p. 42-43).

Still in the field of how smart contracts would be treated normatively, another issue that could be raised would be the approach given to norms and values of imperative incidence. For example, the precepts of human dignity, the social function of the contract and objective good faith, or the theory of substantial performance, would not have their applicability normatively linked to smart contracts (TEPEDINO; SILVA, 2020, p. 387).

One cannot corroborate the idea that smart contracts can act beyond the constitutionally constituted powers, especially, in this case, the Judiciary. The hermeticity of these contracts does not constitute, argumentatively, a legal possibility of not obeying a judicial decision.

Certainly, this innovation in contract models can be considered a disruptive technology in relation to the contract formalized on paper, and the link for the state to act is extremely complex. On the one hand, society naturally demands stability and legal certainty, while on the other it also calls for the right to freedom to contract as it sees fit. Even though the imposition of regulations which impose limits may seem like a transgression, a delegitimization of what smart contracts propose, the fact is that the law has not yet fully solved this problem. The disruptive model rejects the protectionist approach of the State, as it understands that the previous dichotomy in which the stronger exploited the weaker in contractual relations no longer endures in this new contractual model (FEIGELSON, 2018, p. 171-172).

However, in order not to shirk the responsibility of finding a solution to this problem, at least in Brazil, it could be through the evocation of express arbitration clauses, based on Mediation Law No. 13,140 of 2015, which, in its article 46, allows virtual mediation in out-of-court solutions. Although this is a very complex problem, blockchain platforms are already adapting to the regulations of the country, and judicial means are not ruled out for resolving conflicts that mediation and arbitration fail to solve (FERNANDES; RULE; ONO; CARDOSO, 2018, p. 101-102).

Undoubtedly, the practice of conciliatory acts brings benefits to the procedural system, and often to the litigating parties themselves, who no longer have to spend several years in litigation before getting a final answer. However, it should not be forgotten that the culture of the Brazilian population still seems to be resistant to trusting private third parties to resolve conflicts, so that the parties' conciliatory faculties cannot serve as support for the Judiciary (FERNANDES; RULE; ONO; CARDOSO, 2018, p. 114-116).

It also seems important to point out that, however, it is not clear who has the obligation to codify the contract. Due to their self-executing nature, smart contracts must be programmed and, as a result, there is no conclusive answer as to strict liability for the development of the algorithm, its effects and consequences.

Furthermore, in this context, it could be explained that contractual self-execution would face the duality between efficiency and the guarantee of rights. However, what could be glimpsed from a different perspective is that this debate has already been settled, both by current legislation and by case law. In other words, from a legal point of view, the aim would be for artificial intelligence, or better put, the decisions made by artificial intelligence, to be in line with current legislation.

A different possibility found by Gustavo Tepedino and Rodrigo da Guia Silva would be the insertion of a self-destructive code, endowed with the ability to suspend for a certain period of time, or even terminate the smart contract procedure (TEPEDINO; SILVA, 2020, p. 389).

These solutions would leave a lack of transparency in the decision-making process regarding the problem or default that occurred in the smart contract. This would be seen as an imperative factor, both for understanding and possible improvement of artificial intelligence, and for the possibility of judicial control of the relevant facts and rights in the specific case.

Another issue is social inclusion for access to smart contracts. In this sense, one of the points up for debate would be to ask how smart contracts could be made more efficient without having a good quality internet that is disseminated socially? Could it be said that current access would result in digital dignity as a consequence of human dignity? There is no doubt about the importance of new technologies, such as smart contracts, for social development and for promoting freedom of expression and information for people. Such is the imperative of digital inclusion that Fábio Andrade considers it to be a fundamental right, or at least a fundamental instrument for the development, for example, of fundamental social rights (ANDRADE; ACIOLI, 2013, p. 244-246).

It could be said, according to Denise Bittencourt Friedrich and Juliana Horn Machado Philippi, that digital inclusion in Brazil has evolved considerably in recent years, although only a third of the population uses it for work. However, from a concrete perspective, 20 million households still don't have internet access in Brazil, which means 28% of the country's households[3] .

Given the significant number of people without internet access in Brazil, it can be said that the scenario is still far from ideal. In order to understand that digital inclusion will change society and make smart contracts a commonly used binding tool between parties, it would be essential for this type of document to be fully accessible to everyone.

3 No tocante a inclusão digital no Brasil: "De acordo com a pesquisa TIC Domicílios 2019, 20 milhões de domicílios não possuem acesso à internet no Brasil, o que representa 28% (vinte e oito por cento) dos domicílios, sendo que na área rural o acesso à internet atinge mais de 50% (cinquenta por cento) e representa 50% (cinquenta por cento) dos domicílios nas classes DE. Ademais, um em cada quatro brasileiros não utiliza a internet, sendo 47 milhões de não usuários e 134 milhões de usuários. Cabe ressaltar, ainda, que o celular é o dispositivo mais usado (99%), de modo que o acesso exclusivo pelo celular abrange 58% (cinquenta e oito por centro) dos indivíduos, com percentual de 79% (setenta e nove por cento) na área rural e 85% (oitenta e cinco por cento) nas classes D e E". (FRIEDRICH; PHILIPPI, 2020, p. 107-108).

This is because, according to Virginia Eubanks, technology can encompass a system of egalitarian power and privilege, and all people would be offered a broadening of their critical consideration of business issues, as well as technology, society, politics and inequality. The existence of new technologies would already be so deeply permeated in society that it would be pointless to ignore their daily use by people and, therefore, could not overlook agendas to increase social justice (EUBANKS, 2011, p. 154-157).

In addition, smart contracts can also be seen as instruments for social development, as they can help to reduce business costs (FRIEDRICH; PHILIPPI, 2020, p. 112), speed up the execution of contracts and guarantee their effectiveness, regardless of the social status of a person.

There would still be risks such as those pointed out by Antonio Carlos Efing and Adrielly Pinho dos Santos, who stipulate problems with electronic fraud, embezzlement, possible material and moral damages arising from the contractual relationship or facts related to the digital world. These problems would, in a way, create an environment of legal insecurity for people, as contractors would rely entirely on a false security that technology cannot guarantee them (EFING; SANTOS, 2018, p. 52-53).

This means that expressions such as "the code is the law" cannot serve as a basis for the legal regulation of contracts, which must follow the legal dictates of the rules in force in the country. Although it is complex for the Judiciary to determine the possible contractual nullity of a smart contract, it should not be forgotten that Brazilian contract law is based on constitutional precepts that can be used to fill occasional legal gaps (EFING; SANTOS, 2018, p. 55-56).

At the very least, respect for the social function of the contract can be argued, which should still be upheld, even if, as stated above, some of those opting for smart contracts favor pacta sunt servanda (understood here as the freedom to contract as it sees fit), the state cannot fail to protect a possible inequality that previously existed, for example, between consumer and supplier, and thus review a contract that is abusive (EFING; SANTOS, 2018, p. 58-59).

To conclude the section analyzing the problems that can arise from smart contracts, Álvaro Osório do Valle Simeão and Marcelo Dias Varella should be highlighted:

> "Há também riscos estruturais e finalísticos no que diz respeito à cadeia de blocos, relacionados com ataques de hackers, defeitos de armazenamento de informação, ilicitudes pelo anonimato propiciado pela rede criptográfica e garantia de manutenção das condições iniciais do sistema, o que aponta na direção da necessidade de regulação para além das normas costumeiras e criptográficas criadas pelas próprias bases técnicas da blockchain" (SIMEÃO; VARELLA, 2018, p. 53).

Furthermore, these authors recognize the difficulty for states to regulate technologies such as smart contracts and blockchain, given the fluidity of the internet, which would have faded the precepts of time and space. With a liberal international culture regarding the need for state regulation of these relationships, and because these technologies have cyberspace as their referential location, which, because it is not physical or geographical, is characterized as a new frontier, the classic notions of sovereignty or public power end up being relativized (SIMEÃO; VARELLA, 2018, p. 56).

The suggestion of the author for overcoming the problems pointed out would be a transnational normative regulation, in which the protection regimes for investors, consumers and contractors would be delimited, for circumstantial fraud cases, in addition to the choice of location, the dispute should be analyzed legally, thus removing the adversity of territorial legal insecurity (SIMEÃO; VARELLA, 2018, p. 58-59).

4 THE USE OF SMART CONTRACTS BY THE PUBLIC ADMINISTRATION IN BRAZIL

To conclude the analytical phase of the research, we will discuss the possibility of smart contracts affecting acts of the state, or more specifically the public administration.

The relevance that smart contracts can have in public administration is also evidenced by the high demand for contracts it generates today. A sample of this is reflected in the fact that, in 2019, the Federal Government's Integrated General Services System formalized more than 21,000 contracts that had been created using the previous model, which required paper to be used exclusively. These 21,000 contracts generated around 22 billion reais in public contracts (ITO; SANTOS, 2020, p. 56).

It cannot be ignored that contracts made by the public administration must, according to current regulations, be primarily written documents. However, in the area of digital contracts, there is already a more comprehensive legal provision, since it is based on the Brazilian Public Key Infrastructure, provided for in Provisional Measure No. 2,200-2, of August 24, 2001, or as predicted in the Provisional Measure No. 983, of 2020 (ITO; SANTOS, 2020, p. 61).

In this context, it can be argued that smart contracts can help the public administration to make it more efficient, with faster management in its systemic routine and even increasing transparency, one of its basic precepts. One could also envision the use of smart contracts in bidding procedures, especially to achieve self-execution of public contracts, in line with the principles of the primacy of the public interest and efficiency[4] (GABARDO; KOBUS, 2019, p. 505-506). All this without neglecting to mention the need to adapt current legislation to embrace this technological model (GABARDO; KOBUS, 2019, p. 507).

The recurring lack of public resources can also be used as a justification for the use of technological innovations, such as the one discussed in the context of public administration. Smart contracts could even make it easier for the Courts of Auditors to monitor and help control public spending more rationally (SHUENQUENER DE ARAUJO; GOMES DE FREITAS; MARTIN, 2021, p. 488-489).

In addition, smart contracts could play an important role in reducing corruption in public administration, as they could reduce asymmetric information[5] that contribute to the exponential increase in criminal practices. Finally, more transparent information could lead to transactions becoming more transparent and a consequent restriction of practices, such as over-invoicing in

4 Christian Ito e Fábio de Sousa Santos, consideram que a supremacia do interesse público seria um problema para os smart contracts, pois tornariam uma de suas bases inexequível, a igualdade entre as partes, pois esse preceito torna os interesses do Estado dotado de uma superioridade jurídica. Se vislumbra um paradoxo, pois nos contratos administrativos o controle do contrato é realizado pelo Estado, quando se tem uma plataforma autônoma de blockchain nenhuma das partes controlaria o contrato (ITO; SANTOS, 2020, p. 65-66).

5 Para Rodrigo Couto de Souza, Edimara Mezzomo Luciano e Guilherme Costa Wiedenhoft o problema das informações assimétricas estaria entendido da seguinte forma: "De acordo com a Economia, um arranjo contratual apresenta um problema de agência, que pode ter duas consequências. O primeiro é um risco moral causado pela informação assimétrica, que é a falta capacidade do diretor para observar e verificar as ações do agente. O problema de agência ocorre quando uma pessoa ou entidade (o agente) é capaz de tomar decisões em nome de outra pessoa ou entidade (o principal). A segunda consequência é um contrato incompleto, que é uma consequência da dificuldade das partes em considerar todas as situações que possam ocorrer durante a vigência do contrato. Também pode ocorrer devido a informações assimétricas entre as partes, pois uma delas pode não ter acesso a todas as informações relacionadas ao contrato. Consequentemente, a informação para todas as partes é necessária para reduzir os riscos associados aos contratos e sua falta pode prejudicar a confiança entre as partes. A falta de informação também pode aumentar as violações à corrupção" (COUTO DE SOUZ; LUCIANO; WIEDENHOFT e 2018, p. 2).

payments, making public contracts less vulnerable, given the benefit of contractual self-execution (COUTO DE SOUZ; LUCIANO; WIEDENHOFT, 2018, p. 2).

Obviously, it would be necessary to adapt smart contracts to more complex administrative contracts, such as those for the provision of services or works, since these require human contractual supervision. As a result, the normally binding procedures of smart contracts would have to be adapted to encompass these idiosyncrasies (ITO; SANTOS, 2020, p. 59-62).

Therefore, it can be seen that smart contracts can make an effective contribution to public administration, as long as their own characteristics and regulatory needs are respected, as well as the possibility of possible adaptations to current legislation to suit the emerging technological innovation.

5 CONCLUSION

The assumptions contained in smart contracts depict an idyllic scenario, in which initially all their workings would be perfect, because the absence of outside intervention would give self-execution an image of infallibility. However, the reality of society shows a different scenario in which the understanding that the relationship would always be between ideal parties and perfect legal configurations is simply far removed from the reality of society.

The problems pointed out in smart contracts by the research are seen as concrete, or at least likely to occur in the near future, as this type of contracting is already becoming socially palpable. Contractual disputes are part of everyday life in Brazil. Problems with rents, property transfers and countless other examples are not necessarily linked to the contractual model, but often concern irregularities in legal technique, bad faith on the part of the parties, or even procedural errors.

By placing all the power and consequently all the responsibility for smart contracts on the parties, we can see a legal inadequacy in the face of current regulations, and it is important to note that sometimes the vaunted isonomy of the relationship will not be observed, as those with greater economic power will be able to obtain even better conditions to abuse their advantage, imposing adversities on poorer people that are prohibited by law.

Given that smart contracts do not require a physical meeting, there is a latent risk of fraud or misrepresentation. There is also a potential question mark over liability for problems in the configuration of algorithms, after all there is no clear delineation as to who would be liable for a coding error or system malfunction.

There cannot be an interpretative paradigm shift, it must be made clear that, despite the problems presented, the fundamental point is to emphasize that technological innovations, such as smart contracts, are fundamental to Brazil's multidimensional sustainable development, which was previously assessed in terms of economic, social and technological development. This is because contractual relations are permeated at the heart of society, enabling the formalization of the most diverse possible agreement techniques.

Finally, with regard to the use of smart contracts by the public administration, what we are seeing is a need for rapid adaptation by managers, as well as action by legislators to adjust current legislation to the new technologies. The reason for such a concerted effort is the positive points that can be gained from the possibility of using smart contracts by the public administration.

There can be no question of using this contractual modality without an imperative legislative and management structure for the new technology, so that implementation by the public administration proves to be as effective as possible. The advantages of smart contracts for the

public administration include speeding up the execution of contracts, guaranteeing greater effectiveness, increasing transparency and reducing corruption, among others.

Furthermore, it can finally be said that new technologies, such as smart contracts, have become a natural factor in the evolutionary process of the relationship between the state and society. Transparency, speed and effectiveness invariably become essential points for digital instruments to be imposed by society on public authorities.

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