MIĘDZYNARODOWE PRAWO PRYWATNE W ZAKRESIE SMART KONTRAKTÓW: MOŻLIWOŚCI I REALIA (STATUS I PERSPEKTYWY)

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Adnotacja. Celem tego badania (artykułu) było ustalenie specyfiki regulacji stosunków za pomocą smart kontraktów zgodnie z normami międzynarodowego prawa prywatnego obowiązującymi w różnych krajach, określenie zalet i wad tej innowacyjnej formy kontraktu.

W artykule omówiono przesłanki pojawienia się inteligentnych, funkcjonalnych i zróżnicowanych cech smart kontraktów. W artykule przedstawiono zarówno korzyści, jak i prawdopodobne ryzyko związane z korzystaniem ze smart kontraktów w dzisiejszych warunkach. Artykuł kładzie szczególny nacisk na funkcjonowanie smart kontraktów z prawnego punktu widzenia, ze szczególnym uwzględnieniem międzynarodowego prawa prywatnego i ich praktycznej przydatności w tej dziedzinie.

Słowa kluczowe: Smart kontrakty, blockchain, międzynarodowe prawo prywatne, prawo, decentralizacja, regulacje.

МІЖНАРОДНЕ ПРИВАТНЕ ПРАВО ЩОДО РОЗУМНИХ КОНТРАКТІВ: МОЖЛИВОСТІ ТА РЕАЛІЇ (СТАТУС І ПЕРСПЕКТИВИ)

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Анотація. Метою дослідження / статті було встановлення особливостей регулювання відносин із використанням смарт-контрактів відповідно до норм міжнародного приватного права, що діють у різних країнах, визначення переваг та недоліків цієї інноваційної форми договору.

У статті розглядаються передумови появи розумних, функціональних та диференційованих особливостей смарт-контрактів. У статті представлені як переваги, так і ймовірні ризики використання смарт-контрактів у сучасних умовах. Зроблено акцент на функціонуванні смарт-контрактів із юридичного погляду, приділено особливу увагу міжнародному приватному праву, їхній практичній придатності в цій галузі.

Ключові слова: розумні контракти, блокчейн, міжнародне приватне право, право, децентралізація, регулювання.

PRIVATE INTERNATIONAL LAW FOR SMART CONTRACTS: OPPORTUNITIES AND REALITIES (STATUS AND PROSPECTS)

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Abstract. The purpose of this study (article) was to establish the features of the regulation of relations using smart contracts in accordance with the rules of private international law in force in different countries, to determine the advantages and disadvantages of this innovative form of contract.

The article examines the prerequisites for the emergence of smart, functioning and differentiating features of smart contracts. The paper presents both the advantages and probable risks of using smart contracts in modern conditions. The article places special emphasis on the functioning of smart contracts from a legal point of view, paying special attention to private international law and their practical applicability in this area.

Key words: smart contracts, blockchain, private international law, law, decentralization, regulation.

Introduction. Every day the world changes. Often these changes are irreversible, as they are associated with the rapid development of technology. A necessary condition for the safe implementation of modern technological solutions in our lives is no less rapid development of the law system, which should offer modern legal, and therefore digital, regulatory tools. One of such tools is smart contracts, which became known along with blockchain technology and cryptocurrency and were proposed by American cryptographer, lawyer and programmer Nick Szabo in 1994 (Szabo, 1997; Szabo, 2002).

As we see the idea of introducing contract law in the programming language has existed for more than 20 years, but only now its implementation has become widely used. Currently, many scientists both around the world (Sklaroff, 2017; Zinovyeva et al., 2021) and in Ukraine (Nekit, 2020) from different angles researching this issue are united in the fact that the use of smart contracts is associated with financial and organizational costs, as well as with different law risks.

Some researchers point out that the various expectations from reasonable contracts are often exaggerated (Carrieres-Juridiques.com., 2018). At the same time, the importance of the smart contract cannot be denied, as well as its important practical significance as it has already been proven in the fight against the global coronavirus virus pandemic 2019 (COVID-19) (Bodó et al., 2018; Kalla et al., 2016).

Therefore, all countries for which the smart contract is increasingly used for cross-border transactions and which perceive it as a new generation technology, it is necessary to develop and systematize the legal regulation of this relationship and make recommendations for improving directives at the international level.

The **purpose of this research (article)** was to establish the features of the regulation of relations using smart contracts in accordance with the rules of private international law in force in different countries, to determine the advantages and disadvantages of this innovative form of contract.

Within the framework of this purpose, the task was set to formulate general principles on the basis of which the international legislation of countries can make progress with the legal regulation of the use of smart contracts in various fields of activity.

Main part. Before talking about the preconditions and history of origin, it is worth pointing out the dualism of the concept of smart contract, "which combines a document that regulates the relationship between the parties and at the same time is the object of intellectual property" (Zinovyeva et al., 2021). It is a concept that combines software, algorithms, codes, processes with a predefined set of commands that are automatically executed without intermediaries under certain conditions. A smart contract is an example of decentralization in which everyone follows rules that cannot be broken. The emergence of this concept has led to a complete change in the approach to the law definition of the contract.

The history of the concept of a smart contract dates back to the 1970's, when the so-called electronic data exchange appeared, which, despite all the efforts of the authors, could not completely replace traditional contracts. Its source was the demand to increase the efficiency of the economy, associated with the desire to reduce the cost of intermediaries and speed up operations. Although it was not possible to reduce costs, the need to reduce human participation in certain processes was clearly noted (Bodó et al., 2018).

The concept of a smart contract appeared in 1997 long before the advent of the blockchain and bitcoin (Szabo, 1997). The principles formulated by Nick Szabo were laid down in bitcoin cryptography. In his 1997-year work, he defined "a smart contract as a computerized transaction protocol that fulfils the terms of a contract. The overall goals of smart contract development are to meet general contract terms (such as payment terms, collateral, confidentiality, and even enforcement), to minimize both malicious and accidental exceptions, and to minimize the need for reliable intermediaries. Relevant economic goals include reducing losses from fraud, arbitration and enforcement costs, and other transaction costs".

Only the appearance of the cryptocurrency bitcoin in 2008 allowed for the first time to partially implement a smart contract for the transfer of cryptocurrency (Rühl, 2020).

The blockchain concept was proposed only in 2008 by Satoshi Nakamoto together with the team and was practically implemented in 2009. The term Blockchain itself partially describes its tasks and purpose. Part of "Block" is blocks; "chain" is "chainlet". It turns out that Blockchain is a chainlet of blocks. A blockchain is a database that does not have a single centre (server) for storing information (which is almost impossible to break or lose). Each block contains not only new information, but also information from previous blocks. Such information is stored simultaneously by all (but only in case of a high degree of privacy and personal data) who use this network (Nakamoto, 2008).

With the advent of cryptocurrencies and blockchain technology, attempts have been made to build an intelligent environment for programming contracts based on virtual currency (an analogue of bitcoin), using procedural programming languages. At that time, smart contract systems in general, this term could be and was created without relying on modern bitcoin or blockchain technology. Most of the market is focused on smart contracts that rely on virtual currency using blockchain technology. However, this first generation of smart contracts had very few tools to automate transactions.

In 2013, Vitaly Buterin proposed changes to the bitcoin protocol in order to increase the functionality of smart contracts, and in 2015 he created his own blockchain platform "Ethereum". On this platform, smart contracts can potentially be used to address a wider range of tasks, not just the transfer of assets in the form of cryptocurrency. This platform is considered the most common for automatic operations, as well as the creation of decentralized transactions with their own tokens (Decentralized Applications). Thus arose the second generation of intelligent contracts, which were already based on the Turing programming language, that is, it was already possible to implement

any computational function. This programming language has already allowed users to write complex software that interacts with a distributed registry and is said to have the same characteristics: self-sufficiency, immutability, and so on. In the second generation, smart contracts are the algorithmic owners of blockchain accounts (Mogaiar, 2021).

Blockchain technology gives smart contract participants a unique opportunity to exchange property values without intermediaries in the form of banks, notaries, agents, guarantors, etc. Smart contracts are implemented on various blockchain platforms, the most common of which are: Bitcoin, Side Chains, NXT, Ethereum and other cryptocurrencies, which combine common features and principles of operation, which we will mention later.

At the same time, the architecture of existing public blockchain platforms does not meet a number of parameters that are necessary for the widespread use of these technologies by business or government. One of such parameters is the availability, openness and publicity of the register for an indefinite number of people. Another thing is that their work requires a lot of energy, and these platforms are not designed for such a significant load.

So, immediately fixing that a smart contract is a different "form" aimed not at replacing traditional contracts, but at significantly simplifying an agreement, we see two points of view on what a smart contract is.

The first point is that a smart contract is just a computer program that has many advantages. This approach involves the following feature of smart contracts: their code contains not only the obligations of the parties, but also a special algorithm that allows» you to assess whether the terms of the agreement, possible violations, as well as decide to which of the parties underlying asset should be transferred.

The second – a smart contract is an electronic protocol, encrypted using computer code and designed to ensure the implementation of the contract by all parties of the agreement (Volos, 2020; Zinovyeva et al., 2021). In this case, the program code may be a separate object of copyright. The key characteristics of a smart contract in this case is the presence of an agreement with descriptions of all parameters and the necessary technical tools for its implementation.

What both approaches have in common is that a smart contract is a piece of computer code that always requires four elements to function properly (Essebier, Wyss, 2017):

1. A transaction input code that describes the transfer of information (such as a smart contract).

2. A wallet is a conditional digital space in which cryptographic keys are stored. There are usually two such keys: public and private keys. The public key (a long series of randomly generated numbers) is the user address in the blockchain. A private key is like a password that gives its owner access to information. First, a private key that will allow users to access legitimate information and allow them to control their account. Secondly, the public key, the function of which is reflected in the authentication of the owner and the encryption of messages. Note that the EOA address comes from the last 20 bytes of the public key. Both private and public keys are combined to ensure the functioning of the wallet and the management of their cryptographic property (Ethereum Homestead, 2021).

3. A storage file is a digital space where a transaction is stored until it is registered, which is most often done on a blockchain.

4. The transaction is stored in the registry. Mostly this is done using blockchain technology, the basic principles of which are:

− security and safety. The blockchain network is free of centralized vulnerabilities that could be exploited by computer hackers. Blockchain security methods use encryption technology;

− decentralization. There is no server in the chain. Each participant is a server. It supports the entire blockchain;

− openness and transparency. Although the blockchain offers users the highest level of anonymity, it remains a very open and transparent structure. Absolutely all data about blockchains are in the public domain, and if desired, everyone can learn about the basic information of a particular block;

− the immutability of what has already been recorded.

```
callOptionAmerican (rightA="1 round lot XYZ Corp.",
                    rightB="$2,000/lot",
                    time="end of trading on last trading day of August") =
          when beforeTime(time)
               when choiceOf(Holder)
                    to Holder rightA with to Counterparty rightB
          when afterTime(time)
               terminate
```

Fig. 1. An example of such a simple computer code (Szabo, 2002)

Figure shows a piece of code that generates transactions if the conditions encoded in it are met. In most cases, smart contracts encode terms «if», such as: if the user pays X the amount of cryptocurrency to the smart contract, the contract gives them access to a digital copy of the work. Similarly, a smart contract can help distribute income: if the author's work has brought Y the amount of remuneration in the relevant account, the smart contract can distribute income among rights holders according to tokens (Bodó et al., 2018).

Simple examples that show that a large number of transactions in the field of law can be modeled by such a simple algorithm "once upon a time". Of course, all this has led to high expectations from users to reduce transaction costs for many different transactions through self-sufficiency and automation of smart contracts.

In fact, the use of smart contracts is constantly expanding (Federal Council report., 2018) due to the rapid development of blockchain technology and smart contracts themselves (Kosba et al., 2016). From voting, various

types of insurance, logistics operations, health care, quality monitoring, settlement and banking operations, the gaming industry, and ending with the support of entire smart cities (Ullah, Al-Turjman, 2021).

Consider the classic example of a smart contract, which is an option contract. In this case, a smart contract is an example of a financial contract. The right holder may purchase one lot of XYZ's 100 shares at a price of $ 20 per share before or until the last trading day of August. This example highlights what contract terms can be enshrined in such a contract, and gives an idea of how it can be useful to automate them (Szabo, 2002).

Another widely used striking example of the first reasonable contract for $ 100 000 is the contract signed in the fall of 2016 for the supply of cheese and butter of the Seychelles company from the Israel producer Ornua. The buyer paid with a letter of credit, and helped him in this blockchain. The products were delivered by sea, and the batch was marked on the containers with special geolocation sensors. As soon as the ship entered the destination port, they sent a signal to the system. This meant that the bank could pay the money to the seller. Thanks to blockchain technology, the operation was performed in 4 hours instead of 10 days under normal conditions. In addition, it was not necessary to send each other paper documents, and the possibility of forging them was excluded.

But technology is not standing still and we now have examples of improved smart contracts that preserve the confidentiality of transactions for the general public (Kosba et al., 2016). The decentralized system of smart contracts "Hawk" proposed by the authors keeps financial transactions clearly on a chain of blocks. The Hawk programmer can intuitively write a private smart contract without the need for cryptography, and this compiler automatically generates an efficient cryptographic protocol where the parties interact with the blockchain using cryptographic primitives such as zero proof of knowledge.

So we can summarize and classify the advantages of smart contracts compared to traditional agreements:
− simplification of international settlements;
− are performed without the participation of intermediaries and executors, so they do not provoke corruption;
− transparency, openness of the agreement;
− process automation;
− guarantee of protection for substandard goods;
− constant control over the promotion of goods;
− protection against unexpected changes in the contract by one of the parties;
− anonymity.

The main disadvantages and problematic issues that limit the wider use of smart contracts in everyday life include:
− partial automation;
− lack of a defined (unified) programming language for writing codes on different platforms;
− possible shortcomings or errors in the code structure, scaling and processing speed of transactions;
− cybersecurity issues;
− insufficient development of blockchain infrastructure and oracle programs that ensure the relationship of the cryptocurrency system with the real world;
− irreversibility of writing data to the blockchain, i.e. functionally inflexible technology;
− needs more complex cloud and material management structures;
− the need for specialists who have the technology;
− requires consideration of many factors and conditions of the agreement, which is a complex task and requires a complex algorithm with many options;
− ambiguous attitude to this technology in business circles;
− lack of attention of state institutions to the process of regulation and wider full implementation without duplication of paper media.

It is obvious that despite all the difficulties, smart contracts occupy a niche in all areas of activity, so it is important and relevant to resolve problems and legal issues, which we will focus on separately.

As we see, intelligent technologies and the concept of smart contract will eventually answer the topical question that philosophers, economists and lawyers have been concerned about for centuries (Ronman, 1985): how to trade or make other agreements with each other, regardless of national law? Using a modern tool, which today is a reasonable contract, with reasonable legal support under private international law.

We have already mentioned that some authors argue that smart contracts do not require any legal system in the classical sense. These authors call for disregard for the law, arguing that reasonable contracts, especially if they are maintained and executed using blockchain technology, make contract law and, in fact, the entire legal system obsolete. "The code is the law", they often say.

For example, Kai Schiller, author of the German blog blockchainwelt.de, said of smart contracts "Smart contracts allow reliable transactions and agreements between anonymous parties and without the need for a legal system" (Schiller, 2018).

Alexander Savelyev, in turn, said: "Reasonable contracts do not require a legal system for development: they can operate without any comprehensive legal framework. De facto, they are a technological alternative to the entire legal system" (Savelyev, 2017).

But above we have refuted this view and proved that safe in general use smart contracts can not exist independently without legal support and require contract law as well as classic contracts, and – private international law in most cases can solve a number of existing issues or unresolved legal issues, the most common of which are:

− lack of legal definition of smart contracts;
− regulatory uncertainty: lack of detailed full-fledged legislative regulation of this issue, today there are only basic concepts;
− lack of effective case law in case of conflict resolution;
− lack of a coordinated unified approach to the regulation of this area in different states;
− inconsistency of national legal norms with the norms of private international law, in particular regarding the rights of consumers of data confidentiality;
− the anonymity of the parties to the agreement will be an obstacle to the settlement of possible disputes.

It is obvious that answers to all these legal and other questions are needed for a positive impact on various aspects of life of the general population (The Cardozo Blockchain Project, 2018). In this context, the most important question remains whether the existing rules of private international law are sufficient to help resolve at least the problematic legal issues of the smart contract. After all, to establish the emergence of contractual relations, it is necessary to establish the legal structure of the facts that indicate the nature of these relations, as such, to which it is possible to apply the law. This is because a smart contract is essentially a set of computer codes. Therefore, for a smart contract, it does not matter whether there is an obligation between the two counterparties in the context of the law, because, despite this, the program will fulfil the established obligation in the programming language. Therefore, such a contract can only serve as a form of obligation, which enshrines the will of the two counterparties. As a result, the smart contract only complies with the established rules, regardless of the legality or fairness of the latter (Möslein, 2019).

As an example, you can simulate the situation with the use of smart contracts on the basis of a lease agreement. Under this agreement, party A leased the living space to party B, where all contractual terms will take the form of a reasonable contract under which the door to the apartment will be locked if the monthly rent is not paid on time, which may indicate forced eviction. It follows from the terms of the agreement that party A will be interested in fulfilling the terms of this agreement, as it will lose the opportunity to live in a rented apartment if it acts contrary to the provisions of the smart contract. However, we have a question of compliance of such an agreement with the law, because in most legal systems non-payment of a single rent cannot be grounds for eviction of tenant A, so such provisions are invalid due to non-compliance with civil law.

From this example, we can conclude that for normal use, a smart contract must be based on the law of the country in which it must be performed, as only this can ensure equality of arms in such a relationship, but this relationship must be governed by private international law. Of course, where the issue of smart contracts is regulated by law, it should be clearly defined under which legislation the contractual obligation is created and under what conditions it can be implemented, which is a guarantee of truly safe and effective use of this form of contract for all parties and states.

Therefore, having three legislative approaches to smart contracts today: the complete absence of norms on this aspect, indirect and direct regulation, we must create and develop the legal basis for the use of smart contracts.

What should be private international law so that it solves all the problems of effective and safe use of reasonable contracts for all? Today, this issue worries everyone from the establishment to the average citizen who wants the most simplified, economical and, at the same time, safe and effective use of smart contracts in their daily lives.

To answer these questions, we need to turn to private international law, as such questions relate to the subject of this particular branch of law. Today, private international law is enshrined in the legal systems of all countries to which they turn in cases of choosing the law of a particular country to resolve conflicts that have arisen in legal relations between entities from different legal systems. Unfortunately, reasonable contracts are ignored by international organizations, which does not provide sufficient grounds to talk about established practice on this issue. There is good reason to argue about the transnational nature of smart contracts, as they are implemented using blockchain technology, which cannot be unambiguously attributed to a particular jurisdiction, as transactions are stored and implemented on different decentralized network computers distributed across different legal systems. determine which law to apply to the smart contract (Durovic, 2019).

The question then arises as to whether private international law can determine the legislation that a country will regulate such a legal framework through its references to blockchain technology, which does not allow it to be unambiguously determined by its transnational nature.

The absence of uniform rules of private law adopted at the international level requires the application of rules of private international law in order to determine the applicable law for blockchain transactions. The rules of private international law are designed to correct legal uncertainty by linking a certain legal relationship with the legal order of the state. These rules are extremely important because they allow blockchain participants to determine in advance and with certainty which national legislation regulates their rights and obligations.

Private international law applies when the legal relationship in question concerns another country, and if not, national law should apply. However, can a smart contract claim that it applies to another country? Given the operation of smart contracts based on blockchain technology, which feature the decentralization of its information on different devices (computers), the location of which is almost impossible to determine, so for convenience we can conclude that they are in different jurisdictions. For the basic application of the principles with a foreign entity in the context of contracts, it is sufficient when at least one of the entities is foreign or when the contract is settled and / or performed in different jurisdictions. Also, for example, a sign of the need to use private international law may be the language of the treaty, for example, the law of the country in which the treaty was concluded, should apply to such a treaty (Calliess, 2015). As a result, a reasonable contract should also be considered as having a sufficient connection with foreign law, as the conclusion, processing, execution takes place through a transnational blockchain

(Rühl, 2020). Of course, this cannot clearly state the need for foreign legislation, but such a possibility should not be ruled out immediately.

The above means that smart contracts very often have a connection with a foreign country, which requires the definition of current legislation. However, communication with a foreign state is only a necessary but insufficient condition for the application of private international law. In fact, despite the connection with a foreign state, there is no need to determine the current legislation by private international law, where a single substantive law applies (Ferrari, 2017). The only substantive law can be found in international treaties. such as the UN Convention on Contracts for the International Sale of Goods of April 11, 1980 (CISG) (United Nations Convention on CIGS, 1980). It enshrines the international uniform substantive law of international contracts of sale and applies to contracts of sale of goods concluded between the parties to the Contracting States (Article 1 of the CISG). Thus, a reasonable contract that meets these requirements will be directly governed by these provisions without the need to involve national law through private international law. National law may be applied only in the event of a breach of the CISG (Article 7 (2) CISG) or if the application of the CISG is excluded by law or by agreement of the parties (Articles 2 and 6 of the CISG). According to Article 2 years. (a) The CISG, for example, does not apply to the Convention on the Sale of Goods for Personal, Family or Household Use, indicating that the provisions of the Convention do not apply to consumer contracts.

However, the law of sale is not the only industry where international agreements are concluded, which enshrines a single substantive law. An example of this is transport legislation. Many long-term international freight and passenger services are governed by the Convention on the Contract for the International Carriage of Goods by Road (CMR) of 19 May 1956. The Convention for the Unification of Certain Rules for International Carriage by Air of 28 May 1999 to International Carriage by Rail (COTIF).

In addition, European legislation such as the 2004 Air Passenger Rights Regulation (Regulation (EC) № 261/2004) and the 2007 Passenger Rights Regulation (Regulation (EC) № 1371/2007) may also apply. Thus, if a reasonable contract falls within the scope of one of these regulations, the application of national law will disappear by itself, and with it private international law, if there are no gaps in the legal relationship.

European courts can use the Rules of Rome I or Rome II when the question arises as to which law should be applied (Regulation (EC) № 593/2008).

For a more detailed settlement, 22 EU countries have signed a declaration on the establishment of the European Blockchain Partnership. "In order to take advantage of blockchain technologies and to avoid a fragmented approach, the participants in this declaration agree to work together to create a European partnership to develop a blockchain infrastructure that will help improve digital services so that they are trustworthy and user-centered within the single market", – it is spoken in the declaration. EU countries intend to share experience and knowledge in the technical and regulatory field, to prepare the launch of single EU applications using distributed registry technology for the public and private sectors (The Cardozo Blockchain Project, 2018).

Estonia was one of the first countries to introduce the widespread use of blockchain technologies at the state level. Since 2015, there has been a state system of providing notary services to Estonian residents using smart contracts. The Estonian Unemployment Insurance Fund (Töötukassa) provides social insurance related to unemployment and provides labour market services independently of the government, but legally, using norms of private international law (Eesti Töötukassa, 2017). The organization has set its goals to improve the functionality of its IT systems and ease of use. In addition, the Estonian government legally regulates the use of blockchain technology in medicine, banking and stock trading.

Sweden has been using a blockchain platform to register land rights since 2016. The Swedish government is confident that it will save 100 million euros due to bureaucracy and fraud every year. In addition, the Swedes believe that this will improve the efficiency of services in the field of registration of land rights (Elliot et al., 2021).

In some cases, national government agencies are testing the use of blockchain to simplify accounting and increase efficiency, such as projects developed by Sweden, Brazil and Georgia for centralized land registries. According to a report from the UK Government Office for Science report: "Smart contracts are contracts whose terms are written in a programming language and criteria for determining the jurisdiction of a smart contract must be introduced, and a way to verify a transaction without viewing content, to establish legal regulation for the information transmitted by oracles <...>" (Buchanan, Naqvi, 2018).

In Australia, while the federal government has commissioned CSIRO's research unit, Data61, to study the opportunities and risks of blockchain technology, the Victoria government is taking a step forward by exploring the technology's potential through its participation in the Australian Digital Currency and Trade Association.

Given the joint focus of public institutions and private business on the development of blockchain solutions in the near future, the idea of a public-private partnership has great potential. Many of these projects can benefit from partnerships such as food safety, social security and health. A great example of a joint blockchain initiative is the UN-led ID2020 project in partnership with Accenture and Microsoft. This platform will be designed to support the creation and documentation of the legal identification of more than one billion undocumented people worldwide, which is crucial for their access to a wide range of basic services, including education and health (Buchanan, Naqvi, 2018) (Treiblmaier, Zeinzinger, 2018).

Dialogue between stakeholders in the public arena and private business can only accelerate innovation and protect against potential risks, including non-compliance with evolving regulation and unilateral development of systems, rather than joint design of common platforms.

This assertion can be illustrated by the example of China, which is currently making multilateral efforts. Various state-owned enterprises, including the People's Bank of China and ICBC, and private companies, including the Alibaba online store and travel giant Wanda, are involved in developing software applications in their industries based on the blockchain.

While the results of the blockchain race are still uncertain, the technology has clear potential for redesign as interactions between governments, businesses and individuals occur around the world. Smart risk management, as well as a holistic view of operational risks, legal and regulatory issues and strategic risks, will be key to blockchain solutions that provide measurable value in the future (Savelyev, 2017).

Summing up the international experience, it should be noted that the geography of the introduction of blockchain technology and its legal regulation is very different. Blockchain is used by both highly developed countries, which is associated with the high development of scientific and technological progress in these countries, and countries with low levels of development. Therefore, we can state the fact that the use of blockchain is a popular and new phenomenon, a new generation innovation, which today definitely needs legal regulation.

As we can see, many government initiatives of the establishment of many countries, as well as the growing number of startups FinTech, RegTech, SupTech, LegalTech and OtherTech, have led not only to a permanent buzz around smart contracts, but also to the fact that this issue has already reached the mainstream (Rühl, 2020).

Conclusions. After analysing all the pros and cons, including legal regulation, where blockchain technology has already revolutionized many issues related to registers of movable and immovable property, calculations; The following conclusions can be drawn on the issues of voting, modernization of services and intellectual property on the example of private international law in different countries of the world:

1. In order for modern next-generation technology such as the smart contract to change people's vision, behaviour and lifestyle, significant steps must be taken in the legal framework of private international law by developing a single regulatory framework that will be ratified by all states.

2. All countries in a short time, which can be compared with the rapid development of information technology, to develop a coordinated approach to the regulation of this area. Take into account the legal specifics of the regulation of each country and the legal restrictions and differences of different authorities within countries.

3. The key is sound, holistic and comprehensive management of these risks through the settlement of legal issues at all levels: from strategic to operational.

4. Today's smart contracts are an innovation that cannot be seen as a universal replacement for classic legal contracts. Having a different functionality, its advantages and disadvantages, smart contracts take us to another level of consciousness and opportunities that need to be legally used, preferably using the rules of private international law.

In summary, using the example of "**if – to**" coding, we write: **if** the innovative technology of smart contracts can be regulated under private international law and it will make both the individual and the country more efficient, cost-effective and competitive, **to** – smart contracts will develop and will be widely used, having passed the evolutionary path of development. This will be the driving force for both states and individual companies to invest in the creation of "blockchain structures/smart contract".

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