The Role of Blockchain in Public Administration in the Field of Economic Activity

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Abstract

Nowadays, almost every mention of the word "blockchain" is associated with cryptocurrencies in one way or another. This way of thinking is ingrained in people's minds because of the most high-profile and discussed cases of fraud or the cryptocurrency market crash, which have hurt many investors in an extremely negative way. However, if we abstract away from preconceptions and take apart the mechanics of blockchain technology, the situation is not so straightforward. In creating a model for improving the efficiency of public administration in the field of economic activity, it is necessary to study blockchain as a concept, as well as its practical applicability in public administration, using real-life examples from various jurisdictions. The key means and ways to achieve the goal is a comprehensive study of the advantages of blockchain technologies that will be useful in the field of public administration of the economy, using special legal, specific historical, formal dogmatic, and comparative legal methods and the method of legal forecasting. The paper raises the issues associated with the introduction of blockchain into the economic sector and analyses the blockchain's benefits that will be useful in public administration when it is used. It analyses the integration of blockchain into public administration. The role of blockchain in such areas of the economy as finance, economic development, digitalization, agriculture, and others is analyzed. Based on this research, the benefits of blockchain in the economic sector, including the development of the entrepreneurial activity, are formulated. The paper identifies trends indicating that the continued implementation of good governance is not conceivable without the introduction of groundbreaking blockchain technology. The study of the introduction of blockchain in different areas of public administration has led to the conclusion that the legislator should pay special attention to the financial sector because proposals aimed at improving this area of public administration will improve the standard of living of the population of Russia.

Keywords

Blockchain · Economy · Technology · Government · Benefits · Groundbreaking technology · Finance · Public administration

JEL Codes

E2 · E5 · F1 · H7 · O1

1 Introduction

Blockchain is a distributed and decentralized register of digital data. In other words, it is an electronic database that stores information about transactions that take place on the blockchain network. This linear chain of data blocks is secure and does not allow for changes by third-party agents. Additionally, being distributed and decentralized, blockchain does not have a single copy of its data ledger because each user of the network retains a copy when they connect to it, nor does it have a single supervisory body capable of making changes to the network—the blockchain is maintained by network participants spread across the world who have adopted a consensus to work by certain rules for checking and validating transactions and recording data in the blockchain. The main purpose of blockchain technology is to implement and maintain integrity in distributed systems (Drescher, 2018, pp. 19–20).

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According to the information provided by PwC, one of the Big Four, blockchain technology has a significant impact on the global economy. Thus, it could increase global gross domestic product (GDP) by $1.76 trillion over the next decade (Migachev et al., 2019, pp. 23–34).

It is safe to say that, these days, the Russian government is considering the active use of blockchain in the economic sector.

According to the authors, to consider the role of blockchain in improving public administration in economic activity, it is necessary to identify specific attributes of the said technology that may be useful to the public sector (Clavin et al., 2020).

Considering the above characteristics of blockchain, the team of authors immediately notes several benefits that will be useful in public administration when it is used.

First, blockchain promotes the decentralized organization of the data register while preserving its integrity (Inshakova et al., 2021). This means that the data in the register of the government authority will be tamper-proof, and only authorized users or a group of users (validators) will be able to supplement and amend it. Furthermore, NGOs, educational institutions, or individual opinion leaders could also be some of the management hubs in this system for even more granular inspection and credibility of the entire process. The prospects of using blockchain within the electoral system can also be added to this section. Free and democratic elections without voter fraud will be possible thanks to the described characteristics of blockchain because the register into which voters are supposed to be recorded online will be controlled by authorized validators in a decentralized format, thus eliminating the possibility of voter fraud on the ground.

Second, blockchain provides transparency of data storage. This implies decentralized access to data that is not controlled by a biased set of individuals. In other words, databases become available for independent inspection, which removes the problem of trust between government agencies and civil society—the scope for fraud and corruption schemes is minimized while the data itself is safe. Detailed monitoring of the financial activities of various organizations, law enforcement agencies, and other institutions is made possible by blockchain and its consensus.

Third, there is an increase in managerial efficiency and a reduction in the cost of the process. As a high-tech product, blockchain minimizes the number of agents at work, which means a reduction in traditional staffing and, consequently, a reduction in the financial cost of maintaining the public administration apparatus. Blockchain and its smart contracts thus automate the execution of tasks and make the process more efficient in terms of time and the context of the absence of human error. Additionally, it is worth noting that the absence of human interaction in such a system will increase trust in the public administration itself because citizens will be in contact with a virtual system devoid of the disadvantages of the human factor mentioned above. In fact, lower-wage disbursements and logistics costs would allow the budget to be reallocated to other tasks and processes such as tax collection, accounting, and another auditing of public life would take on a modernized form.

Therefore, we can conclude that the advantage of using blockchain should be seen as its ability to ensure data availability and security in various public administration areas.

2 Materials and Methods

The goals and objectives set in the work determine the choice of research methods. Rules of law and legal relations in the field of public administration and implementation of executive power are studied using a special legal method. This method involves such approaches as description and analysis of administrative-legal rules and legal relations, their explanation, interpretation, and classification. These are logical research techniques. As part of the formal dogmatic method, the role of classification and systematization is especially significant. When classifying through the grouping of administrative and legal phenomena and concepts, these concepts are compared, which helps to form a more complete picture of each of them separately and of the studied subject as a whole.

A comparative-historical research method is a historical approach to analyzing and evaluating the most important categories of public administration and administrative-legal institutions. The science of administrative law cannot ignore all the valuable and positive that has been accumulated by the administrative legislation of Russia, and that represents its contribution to the overall potential of the world legal culture (PwC, 2020).

The scientific methods are related to each other, and each of them can be applied in combination with others. These methods have a common basis, which is determined by the property of the subject (object) that is being studied and learned—blockchain in public administration.

The comparative-legal method and the method of legal forecasting allow considering the specific legal nature of blockchain, comparing homogeneous legal phenomena, and identifying the prospects of legal relations in dynamics.

3 Results

3.1 Modernization of the Land Registry in Georgia

Collecting and storing data on land and real estate titles is a serious problem that the traditional registry cannot solve. Obsolete databases are often not updated, and many records

are made with errors and do not reflect the reality of the land register.

Ownership, as one of the key rights of a citizen of any country, must be respected unmistakably. In the context of this task, the Tbilisi government has partnered with BitFury to create a blockchain-based land registry. Back in 2017, the state blockchain-based land registry in Georgia had more than 100,000 property records entered in accordance with all necessary standards.

3.2 About Voting in Switzerland

The city of Zug in Switzerland is considered a corner of high-tech entrepreneurship, so experiments with blockchain have not been long in coming. For example, in 2018, the city of Zug organized and successfully tested blockchain-based voting. Although the event was experimental, the fact that it exists and the interest in this form of blockchain application paves the way for further testing of the technology in democratic states.

3.3 Business Registration on the Blockchain in Delaware

A loyal business environment is one of the key factors in developing any nation's economy. Not uniquely Delaware's problem, until recently, was an expensive business and corporate transactions, coupled with the tangible costs of processing various paperwork from business notaries. To resolve this situation, Delaware enlisted the help of IBM to minimize these cost items by switching these processes to blockchain and smart contracts. Moreover, in 2018, a law was passed that allowed businesses to do their actual registration in a blockchain registry, thereby bypassing costly notaries and other agents.

The above examples describe blockchain as a promising technology that could significantly improve the efficiency of public administration and reduce the cost of maintaining the state apparatus, as well as increase citizen trust in government.

3.4 Blockchain and Agriculture

Blockchain is used to track wine shipments. Chinese company Tencent develops a blockchain platform (Peng, 2020) to monitor all stages of wine production, transportation, and sales for Changyu, a major spirits producer. This blockchain solution will allow consumers to get full information about the product they are buying: the variety, the production place, etc.

In December 2017, the first cryptocurrency trade between Russia and Turkey took place. Turkey bought 3000 tonnes of Russian wheat, paying in 46 bitcoins (30 million rubles as of December 2017). The transaction was carried out by Prime Shipping Foundation, a transportation company owned by Rosneft and Sberbank, in cooperation with Quorum Capital Ltd. and Interchart LLC. The grain was shipped from Rostov-on-Don to Samsun, Turkey. Notably, this was the first deal to pay for the ship's freight in cryptocurrencies (Almeida, 2018).

Ivan Vikulov, a representative of Prime Shipping, noted that such transactions would allow for instant payment for agricultural products and help countries that cannot use USD for trade transactions due to sanctions (e.g., Iran) (Reiff, 2021). Bitcoin futures from the CME Group (Inshakova et al., 2020) were used to hedge the transaction risk.

In early January, China's Shandong Bohi Industry first used a blockchain platform to sell soybeans to the American agribusiness Louis Dreyfus (Jess, 2018).

When it comes to financial management, it is safe to say that blockchain has the potential to improve the governance of the banking sector (Matytsin, 2021). Thanks to blockchain's capabilities, users of banks worldwide can access financial services where they would not otherwise be able to. In particular, people in countries where standard banks are not readily available can use blockchain technology to access a range of services. For example, it is necessary to note the massive use of blockchain technology for instant money transfers between countries with virtually no fees or delays.

According to Paul Domian, former global head of research, analytics, and data at investment bank Tellimer (formerly Exotix), emerging markets are the most promising beneficiaries of blockchain technology. He also argues that because "frontier markets in Latin America, sub-Saharan Africa, and South Asia are severely underperforming and their average performance is less than half that of the best performing economies, they are ready to take advantage of blockchain" (Rusakova et al., 2019). A. Inshakova (Inshakova et al., 2020) also argues this for the BRICS countries.

Of particular importance is the fundamental fact that the blockchain contains data about all transactions that pass through it. Tim Draper, a US venture capitalist, emphasizes this point when predicting a bright future for bitcoin in a new blockchain-based financial system (Partz, 2019). Officials at the Russian Ministry of Finance, the Ministry of Economic Development, the Federal Tax Service, and the Ministry of Finance take a similar position today (Akimbo, 2022).

4 Conclusion

A. Advantages of the technology are as follows:
   - Increasing the speed of information transfer and establishing a single data registry;
   - Reducing the cost of employing clerical staff;
   - Increasing security and guaranteeing the confidentiality of documents within a restricted access framework;
   - The ability to automate the activities of suitable agencies using smart contracts.

B. Possible sectors for the use of blockchain in public administration (in the economy) are as follows:

- Budgeting processes—automated execution and budgeting based on smart contracts (Invest Foresight, 2018);
- Tax administration—automated tax collection and autonomous collection of relevant tax information. Eliminating non-payment of taxes;
- Customs control—a transparent system for obtaining customs duties and minimizing customs law violations;
- External and internal financial control—automation of control processes;
- Anti-monopoly regulation—organization of an open and decentralized public procurement control system.

C. Other examples of the use of blockchain within government structures are as follows:
   - Modernization of land registries;
   - Cryptographic protection of intellectual property;
   - External and internal financial control—automation of control processes;
   - Digitalization of logistics systems;
   - Optimization of document management;
   - Digitalization of various certificates and documents in the economic sphere.

There is no doubt that the use of blockchain will increase the security and reliability of public administration processes and make it (public administration) more efficient. Thanks to its digital platform and multifunctionality, blockchain can reduce bureaucratic burdens. Nowadays, almost any type of transaction can be represented in a distributed registry. Access to this registry could be the basis for executive cooperation to build networked public services and, in some cases, to simplify the implementation of executive power. These measures could contribute to the efficiency of the entire government.

Blockchain has its own characteristics that prevent it from being integrated into certain government sectors in an unchanged form without adaptation. For example, blockchain can be chosen to be public or private if data needs to be stored in a special way in a closed format or if a certain type of consensus needs to be established so that data can be changed in the process. Nevertheless, blockchain is flexible—with the right interest in the technology and an objective assessment of its benefits, integration into public administration is only a matter of time (various countries are involved in at least 200 blockchain initiatives) (Berryhill et al., 2018).

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