Digitalization of the legal regulation system: prospects and ways of development

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Abstract. In modern conditions of society development, legal regulation seems to be insufficiently effective due to a number of reasons: the lack of a unified approach to public administration, an excessive number of legislative prescriptions, the disintegration of legal regulation elements, inconsistency of regulatory requirements, as well as fragmentation in the activities of government bodies. In scientific discourse, the solution of these problems is possible only under the condition of digitalization and automation of the legal regulation system. In this regard, the purpose of the work is to study digital tools of legal regulation in the context of the development of domestic management structures. The methodological base of the research consists of a compilation of general scientific and private scientific methods: analytical, logical, structuring, as well as comparative legal, formal legal and predictive, aimed at a detailed study of the methods of law digitalization, their content stages, principles and functions. The result of the study was the selection and analysis of the most relevant digital management mechanisms, including: automation of the decision-making process, expert systems, blockchain, artificial intelligence, etc. As the most effective scenario for automating legal structures and domestic legislation, it is proposed to introduce a hybrid human-machine management model, in which a significant role is assigned to digital technologies (artificial intelligence, neural networks and software that allows implementing the concept of machine-readable legislation and the unified information code of the Russian Federation), which does not exclude the importance of human, the role of which passes into the category of data entry into a digital system, correction of individual structures and expert control over the activities of digital processes.

1 Introduction

In the modern realities of legal regulation, there are many structural elements of management and control through the accumulated legislative array over the years, a variety of normative legal acts and coordination orders. All these components are distinguished by the heterogeneity of requirements and regulations adopted at different times, in force or actually expired, which leads to the need to systematize legal regulation.

At its core, legal systematization implies a special type of legal activity, the implementation of which is aimed at the development and streamlining of the existing legal system.

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Considering rapid development of modern information technologies, the process of digitalization and automation offers a huge range of possibilities for managing the decision-making system, including in the field of law.

Legal regulation includes a significant number of constituent elements, including: legal norms and legislative requirements, legal relations, activities of regulatory institutions and governing bodies, legal responsibility and legal awareness, methods and tools of legal regulation, etc. The totality of these subsystems appears to be fragmented and disintegrated, due to the limitations of "manual labor" and traditional methods of public administration.

The introduction of automated systems instead of human labor can improve the efficiency, stability and consistency of legal regulation. There are practical results of using such systems in the implementation of international experience. Thus, some countries have become active followers of automation in areas such as social security distribution and criminal justice systems [1, p. 1].

It can be noted that the creation and application of normative legal acts is a leading element in the regulatory process, nevertheless, in conditions of balanced, progressive development of society, the priority role in lawmaking also passes to intelligent decision support systems.

"Lawmaking cannot stop at a certain stage, but is constantly in development due to the dynamism of social ties, the emergence of new needs in public life that require legal regulation. The state and legal basis of any civilized society is characterized by the presence of a significant number of normative acts adopted by the legislative and executive authorities" [2, p. 24].

Therefore, the introduction of automatic legal decision-making systems seems to be the most promising mechanism for optimizing the functioning of legislation, streamlining institutional structures, and at the same time, a way to improve law enforcement through the use of modern technologies.

In this regard, the purpose of this study is to explore possible ways to digitalize the legal regulation system in the context of the development of domestic management structures.

The tasks of scientific work include:
1. Defining the features of the functioning of the modern legal regulation system;
2. Highlighting the key mechanisms of this system digitalization;
3. Identification of the most effective and promising scenarios for automation of the legal regulation system in Russia.

The study of the issues of digitalization of modern legal structures causes contradictory ideas in the scientific community. On the one hand, the transformational potential of information technology is highly appreciated in terms of economic benefits and managerial advantages. On the other hand, there are significant risks of violating the rights of confidentiality, property and equality, questions arise about the importance of human decision-making and social self-organization based on uncertainty and the versatility of socio-cultural factors.

The question of how automation interacts with fundamental legal concepts and norms also attracts the attention of theorists working at the intersection of legal theory, information and communication technologies, sociology, cultural studies and philosophy. Some researchers are exploring the technological possibilities of automation and artificial intelligence to replace traditional legal structures. Others are wondering about the relationship and coordination of legal instruments with digital regulation [1, p. 2].

In the domestic practice of legal regulation, there is no single approach regarding the ways of implementing automated legal regulation systems. The main problem is the disintegration of legal structures, inconsistency of regulatory requirements and fragmentation in the activities of government bodies.
In this context, Eriashvili N. D., Sarbaev G. M., Ivanova Yu. A. consider the process of digital systematization of legislation as the basis for improving all structures of legal regulation. Questions of a methodological nature and the selection of relevant systematization techniques are raised in the works of Sorokina Yu. V., Kozhevnikova V. V. and other scientists. The ideas of Williams J. and Lipen S., who consider the process of transforming the theory of legislation systematization through a certain set of digital technologies, are especially relevant.

Thus, the development of modern social, economic and political relations requires effective legal regulation, the provision of which directly depends on the optimization and digitalization of the management process and legal assessment. In these conditions, it is very important to study the phenomenon of the legal regulation system automation aimed at the development and transformation of all legal structures.

2 Methods

The research direction determines the methodological basis of scientific research based on a number of general scientific and private methods.

The structural core of the study is a systematic approach that reveals the essence of the object under study through the identification of the entire complex of internal and external relations. The application of a systematic approach to the study of legal regulation processes at all levels increases the ability to identify its content and form, and also helps to determine the relationship and correlation of its parts and components.

With regard to the issues of law systematization, it means building internal unity and structuring the dominant legal elements through the use of modern information technologies.

The analysis of digital technologies for law systematization makes it possible to structure the most relevant tools of public administration aimed at overcoming the points of stagnation and shortcomings of previous forms of legal regulation. The application of a technocratic approach and the principle of evidence based on big data analysis and work of artificial intelligence generates the emergence of alternative ways to implement new forms of management.

The introduction of modeling and forecasting methods allows to explore various scenarios for the implementation of digital regulation in the field of law and explore possible mechanisms for organizing legal systems aimed at coordinating all regulatory processes.

The analysis and synthesis of relevant scientific ideas and concepts makes it possible to study the basics of the automation and digitalization process in the field of legal regulation, considering the distribution of powers and legal requirements, conditions of public self-organization, social-cultural factors and possible risks.

The use of private scientific methods (comparative law, formal law, legal forecasting method, etc.) is aimed at studying political and legal phenomena and structures in the context of digital governance, as well as substantiating the prospects for the development and transformation of the domestic legal system.

3 Results

The process of natural evolution of social, economic and political relations generates the need for constant updating and improvement of the legal system.

Achieving effective legal regulation in modern society is possible through effective work with information, the analysis, structuring and dissemination of which is implemented
through a number of digital technologies and automated systems. Let's take a closer look at the most relevant digital control mechanisms:

1. Automation of the decision-making process. The automation process is based on a set of technological tools and subsystems that include various regulatory scenarios (partial or full automation, auxiliary computer support for decision-making with human participation), among which the most common type of automation implies a process following a series of programmed rules and algorithms compiled by people; another type of automation implements algorithms that are output by the system from the data accumulated during the data society functioning [1, p. 7].

The use of automated decision-making systems in the process of legal regulation implies the presence of a large-scale database supported by various technologies, software, artificial intelligence, neural networks and robotics. The implementation of this approach in public administration brings many advantages in terms of accuracy, efficiency, cost-effectiveness and structuring, but at the same time conceals hidden dangers and problems associated with ethical, socio-cultural, legal and other consequences.

2. Expert systems. Being a kind of automated systems implemented through artificial intelligence, this process implies the machine execution of tasks requiring human participation. In other words, "expert systems are an example of pre-programmed logic, where the rules are encoded into the system and applied to new situations to obtain the expert opinion of those who have sufficient knowledge in this field" [1, p. 7]. For example, in the context of public administration, expert systems rely on specific legislative provisions and fixed legal criteria. If the legislation provides that persons who meet a specific set of criteria are eligible for a grant, allowance or benefits, the expert system analyzes information from various sources and makes an independent decision.

3. Adaptive service architecture. Managing complex systems whose actions are difficult to foresee is one of the key tasks of digital regulation. An example of this can be financial transactions and banking, insurance services, medical services management, resource allocation, etc. As a result, top-down hierarchical management of such systems does not seem to be effective enough, due to frequent deviations from the predicted scenarios. In this regard, the convergent application of adaptive systems based on Big Data and neural networks allows to adapt to changing conditions, improves the structure of management processes and creates new opportunities for flexible regulation. Based on local short-term forecasts, neural networks effectively distribute decision-making processes and successfully cope with local failures or dysfunctions, thereby preventing the failure of the entire system [3, pp. 23-24].

4. Distributed registry systems (blockchain). The advantage of this technology is the ability to "store and use information in a distributed database with full guarantee of data preservation in its original form; this information cannot be changed, replaced or extracted from it; blockchain is distinguished by decentralization, use of cryptography, autonomy, availability of coordination mechanisms, anonymity and transparency of the block chain. A common practice of using blockchain technology is electronic voting and crowdsourcing projects. This technology can also be used in the implementation of public control forms, when confirmation of data immutability and their safety is required" [4, p. 35].

In the context of corporate law, the use of this technology implies the impossibility of unauthorized interference in the system for the purpose of security and transparency. Nevertheless, distributed registry systems provide access to personal data to all participants of the blockchain system, which complicates the process of protecting private interests.

5. Internet of Things and quantum communications. The ubiquity of the Internet of Things is determined by modern information accessibility and the ability to perform any operations remotely. In the field of legal regulation, this technology supports the life support of many systems (for example, smart cities), provides integration of urban services,
communication systems, digitalization of education, monitoring of urban infrastructures, etc. Nevertheless, the presence of a huge number of devices connected to the network, provided that most sources are open, accumulating data on all socio-economic processes, generates a number of risks associated with the legitimacy and safety of anonymity, personal data and technical information. In this case, it is recommended to use quantum communication technologies "aimed at eliminating threats to information security, including from quantum computers, and including the use of properties of quantum systems for key transfer; the main advantage of quantum communications is the security of information guaranteed by the laws of physics, the use of which will provide a higher and previously inaccessible level of information security and construction of quantum secure and computing networks" [5, p. 27].

Analyzing the practical experience of different states applying certain digital technologies in the field of legal regulation, it can be noted that not all modern tools confirm their effectiveness and accessibility.

The Robo-debt program, implemented in Australia since 2016, can serve as an illustration of the ambiguity of using fully automated decision-making systems. The method of automatic debt collection, which replaced the manual system for calculating social benefits and overpayments, was used on the basis of comparing data on average incomes of the population. Appeals to the online portal implied statements about the average annual income figure to calculate the amount of social benefits, nevertheless, it was not explained to individuals that changes in income during the year affect the accuracy of social security calculations, after which notifications about debts were automatically sent to individuals [1, p. 10].

In the field of judicial proceedings, an automated decision-making system for offenders (COMPAS) has recently been used in some US states. This system uses the accumulated data on the illegal acts of the defendants, identifying the greatest risks of repeated offenses [1, p. 11]. During the decision-making process, judges consult with this system, which is not a violation of the rights of the accused, since the defendant's arguments are heard in court and receive an objective assessment along with the digital assistant decision. Nevertheless, the US Constitution defines the impossibility of fully delegating judicial duties to automated programs, due to the fact that the data and decisions of the system are initially modeled by humans, resulting in a number of biases and risks.

Based on practical examples of the transition to digital management in the field of law, we come to the conclusion that the viability of automated control systems at the present stage of development is possible only if there is a transition from full digital regulation to hybrid collective "man-machine" management [3, p. 12].

In this system, it is necessary to build on the most significant elements of legal regulation, the ordering and optimization of which can lead to the hierarchical development of all public administration elements, gradually introducing automated structures and digital technologies coordinated by humans.

Therefore, the systematization of legislation as a type of lawmaking is the starting point in solving the problem of legal regulation inefficiency, since legislation is the primary link in the mechanism of legal management [6, p. 233].

In the modern domestic legislative system, there are many outdated, contradictory or unused laws, rules and requirements, therefore, carrying out a complete systematization of legislation through digitalization and automation of the activities of state bodies is extremely important for any modern state, since this allows developing the legal system, improving it, raising the level of its legal technology and eliminating various legal problems [7, p. 115]. Legislative bodies actively adopt new laws and regulations, debate on issues of terminology, and cannot agree on scientific approaches and concepts of legal regulation. This leads to regular changes in the legal system and its inconsistency.
The optimization of the lawmaking system involves work on the rationalization of its elements. The most effective digital tool in this case is the creation of a unified Information Code of the Russian Federation.

The main purpose of the legislation systematization is to streamline laws and regulations by integrating them into a coherent system that meets modern requirements of legal regulation. The activity of legislation systematization occupies one of the main places in the legal policy of modern states, nevertheless, the general concept of "legislation systematization" may well be limited only to the external processing of normative material, meanwhile everything related to the so-called internal systematization (codification and aspects of lawmaking in the consolidation of legislation, the drafting of a single normative legal act as a result of digitalization, cancellation of previously valid acts, etc.), can be transferred to the theory of lawmaking and considered within its framework [8, p. 132].

"To solve the problems that have arisen, it is necessary to develop a theoretical model of the Information Code of the Russian Federation, which would provide an opportunity to move from abstract theoretical discussions to solving urgent issues. There is a need to clearly define information terms and concepts, create clear quality standards for them, and eliminate discrepancies in information law. All this will contribute to the improvement of information legislation in the country" [9, p. 32].

The practical implementation of information relations in the field of law should not exclude human participation, because initially it is necessary to examine the entire accumulated legislative body, highlighting its positive and negative sides, relevant and outdated regulations, and as a result, eliminate the shortcomings of the regulatory system.

In the most generalized form, all digital methods pursue the goals of streamlining, structuring and integrating legislative elements with subsequent transformation of legal regulation.

In this direction, there is another significant concept of digital optimization of law enforcement activities through artificial intelligence, designated by researchers as "machine-readable legislation".

"Machine-readable legislation can be defined as a set of normative legal acts transformed into a machine-readable form, designed to implement the legal norms contained in them through software and hardware complexes (artificial intelligence)" [10, p. 89].

This form of digital expression of legal norms takes the form of a program code without loss and transformation of their meaningful characteristics. The machine-readable model of legal enforcement automation is effective primarily in those branches of law in which it complies with the algorithmization principles, for example, in procedural or administrative law. In this regard, it is advisable to single out a separate branch of law digitalization related to the organization of machine-readable legislation - machine-readable law.

In the most general form, machine-readable law is a "special instrumental ontology and format (creation and presentation) of acts of regulatory and regulatory technical regulation (and complexes of such acts) based on specially developed languages (technologies of digital ontoengineering in law), hybridized from standardized computer languages (machine codes) and special legal metalanguages (with meta-data, with meta-markup, with digital "sidenotes") and with legal and technical constructions in formalized digitalized ontologies), with the transformation of the logic of normative institutions into computer-software logic of multiple use, allowing to achieve and ensure a high degree of automation of solving a range of legal tasks (to achieve greater efficiency and ergonomics of such solutions), including allowing computer software complexes (computer tools) to automatically recognize (read) directly in primary sources (and not in translations), find, "understand" and interpret the texts of such acts (and their complexes), as well as execute or ensure their execution (to the extent available for these computer software complexes)" [11, p. 65].
In this area of law automation, it is important to note that it is inefficient and practically impossible to translate the entire legislative array regulating any legal scenarios into machine-readable code. Automation should affect modern law-making - the creation of new legal norms in machine-readable form. Only after the establishment of this system its old elements can be partially automated, which directly affect modern legal situations.

As the results of this study show, the introduction of a law automation system provides advantages in increasing transparency and accountability of government decision-making. This is because a person uses his own conclusions in the decision-making process, which may not correspond to the actual situation; nevertheless, decisions based on system algorithms will explain exactly how and why each variable was accepted and how a certain conclusion was reached.

Nevertheless, we consider it ineffective and erroneous to exclude human participation from the legal regulation process. Automation of the legal system should imply hybrid interaction, in which the role of a person passes into the category of entering data into a digital system, correcting individual processes and expert control over the system activities.

Summarizing the data obtained on law digitalization, we can say that there are many approaches to the process of automating legal regulation, but in a fragmented form none of them can manage a complex system of rules, norms and relations. In this regard, only an integrative set of digital tools, methods and technologies, along with human participation, can ensure a full-fledged transformation of the legal system in the direction of automation and unification.

4 Conclusions

The dynamic development of modern society requires constant improvement and updating of the legal system at all its levels, including management and regulatory structures. Therefore, it is necessary to ensure the effectiveness of legal regulation by automating the decision-making system, digitalizing legislation, technological transformation of legal relations and transformation of functional requirements for the activities of public administration bodies.

Automation can improve government decision-making. Benefits include cost savings and greater responsiveness, as well as the ability to strengthen the rule of law. Properly designed, implemented and controlled automation can help the government to make clear decisions, maintain transparency and accountability, predictability, consistency and equality before the law [1, p. 25].

To date, it is impossible to speak with certainty about the scale of automation processes in the field of law, since it is not fully known which values can be fully integrated into automated decision-making systems, and which ones should retain their functional identity.

The functioning of legal structures is not a static phenomenon, but appears to be a developing and transforming process that responds to changes in society and the spread of digital technologies.

An important condition for the introduction of a legal automation system is the implementation of a hybrid structure that coordinates digital technologies and human participation for the purpose of public regulation. Modern technologies perform computational work that cannot be performed by humans, while expert evaluation must be carried out directly by humans.

Through joint efforts, society can come to a new dimension of the development of organizational and managerial structures that support the work of innovative tools and sustainable legal values. In this context, the planning and development of management policy should be a continuous dialogue process aimed at achieving consensus or at least agreement.
between the various parties involved and technologies, considering different semantic systems, as well as limited communication and cognition [12, p. 76].

Digital technologies can play an important role in decision-making, can help improve data quality, collect information more accurately and efficiently, and process and analyze data more efficiently [3, p. 14]. The use of a hybrid approach in management enables society to innovate, coordinate its actions with the state, cooperate and make a common contribution to future social transformations.

In this regard, the digitalization of legal regulation can solve many problems related to the foundations, principles and forms of public administration [13, p. 78], providing a general regulatory assessment in the most accessible form, as well as issues related to the coordination of institutions and bodies of legal regulation.

References