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INFORMATION TECHNOLOGY FOR DECISION-MAKING ON TERRITORY MANAGEMENT AND INTERACTION WITH THE POPULATION

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Abstract: The article deals with the legal regulation of the development, implementation, and use of information technology for decision-making on the management of territories, and interaction with the population. The main purpose of the study is to analyze the legal regulation of the possibilities of implementing and using information technology in state and municipal management, in particular, in the territory management and the interaction of the population with state and municipal authorities. The authors explore the sources of legal regulation of the choice, development, implementation, and use of information support for the territory management, and interaction with the population. The article presents a review of studies devoted to the use and development of information technology for solving complex and specialized tasks in the practice of public administration. It is shown that the processes of globalization, technological revolutions, the implementation of information technologies, and other innovative results in the development of systems at various levels lead to the need to improve management methods. It is noted that the main management problems are caused by inconsistency and lack of regulation of the information support used by the authorities. The lack of unified principles of information and analytical support for the territory management process at the level of regional and municipal authorities hinders their implementation. To solve the problem concerning territory management and public interaction, it is necessary to develop general principles and criteria for the selection and use of information systems. It is concluded that to provide state bodies and local authorities with up-to-date and complete, comprehensive, and operational information, it is necessary to coordinate and integrate information resources at all levels of state administration in the course of improving information support.

Keywords: territory management; information support; interaction with the population; decision-making; geoinformation systems

I. INTRODUCTION

Today, the territory management, as well as management of socio-economic systems, economic and social organizations, designed to ensure their high efficiency and effectiveness to meet the needs of society, acquires special specificity associated with the spatial and natural characteristics of subject to management [1-3]. The increasing requirements for the quality of managerial activity are due to various factors, such as the geopolitical, natural, and socio-economic aspects, as well as the rapid growth of scientific and technological progress, increasing diversity and complexity of technologies used, increasing the role of human resources, drastic changes in consumer preferences, increasing complexity of the competitive

environment, the emergence of new, often completely unexpected opportunities for implementing management goals, etc. [4, 5].

In the contemporary theory and practice of managing the development, one can trace certain dynamics of conceptual approaches that involve the development and widespread implementation of information systems, telecommunications, local and global computer networks with artificial intelligence, design, and integration of business processes, engineering and reengineering management technologies, training and self-learning technologies of organizations as socio-technical systems designed to influence managerial decisions, including those in the territory management and interaction with the population.

Today, the basic regulatory, material, technological, and organizational conditions for the active use of information technology in public administration practice have been formed as a result of administrative reform, which is reflected in the fact that state and municipal government bodies possess regularly maintained and updated information and telecommunication systems for state and municipal authorities, the ability to receive many public services in electronic form, to organize electronic document management and interdepartmental interaction. Despite obvious achievements in the concerned area in the recent decade, some problems of application of information and communication technologies in public administration still do not lose their relevance. Among other things, these problems are associated also with an inadequate and unclear legislative and regulatory framework for the use and development of information technology management, and independent decision-making arising in this problem domain. This problem is particularly urgent since it does not allow fully unlocking the potential of public administration and local self-government as split-level mechanisms for solving problems of the territory and the population.

The contemporary statutory regulation in the use of information technology has been brought into line with the program documents that were adopted in Russia. But it must be recognized that the results that were expected in the strategic programs were not achieved in a short time. According to experts, one of the reasons is insufficient attention and demand for information technology on the part of the state, and as a result, insufficient funding [6]. According to some estimation, in 2020, the amount of state funding for the implementation of information technology may reach 886.9 billion rubles, i.e. 98.5% of the level of 2016 [7]. At the same time, the issues concerning the need to use information technology find their awareness in government agencies. Thus, the officials of the Russian Federation has pointed out that to implement digital technologies in all sectors of life, a new and flexible regulatory framework is needed that would allow ensuring the information security of the state, business, and citizens, and providing professional training of specialists for the digital economy [8].

The researchers are quite active in discussing issues related to the use of information technology. The authors A.E. Kurilo [9], A.A. Krivoukhov [10], M.P. Fedorov [11], and others describe various aspects of this issue – from theoretical aspects of applying this technology in socio-economic development to highly specific areas of the economy, such as infrastructure or property complex. Nevertheless, it cannot be denied that the research on this topic is more focused on the commercial sector. Thus, information technology is an urgent research area for public authorities as well.

The research hypothesis of the present work is as follows. The complexity of tasks for the socio-economic development of territories encourages creating information and analytical platforms based on big data technology. The lack of statutory regulation, including the lack of unified principles of information and analytical support for the management process at the federal, regional, and municipal levels, hinders their implementation.

II. METHODS

The main research method in this work is the dialectical method of cognition of reality. Along with it, the statistical method, the method of transition from the general concept to the particular, and the method of formal logic were used. International experience in using information technology in the territory management and interaction of administration with the population was studied using a comparative legal method. To prove the hypothesis, the authors searched for sources of statistical data, information about the institutional environment, and conducted a content analysis of official government websites that reflected the development of information technology, as well as information and analytical systems in federal, regional, and municipal management.

III. RESULTS

Currently, information technology is intensively used in all sectors of life. Commercial companies are forced to implement information technology to improve their competitiveness, study consumer preferences, and improve financial results. Public administration bodies also follow signs of the time, using information systems in their work [9].

It should be noted that until recently, state policy in the information sector was not clearly defined, and thus was just declarative. The main development directions of the information society and the application of information technology were defined in the strategic planning documents, namely, the “Strategy for the Development of the Information Society in the Russian Federation for 2017-2030” [12]

The main areas of technology application by state authorities were outlined in the “Concept of Using Information Technology in the Activities of Federal Public Authorities until 2010” [13]. The main goal of using information technology in the activities of federal public authorities was to increase the effectiveness of public administration mechanisms by creating a common information technology infrastructure that would include state information systems and resources, as well as means to ensure their functioning, interaction with the population and organizations in the provision of public services.

As noted in [5], the state policy in the field of information technology used by state authorities has been already figured out. The process of using information technology in the activities of public authorities and the procedure for providing public services are regulated by a large number of regulatory legal acts. A system of state authorities responsible for implementing the provisions of state policy has also been established. Regulatory legal acts governing this sector are mostly brought into line with the requirements of the new state policy. However, the norms of these acts, practically do not take into account an important aspect, such as the activities of government bodies in the territory management using information technology.

The management of economic and other activities in the vast territories of the country is associated with the use of huge amounts of data. Selecting optimal strategies for managing spatially distributed objects of socio-economic systems, requires conducting a comprehensive analysis of the entire amount of accumulated information about management objects, including satellite data, field observations, cartographic, and other useful information. This information is used when working with a geographic information system (GIS), which can solve several applied problems, in particular, preparing data for decision-making in the territory management using at that heterogeneous data [14].

In recent years, the issue of organizational development of the territory and land resources management in the context of building capacity of interaction with the population has become particularly relevant around the world that is indicated by the appearance of international acts, such as the UN Resolution "Transforming our World: the 2030 Agenda for Sustainable Development" (hereinafter referred to as Agenda-2030) which calls on countries around the world to ensure flexible, exhaustive, broad participation and representational decision-making at all levels [15].

Agenda-2030 sets out 17 main sustainable development goals (SDG). The success in achieving several goals (Goal 11 "Sustainable cities and communities", Goal 15 "Life on Land", Goal 16 "Peace and justice", Goal 17 "Partnership to achieve the Goals") is associated with the transition to inclusive territory management.

The UN notes [16] that the use of GIS when providing public services has led to a huge number of innovations, and improved processes and results for the public service. GIS is a computer system that allows displaying, model, making queries, and analyzing large amounts of data in a single and structured database consistent with the location. GIS enables a person to create maps, integrate information, visualize scenarios, present powerful ideas, and voluntary geographical information (VGI), and develop effective solutions. The adoption of GIS in the provision of public services goes far beyond the use of traditional mapping tools. GIS is naturally and easily integrated into all processes and systems to significantly improve public policies and public services in key social sectors, such as health service, education, energy, agriculture, transport, etc. Since GIS has become more common and easier to use, governments are using these systems to analyze financial decisions, improve service delivery, and involve people in monitoring and evaluating government performance. Besides, GIS has unique opportunities to increase government accountability and transparency. Web-based GIS platforms provide specific and timely information that is particularly useful for emergency response [17].

IV. DISCUSSION

Researchers note that the era of Big Data, social networks, open-source software, and open access is emerging into contemporary territory management [18]. It is noted that Big Data are becoming the "dashboard of humanity", an intelligent tool that can help fight poverty, crime, and pollution [19]. Such opportunities appear when using Big Data Technology.

It is noteworthy that the use of the collected information is no longer limited to internal use for compiling reports or publishing data on the official website to ensure openness and transparency. Today, these data are becoming the basis of special platforms designed to solve the problems of the population in real-time mode [20]. Thus, the Chinese Academy of Sciences is working on the creation of a new platform called "Urban Municipal Monitoring and Information Management System" [21], designed for comprehensive environmental management at the municipal level. This system accumulates geographical and socio-economic information containing data on the urban environment and the results of the population's life. This system was used to analyze spatial infrastructure and places where environmental problems occurred. This made it possible to make proposals for optimizing the allocation of urban management resources and improving their efficiency, as well as to reduce decision-making time and costs for maintaining the traditional management routine with regular and irregular inspections of supervisory organizations [21]. A similar city management information system is implemented in Seoul. It allows conducting up-to-date monitoring of water and air quality, road conditions, consumer prices, etc. All indicators are updated automatically and can be visualized, which allows managing the current situation [22].

An important part of the present research is dealing with studying the issues of legal regulation of information technology use when interacting with the population.

Russian legislation, regulating the interaction between government agencies and citizens, is developed based on several fundamental federal targeted programs and projects. The RF Government program "Information Society" (approved by RF Government Resolution of 15.04.2014 No. 313 [23]) put before a legislator more specific objectives: developing mechanisms to provide citizens and organizations with public services and information by using remote technologies; improving the openness, efficiency, and functioning quality of mechanisms for electronic interaction between state and local authorities, individuals and legal entities, including that at the cross-border level; improving the usability by citizens, organizations, and authorities of state (municipal) information systems and

services, and interdepartmental electronic interaction mechanisms; creating a national data management system, ensuring the possibility of using data in digital infrastructure platforms.

In the course of implementing these tasks, the Presidium of the Government Commission on digital development and the use of information technology to improve the quality of life and business conditions, approved the Federal project "Digital Public Administration" on May 28, 2019 [24]. The main project task is to implement digital technologies and platform solutions in the public administration and public services areas, including those to the benefit of the population and small and medium-sized businesses, as well as individual entrepreneurs. These resolutions of the RF Government and its agencies allow considering the development of legislative regulation in the field of information and communication technologies in terms of how relevant legislative decisions contribute to the achievement of the stated goals related in fact to the formation of a new paradigm of interaction between society and the state.

Currently, the regions of the Russian Federation have accumulated certain experience in organizing and regulating electronic forms of interaction between authorities and citizens. Thus, since October 2017, the "Incident Management" project has been implemented in several Russian regions. It allows keeping track of complaints and negative responses of citizens on the certain issues within the competence of regional authorities through social networks (VKontakte, Facebook, Instagram, Twitter, and Odnoklassniki), taking promptly the necessary measures to respond citizens, comment on state-government decisions, as well as to estimate in general the attitude of the population of the Russian Federation entities to the regional authorities [25]. The obvious drawback of the "Incident Management" system is that it does not exclude selective response to citizens' messages. Unfortunately, some negative comments concerning regional authorities remain unanswered [26].

An analysis of the practical activities of the authorities in reviewing citizens' appeals allows pointing out two obvious trends. The first is that the number of requests to authorities in electronic form in recent years remains very significant. This indicates that Russian citizens are mastering contemporary information and communication technologies, they have acquired skills to use these technologies to protect their rights, and thus, a certain primary level of the population's digital culture is being formed [26].

The second trend is that citizens actively use alternative ways of contacting various government officials through their email addresses, hotlines, social media accounts, and special digital platforms. These appeals are not officially registered, they are not subject to the guarantees provided by the Federal law "On the Procedure for Considering Appeals of Citizens of the Russian Federation" [27], and statistics of such appeals are not always kept. But in some cases, they are more effective in terms of the possibility of solving the problem of concern to the applicant than numerous official appeals. It is noted that the above Federal law operates vicariously: according to part 2 of article 1, it applies to all appeals of citizens, except for those whose consideration procedure is regulated by special federal constitutional laws and federal laws. In quite a few cases, Russian legislation provides for special procedures for reviewing citizens' appeals to the authorities, for example, through the Internet resource "Russian Public Initiative" [28].

Note that an important aspect of creating information and analytical platforms for interaction with the population abroad is their integration with social networks [29]. In Japan, local authorities are actively implementing new information and communication platforms to attract attention and renew public interest in their activities, as well as create opportunities for citizens to participate in democratic processes and municipal life. Social networks can also be used during various crises. Thus, during the Great Eastern earthquake in Japan in March 2011, social networks proved to be a valuable communication channel that allowed the synchronous exchange of information, while traditional communication channels failed due to power outages and overloaded telephone networks [29]. In this regard, it can be stated that it is necessary to introduce new positions in municipalities (for example, a social media manager) since work in social media environments must be conducted by qualified employees to prevent the misuse of these tools. Thus, a study of 217 Italian and Spanish municipalities [30] which used Facebook as a platform to ensure the transparency of their activities, revealed the problem of insufficient skills of employees. Another important result of this study was that information provided through social networks was most demanded among low-income people, since the needy used this communication channel to get information in the sector of social services, benefits, financial support, etc.

The state is interested in further improving this sector of interaction with citizens. Therefore, the legislation consistently responds in general to the relevant requests of society.

At that, the following issues remain problematic:

– misregulation of certain state and power procedures in terms of possibilities of their implementation in electronic form;

– insufficient incentives, including fiscal incentives, for citizens who prefer using electronic forms of interaction with authorities to traditional methods;

– the absence of mechanisms that prevent the state from a selective approach when responding to incoming responses and comments from citizens in social networks;

– the absence of model acts of the RF entities in the field of electronic interaction between authorities and the population.

V. CONCLUSION

The implementation of the above-mentioned information technology in the activities of government bodies in terms of the territory management and interaction with the population requires a large-scale improvement of

legislation, primarily normative consolidation of general principles in creating, implementing, and using information technologies. Such principles may include creating a single hierarchy of information systems in the executive power bodies at all levels; preparing information systems for specific purposes and consumers; providing uniformity of all information bases and data banks; ensuring compliance of analysis methods and algorithms with the goals and objectives of using information resources, provided observing the procedure for selecting, transmitting, processing, storing, and issuing information. Thus, the hypothesis of the present study is proved. Further development of the issues of normative support concerning the activities of the executive power bodies at all levels in the context of using information technology is seen in the analysis of the possibility of creating a single centralized system for decision-making management based on unified standards and protocols of all user information technology and systems.

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