

Modern Aspects of SMART-Management of the Region in the Context of the Development of Public Administration

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Abstract

The main purpose of the study is to analyze the key aspects of SMART management in the region in the context of public administration. New information technologies and SMART-management trends renew the role of digital management of the region in the context of the formation of the global information society. The research methodology includes a number of theoretical methods aimed at achieving the set goals. Based on the results of the study, the main aspects of the SMART-management of the region in the context of the development of public administration were identified.

Keywords:

SMART-management, Management, Public Administration, Region.

1. Introduction

Today, the global trend of the digital world economy is entering an active phase of its development. In the leading countries of the world, the concept of "Industry 4.0" and the development of digital technologies both at the state and corporate levels began to be massively developed in government programs and business strategies. The practical plane of solving these issues at the regional level is updated quite quickly, which is a response to system calls. Despite the revival of digitalization at the regional level, today the question arises of constantly convincing all subjects of the objective need to switch to a digital format.

Management of the digital transformation of the economy, the introduction of modern IT technologies SMART and HR management and e-governance in the region is the renewal of the entire management, logistics and control system in the region, the establishment of an innovative concept of SMARTization between civil society, government

and business, increasing the speed index, network readiness, assurance of the quality of implementation of strategies and opportunities to reduce time, money, risks, provide new fast efficient services and living standards in the region. This is a unique opportunity for the entire public administration system to form an attractive leading investment image, to establish the country as one of the most successful digital states in the world with a focus on SMARTization, sustainability, innovation and exclusivity. Digital transformation, "SMARTization", sustainability and exclusivity are priority vectors for the development of global processes in the global digital economy of the future.

The digital future, improving the quality in the sphere of economic and social life of citizens, the digitalization of business processes and e-governance are an integral part of the effective and high-quality management of the economic policy of any state in the world. E-democracy, digital transformation, "SMARTization" of the country is not only the process of providing citizens with access to electronic services, but also the control of the online regime over the actions of the government. Structural innovative information technologies of the new generation and digital transformation of the economic policy of the future of the advanced countries of the world in the context of globalization and constant progress require a new strategy in many areas.

The main purpose of the study is to analyze the key aspects of SMART management in the region in the context of public administration.

2. Methodology

A set of methods form our research methodology. The methodological base is a comprehensive, interdisciplinary, institutional, systemic, historical approach to the analysis of evolutionary processes in the development of regional governance in the context of public administration. The study used general scientific methods, including: synthesis, generalization, comparison, description, observation, retrospective analysis and others. The generalization method was used at different stages of the work to substantiate the conclusions and recommendations.

3. Research Results and Discussions

The expansion of digital technologies is one of the dominant factors in the growth of the global economy in the next 5–10 years, which is a key driver for achieving the goals of sustainable development of the country and its regions in the context of decentralization. According to the UN, 55% of the world's population currently lives in cities, and by 2050 this number will increase by another 2.5 billion people and reach 68%. In the current conditions of urban population growth, countries are attracting more and more investments for the development of SMART cities and regions, of which there are already more than a thousand in the world, among which half is concentrated in China, and among the leaders of "SMART" urban development there are also Europe, North America, Japan and South Korea. The growing level of urbanization in the world determines the expediency of transforming public administration based on the concept of "SMART cities and regions" by introducing the latest information and communication technologies to modernize the infrastructure of cities; ensuring a better level of service delivery to the population; implementation of effective resource management; reduction of budget expenditures while improving the quality of services; support for small and medium businesses; enhancing the development of innovation and human capital; reforming the social sphere of city life; improving the quality of health care and education; solution of environmental problems of the city and the region. However, today cities are dominated by a non-conceptual vision of strategic development and a fragmented approach to the

implementation of SMART solutions, which does not allow the full use of the potential and capabilities of SMART cities and regions technologies. Therefore, in the current realities of a mobile, information-rich urban environment that is continuously transforming in the digital economy, it is relevant and timely to search for new models of organizational and information support for the development of a SMART city strategy, taking into account the speed of information dissemination, the complexity of communication flows, and the digitalization of the urban environment [1-5].

Accelerated technological development in the context of the Fourth Industrial Revolution has changed the nature of competition in world markets, increasing the importance of technological capabilities as a source of competitive advantage and identifying technology as a key factor in production. Every year, digital technologies change everyday life, creating foundations for sustainable socio-economic development. The global COVID-19 pandemic has significantly accelerated digitalization processes, giving rise not only to new needs and opportunities, but also to new dependencies and challenges. Despite the obvious positives inherent in SMART technologies (increasing the level of innovation and reducing the carbon intensity of the economy, improving the education and healthcare system, increasing the level of energy efficiency, etc.), they can increase territorial digital divides, create risks of disintegration of the communities of individual remote towns, and deepen the vulnerability of the economy and the population to cyberattacks. The main elements of SMART-management in the region in the context of the public administration system are shown in Figure 1.

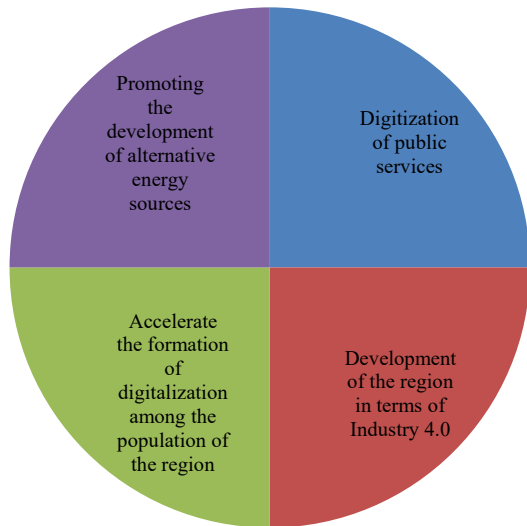


Fig. 1 The main elements of SMART-management in the region in the context of the public administration system.

It is unmistakable to understand how deeply dependent and vulnerable to infrastructure the population has become. Roads, bridges, schools, hospitals, ports, public transport system - physical infrastructure that has always been important. "Failures" in its work can quickly disrupt the stable functioning of the city, reduce the quality of life and productivity of communities, while modernization, on the contrary, promotes economic growth and improves the well-being of the population. Today, the development of basic infrastructure is impossible without the introduction of digital technologies: the search for "SMART" ways to accelerate economic growth, increase social inclusion and improve the quality of the environment gives them priority. Thanks to the implemented digital technologies, it is possible to obtain information about the efficiency of the infrastructure. Using them to monitor or map the health of an infrastructure can determine the extent of aging and the remaining design life. The positive effects of using digital technologies are gradual, so it

is not easy to predict the impact of such technology "interventions" for any system. It is more difficult to assess the possible scale of their consequences in the future, since the adoption of digital technologies depends not only on technological capabilities, but also on policies, legal and institutional support, behavior and perception of them by consumers [6-8]. Digital technologies in the infrastructure of the city form a variety of opportunities, the main of which are presented in Table 1.

Table 1: The main possibilities of SMART-management in the conditions of public administration of the region

№	<i>The main possibilities of SMART-management in the conditions of public administration of the region</i>
1	Environmental impact
2	"SMART" use of water resources
3	"SMART" waste management
4	"SMART" energy consumption

The policy of formation and development of human resources is implemented on the basis of the concept of regulation of the demographic, cultural, educational and social and labor spheres, in which all stages of the reproduction of human resources take place. The need for public management of regional

socio-economic development is largely due to the imperfection of the market mechanism and its inability to solve modern development problems, both at the national and regional levels. The conditions for the formation and development of human potential are determined, first of all, by the nature of its institutional base. Formal legislative acts and informal norms correct the activities of scientific, economic, educational, medical, cultural and other organizations that play an important role in creating conditions for the formation and development of human potential. Effective management of the human potential of the region is problematic due to the frequent change of legislative norms, the lack of a clear state policy in the development of priority sectors of the economy, and the lack of career guidance. Evaluating the effectiveness of managing the formation and development of human resources in the region requires both retrospective and predictive analysis of the state of human potential and possible directions for its change. This, in turn, will contribute to the adoption of managerial decisions by the relevant governing bodies of the region in order to most effectively form and realize the human potential of the region [9-12]. The effectiveness of governance at the regional level is determined by long-term trends in structural changes and their impact on future economic growth. Therefore, long-term forecasts of the human potential of the regions based on a retrospective analysis are of great importance. The practice of strategic planning of regional development in the world precedes the improvement of the theoretical and legal foundations of this process. Promising areas of scientific research on this issue are the justification of institutional support for strategic planning of regional development, as well as the development of methodological recommendations for monitoring and evaluating the effectiveness of the implementation of regional development strategies.

Environmental impact. Urbanization has a negative impact on the overall state of the environment. In particular, the most serious and widespread harm to the environment is due to the inability to control emissions and wasteful water consumption. And unregulated, poorly designed, or poorly managed public water and sanitation infrastructure is often among the largest sources of environmental pollution in regions.

"SMART" use of water resources. Water, namely its lack, will become one of the biggest problems of cities already in this century. Undertreatment of wastewater can lead to serious pollution and health problems. SMART solutions in the water sector are aimed at improving the quality of water. The system of optimal water resources management uses digital technologies that help save water, reduce costs and increase reliability and proper water distribution. The operation of the physical water supply system is combined with the introduction of information networks. This system typically analyzes available cost and pressure data to detect leaks in real time.

"SMART" waste management. The rapid increase in waste exceeds the pace of urbanization: it is increasingly difficult for cities to trace the origin, ensure sorting and recycling of various types of waste that can be reused to move towards a circular economy. Waste collection and recycling is one of the largest annual expenses of cities and regions. One of the shortcomings of the waste management system is the inability to predict the frequency of their removal. This issue can be solved using digital technologies [13-15].

"SMART" energy consumption. Application of sensors, SMART meters, digital control systems, etc. provide automation, monitoring and optimize energy distribution and energy consumption. Such systems make it possible to optimize the functioning and operation of networks by balancing the needs of different actors: consumers, producers and suppliers. "SMART" medical care. The system of "SMART" health care management (through the use of SMART technologies) makes it possible to turn population health data into clinical information covering electronic patient registration, home health care, and mechanisms for remote diagnosis, treatment and monitoring.

The most valuable wealth of any country is its human potential, which is an important factor in ensuring its prosperity and competitiveness in the global socio-economic space. Conditions are created by the preliminary socio-economic development of the country, the state of the use of its various resources, the development of political, ideological, social processes that took place in the country. They either contribute to the formation and development of human potential, or reduce these opportunities. Effective management of socio-economic processes occurring in the national economy at different

hierarchical levels of government (both at the national - macro level, and at the local - meso level) is considered impossible without strategic planning, the implementation of which is entrusted to public authorities and management of the appropriate level. the role of a powerful organization in the country, working out and implementing a strategy for the development of society. Determination of priorities and prospects, adequate formation of development goals for each specific region, taking into account the available resource provision, requires the introduction of a strategic approach to state regulation of regional socio-economic development.

4. Conclusions

In the context of the European integration orientation of the creation of a state and taking into account the development trends of modern socio-economic systems based on a combination of globalization and localization processes, the issue of ensuring the competitiveness of the economy of any state in the world market is of particular relevance. Today, international integration in a globally oriented economic environment is not a prospect, but a prerequisite for the development of the state, therefore, the issue of following and adopting successful and effective trends in the global economy is a condition for the effective development of the state as a whole and its public administration system. Establishing proper ethics of information communication and new technologies of digitalization of the economy can turn any region into leaders in the field of IT technologies and translate it into a digital future where all areas of life gain an advantage. Promotion in the regions of the developed countries of the world on this path is developing every year and is increasingly filled with practice. Harmonious and integrated use of new digital technologies, the formation of high-quality creative approaches to governance, e-democracy, e-governance, transparency of government actions, involving citizens in governance, promoting the formation of a public position, global cooperation and support for flexible transformation based on multi-level network structures, essential accelerating the development of e-government, introducing advanced IT technologies SMART and HR management, developing an information culture and reducing the digital divide open up new unique

development opportunities and contribute to a radical improvement in the quality of economic and social life of citizens and the digitalization of business processes in the region.

References

- [1] Huzar, U. & Zavydivska, O. & Kholyavka, V. & Kryshchanovych, M. Formation of psychological peculiarities of time-management of a modern expert in the field of finance. *Financial and credit activity: problems of theory and practice*. 4(31), 2019, 477-486. <https://doi.org/10.18371/fcaptive.v4i31.191001>
- [2] Bashynska, I., & Dyskina, A. The overview-analytical document of the international experience of building SMART city. *Business: Theory and Practice*, 19, 2018, 228-241. <https://doi.org/10.3846/btp.2018.23>
- [3] Alizadeh T., Crowdsourced SMART Cities versus Corporate SMART Cities. In: The 4th PlanoCosmo International Conference IOP: Earth and Environmental Science 2018, 158: 012046 <https://doi.org/10.1088/1755-1315/158/1/012046>
- [4] Cifaldi G, Serban I. Between a SMART City and SMART Society. In: Intelligent Human Systems Integration 2018, (722): 714-719. https://doi.org/10.1007/978-3-319-73888-8_110
- [5] Sylkin, O., Kryshchanovych, M., Bekh, Y., & Riabeka, O. Methodology of forming model for assessing the level financial security . *Management Theory and Studies for Rural Business and Infrastructure Development*, 2020, 42(3), 391–398. <https://doi.org/10.15544/mts.2020.39>
- [6] Gulc, A. Role of SMART specialisation in financing the development of regions in perspective 2020. *Business, Management and Economics Engineering*, 13(1), 2015, 95-111. <https://doi.org/10.3846/bme.2015.249>
- [7] Bulatova, O., Chentukov, Y., & Chentukov, I. Integration processes and global regions. *Journal of European Economy*, 3, 2018, 292–304. <https://doi.org/10.35774/jee2018.03.291>
- [8] Petroye, O., Lyulyov, O., Lytvynchuk, I., Paida, Y., Pakhomov, V. Effects of information security and innovations on country's image: Governance aspect. *International Journal of Safety and Security Engineering*, Vol. 10, No. 4, 2020, pp. 459-466. <https://doi.org/10.18280/ijssse.100404>

- [9] Kaivo-oja, J., Vähäsantanen, S., Karppinen, A., & Haukioja, T. SMART specialization strategy and its operationalization in the regional policy: case Finland. *Business, Management and Economics Engineering*, 15(1), 2017, 28-41. <https://doi.org/10.3846/bme.2017.362>
- [10] Hajduk, S. The concept of a SMART city in urban management. *Business, Management and Economics Engineering*, 14(1), 2016, 34-49. <https://doi.org/10.3846/bme.2016.319>
- [11] Magruk, A. (2016). Uncertainty in the sphere of the Industry 4.0 – potential areas to research. *Business, Management and Economics Engineering*, 14(2), 275-291. <https://doi.org/10.3846/bme.2016.332>
- [12] Kryshtanovych, M., Ortynskyi, V., Krasivskyy O., Mazyi, N., & Pasichnyk, V. Methodical approach to countering threats of economic security in the context of ensuring the protection of national interests. *Financial and Credit Activity: Problems of Theory and Practice*, 4(39), 2021, 202–208. <https://doi.org/10.18371/v4i39.241309>
- [13] Kryshtanovych, S., Gutsulyak, V., Huzii, I., Helzhynska, T., & Shepitchak, V. Modeling the process of risk management response to the negative impact of risks as the basis for ensuring economic security. *Business, Management and Economics Engineering*, 19(2), 2021, 289-302. <https://doi.org/10.3846/bmee.2021.14798>
- [14] Kryshtanovych M., Akimova L., Gavkalova, N., Akimov, O., Shulga. A. Modern Technologies for Ensuring Economic Security in the Context of Achieving High Efficiency of Public Administration. *IJCSNS International Journal of Computer Science and Network Security*. Vol. 22 No. 2 2022, pp. 362-368.
- [15] Kryshtanovych, Antonova, L., Pohrishchuk, B., Mironova, Y., Storozhev R. Information System of Anti-Crisis Management in the Context of Ensuring National Security. *IJCSNS International Journal of Computer Science and Network Security*, VOL.21 No.12, 2021, pp. 719-725. <https://doi.org/10.22937/IJCSNS.2021.21.12.98>