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The role of digital technologies in the public administration sphere

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Abstract

The article is devoted to highlighting the role of digital technologies in the public administration sphere, taking into account the modern experience of the EU countries. The methodological basis of the research is the institutional approach, which provides for ensuring the effectiveness of the interaction between the components of the institutional system and the mechanisms of its implementation and control over the use of digital technologies and makes it possible to create an effective network of relationships between all levels of the system horizontally and vertically, as well as to increase the efficiency of the entire system public administration and the quality of public services. The advantages of the implementation of digital technologies in public administration are highlighted, which makes it possible to: increase the efficiency of public administration, reduce administrative costs, improve the quality of public services and ensure their availability, and reduce the level of corruption. The results of the implementation of digitalization of public services in the EU countries were analyzed in accordance with the program for the implementation of digital

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measures within the framework of the Recovery and Sustainability Fund. The necessary directions for the activation of the implementation of digital technologies in the public administration system are substantiated.

Keywords: digital technologies, digital public services, public administration, institutes of public administration.

El papel de las tecnologías digitales en el ámbito de la administración pública

Resumen

El artículo está dedicado a resaltar el papel de las tecnologías digitales en el campo de la administración pública, teniendo en cuenta la experiencia internacional actual. La base metodológica de la investigación fue el enfoque institucional, que prevé asegurar la efectividad de la interacción entre los componentes del sistema institucional y los mecanismos de su implementación y control sobre el uso de las tecnologías digitales y, al mismo tiempo, posibilita la creación de una red efectiva de relaciones entre todos los niveles del sistema en sentido horizontal y vertical, así como incrementar la eficiencia de todo el sistema de la administración pública y la calidad de los servicios públicos. En las conclusiones se destacan las ventajas de la implementación de las tecnologías digitales en la administración pública, que permiten: aumentar la eficiencia de la administración pública; reducir los costos administrativos; mejorar la calidad de los servicios públicos y asegurar su disponibilidad, y; reducir el nivel de corrupción. Finalmente, se analizaron los resultados de la implantación de la digitalización de los servicios públicos en los países de la Union Europea de acuerdo con el programa de implantación de medidas digitales en el marco del Fondo de Recuperación y Sostenibilidad.

Palabras clave: tecnologías digitales; servicios públicos digitales; administración pública; institutos de administración pública; politicas digitales.

Introduction

Modern globalization challenges of creating a post-industrial society are based on the development of an open information space, which serves as the basis of democracy, socially oriented economic development, productivity improvement, and quality of life in general. Within the paradigm of post-

industrial development, digitization processes become a necessity and an unconditional attribute of everyday life, permeating all spheres of social extended reproduction. The role of introducing digital technologies into all spheres of public life, including public administration, is becoming important.

The purpose of the article is to outline the role of digital technologies in the public administration sphere, taking into account the modern experience of the EU countries. To achieve the goal, the authors set the following tasks:

- the importance and relevance of this topic is substantiated, taking into account modern globalization trends of establishing a paradigm of post-industrial development;
- the advantages of the implementation of digital technologies in the field of public administration are clarified;
- e-governance models and digital technologies in public administration were analyzed;
- directions for ensuring the implementation of digital technologies in public administration are substantiated.

1. Literature Review

Ensuring effective management in the conditions of digitalization requires the use of electronic government, electronic management, establishing a system of electronic services, ensuring electronic democracy and electronic commerce. That is why the issue of introducing digital technologies in public administration is urgent. Scientific researches on the above-mentioned issues were carried out by the following scientists: Ap-Azli *et al.* (2019); Chyrun *et al.* (2020); Cosmulese *et al.* (2019); Derhaliuk *et al.* (2021); Gowd (2022); Kholiavko *et al.* (2021); Khrushch *et al.* (2022); Kyeong *et al.* (2022); Martinez *et al.* (2020); Melnychenko *et al.* (2022); Mustafa *et al.* (2022); Najimi (2020); Popelo *et al.* (2022); Pratap *et al.* (2020); Saleh (2019); Tyagi and Goyal (2021) and other.

Within the framework of the scientists' article (Gowd, 2022), network management is used as a theoretical basis for determining key success factors by analyzing the role of state and non-state actors in the implementation of a public distribution system. Scientists note that the e-governance approach is becoming an important theoretical basis in the field of management and public policy for identifying challenges and problems in the field of politics and building electronic networks between government entities, markets, civil society and citizens.

Scientists (Mustafa *et al.*, 2022) are investigating the impact of e-services management on local self-government. The authors provide empirical evidence on the factors that influence citizens' willingness to use electronic services. The article analyzes the role of such factors as: awareness of e-services, poor infrastructure and technical problems (quality of e-services) in the use of e-services.

The results show that factors such as availability at any time, reduced waiting time and quality of information are the most important factors that increase the importance and willingness to use e-services. The authors note that the conducted research theoretically and empirically contributes to the acquisition of knowledge about the management of electronic services of local self-government.

The authors of the article (Kyeong *et al.,* 2022) argue that institutional and political resources affect the selective response of the government, scholars try to prove this argument through Korea's e-government system. Scientists are convinced that the results of the research contain practical lessons for practitioners who are concerned about the e-government system as a space for communication between the government and citizens.

The study (Tyagi *et al.,* 2021) examines and presents the gaps in various e-Governance services developed, implemented in India, an initiative taken under the concept of achieving the Digital India agenda announced by the Government of India through information and communication technology.

The authors (Martinez *et al.,* 2020) prove that, despite the fact that e-governance was institutionalized as a state policy that promotes citizens' access to information, transparency and control of state institutions, according to the results of research by scientists, the introduction of e-governance did not immediately cause a positive impact on reducing corruption, and, as a result, state government policy needs improvement.

The purpose of the scientists' article (Najimi, 2020) is to study the role of e-government in the least developed countries in the context of public finance management and service provision. The article examines the challenges and opportunities in the way of modernizing management systems, fighting corruption, and improving the space for the country's development.

It has been explored (Pratap *et al.,* 2020) that e-government uses technology to increase transparency, reduce remoteness, and empower people to participate in the political processes that shape their lives.

The authors of the article (Chyrun *et al.,* 2020) consider the issue of optimizing the choice of a cryptographic algorithm for the protection of information for the management of IT projects of electronic government by using a non-linear convolution of criteria based on the method of hierarchies, taking into account the requirements: security, speed, characteristics of the

algorithm. Based on the results of the research, scientists determine the optimal cryptographic algorithm that ensures the integrity and availability of information during the management of the IT project of electronic government, user authentication and the impossibility of denying the fact of sending/receiving information.

Within the framework of the study (Saleh, 2019), citizens' satisfaction with the innovative online passport application service introduced by the Immigration Service was analyzed. The researchers assessed which types of innovation (technology, access, process, product, and payment method) had the strongest and weakest effects on citizen satisfaction.

Based on the results of the analysis, scientists (Ap-Azli *et al*., 2019) have clearly defined the mechanism for solving issues of improper management of electronic document management. The authors outline the problems of improper management of electronic documents with a constructive reflection of the approach, mechanism and elements of proper management.

Despite the existing publications in the field of e-government and the use of other aspects of digitalization, the question of the role and place of digital technologies in public administration requires further study, analysis and systematization of existing research.

2. Methodology

The methodological basis of the research is the institutional approach. The institutional approach makes it possible to consider public administration as a set of rules, norms, methods of activity, thinking, etc. The institutional approach involves ensuring the effectiveness of the interaction between the components of the institutional system and the mechanisms of its implementation and control over the use of digital technologies, which makes it possible to create an effective network of relationships between all levels of the system horizontally and vertically, as well as to increase the efficiency of the entire system of public management and the quality of provision public services.

3. Results

We would like to note that relations related to the creation, preservation, accumulation, processing, dissemination and protection of information in general were of great importance for social development even before, but modern technologies change the essence and role of information, affecting all spheres of life. The development of information and communication technologies has increased the importance of information as a resource,

as well as increased the relevance of ensuring human rights in society in relation to freedom of expression, the right to information and access to it, the right to non-distribution of information and the preservation of its confidentiality, etc.

World experience proves that the implementation of digital technologies in public administration makes it possible (Fig. 1):

- to increase the efficiency of public management as a result of simplifying management procedures and reducing time;
- to reduce administrative costs due to the introduction of progressive methods of decision-making and publication;
- improve the quality of public services and ensure their availability for all sections of the population of all territories;
- to ensure the transparency of the work of power institutions, to increase their effectiveness due to the introduction of new methods of control and diagnosis of their work;
- improve the quality of work of state authorities and local self-government by involving citizens in discussions and making management decisions;
- reduce the level of corruption and achieve a qualitatively new level of public administration.

Modern globalization challenges cause an urgent need to implement digital technologies in the field of public administration. Each country, taking into account the specifics of the public administration system, implements a certain model of e-government.

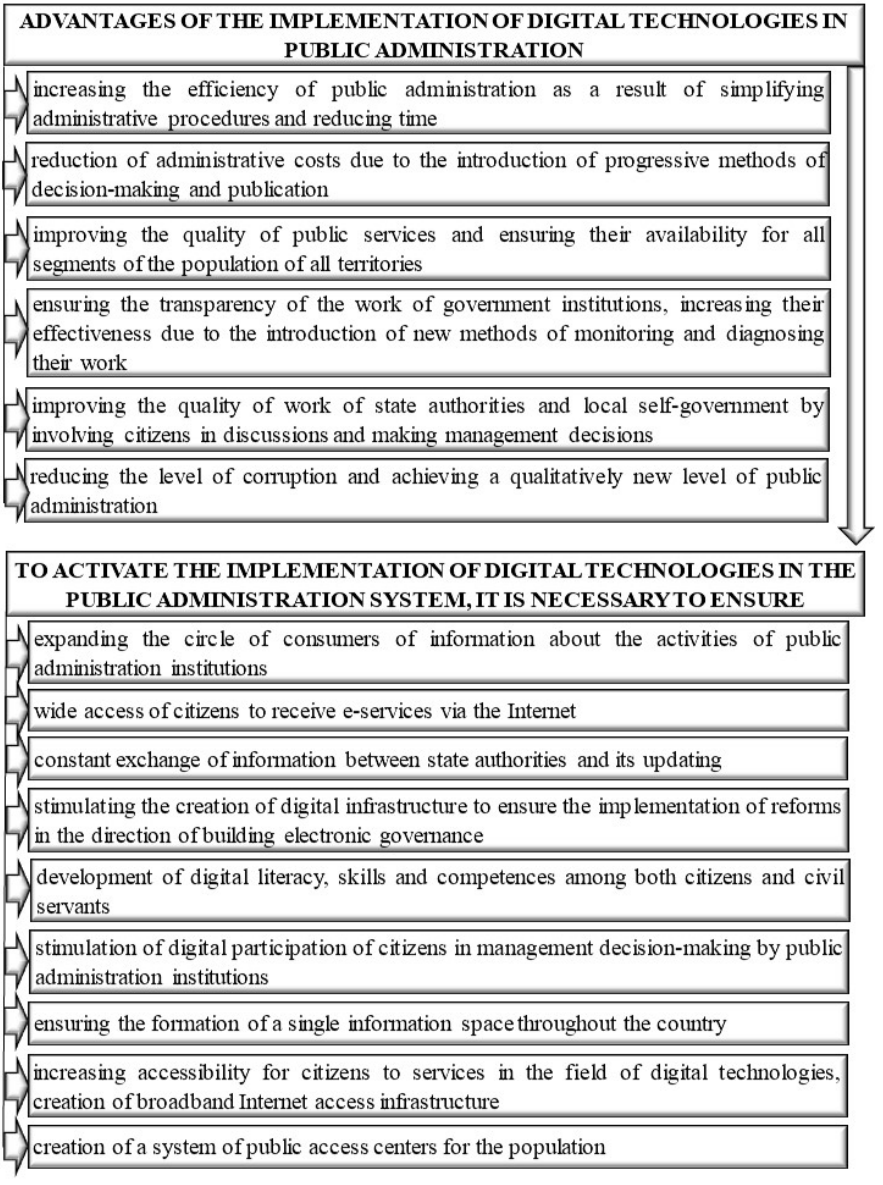

Fig. 1. Activation of the digital technologies' implementation in the public administration sphere. Source: constructed by the authors.

The implementation of a certain model of e-governance depends on the definition of the role and place of state institutions in social development, the system of formation, development and implementation of social development policies, the level of decentralization of power, public activity in making management decisions, etc. Taking into account the outlined features, the most common models of electronic governance are e-Government 1.0 and e-Government 2.0.

E-Government 1.0 involves the creation of conditions for citizens of the country with the help of digital technologies thanks to electronic access to electronic services through the web resource of state authorities and local governments. In this model, the dominant role is given to public administration bodies that implement their public functions thanks to digital technologies through e-government. Citizens in such models play the role of consumers of public services thanks to digital technologies implemented on the e-government platform.

The e-Government 2.0 model has other features, in which there is a more active interaction and density of relationships between public administration bodies and citizens of the country, since the latter are not just consumers of public services, but act as an active partner in the development and adoption of management decisions. Australia, Great Britain, Canada, Germany, Norway, New Zealand, and the United States are among the world's countries with the most successful implementation of the e-Government 2.0 model.

In these countries, it is considered to be the most successful experience of implementing partnership relations for establishing relations between institutions of public administration and citizens. That is, such a system, it aims not only to implement digital technologies as a tool for the implementation of public administration, but also provides an opportunity to transform the state administration system itself towards its consumers, that is, society, involving it in the justification, making of management decisions and monitoring their implementation.

Digital technologies expand the possibilities of public administration, the term «e-Government» becomes synonymous with such words as improving the quality of public services, efficiency, transparency and democracy. Recently, a powerful impetus for the introduction of digital technologies into the public administration system was the COVID-19 pandemic, during which digitization became the norm and forced ordinary citizens to accept these innovations.

EU member states have set the goal of full digitization of public services by 2030. It should be noted that there are already countries that have almost achieved such results, but there are also those that have not yet integrated digital services in public administration. In general, the general trend of

the introduction of digital technologies shows their widespread distribution and the business sector, rather than for ordinary citizens.

Incidentally, we note that digitalization is closely related to the plans of developed countries to achieve recovery and sustainability. Thus, according to the reform plans within the framework of the program for the implementation of digital measures within the framework of the Recovery and Resilience Fund (RRF), it is planned to invest in digitalization 46 billion euros, which will be directed to the digitalization of public services, including the implementation of electronic health care (13 billion euros), electronic justice and e-justice (24 billion euros), digitalization of transport and energy system, etc.

Countries such as Lithuania, Malta, Finland, and Croatia allocate more than half of the planned funds to the digitalization of public services. The main principle within the implementation of digital measures within the framework of the Recovery and Resilience Fund (RRF) is the integration of eID solutions into all government processes and the implementation of the «Only Once Principle».

In EU member states, indicators regarding the implementation of digital services in public administration have significantly improved. Thus, in 2021, the number of e-government users in EU countries as a whole increased to 65%, compared to 61% in 2020. The volume of digital public services for citizens was 75% in 2021, and digital public services for business was 82%. Estonia, Bulgaria, Greece, Malta, the Netherlands, Romania, and Finland are among the countries with the greatest growth and indicators of public services digitalization.

Figure 2 presents data for 2021 regarding e-government users who had some interaction with state authorities via the Internet during the year.

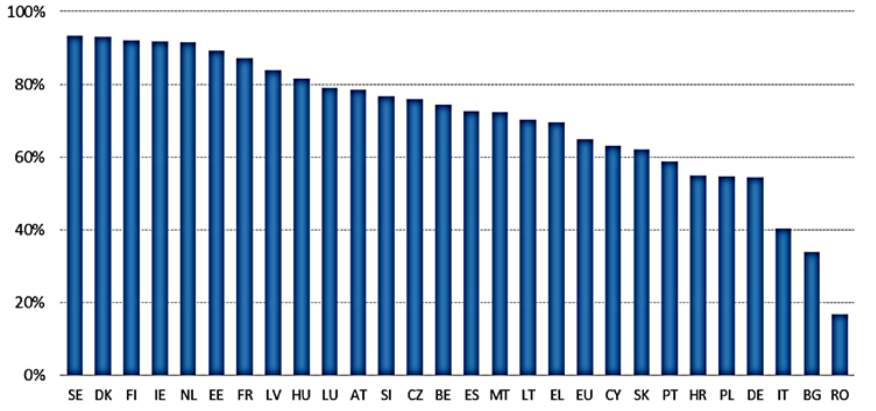

Fig. 2. E-Government users interacting online with public authorities over the Internet in the last 12 months (% of internet users), 2021. Source: Eurostat, Community survey on ICT usage in Households and by Individuals (Digital Economy and Society Index, 2022).

Denmark, Ireland, Sweden and the Netherlands are among the countries where the highest percentage of users of public services is tracked. In these countries, more than 90% of Internet users between the ages of 16 and 74 have interacted with public administrations to resolve their issues over the Internet using various digital platforms. The fewest users of public services were observed in such EU countries as Bulgaria, Romania and Italy. In these countries, such users were less than 50% of Internet users.

As for the implementation of the «one-time principle» for filling out various forms for economic entities and citizens, which works through the establishment of information exchange platforms between public administration institutions, the best results according to the results of 2021 were demonstrated by such countries as Estonia, Denmark, the Netherlands, Lithuania, Malta, Denmark, Sweden. However, it should be noted that there is a significant difference between countries according to this «one-time principle» indicator, since, for example, Romania has 20% of such interaction, and countries such as Croatia and Cyprus have about 40%.

Figure 3 presents the results of the provision of digital public services for citizens and measures the extent to which public services are spread through digital technologies using state digital platforms. Public services can either be provided entirely with the support of digital technologies, or be provided partially online or completely offline. The indicator was calculated

in relation to how much blood citizens need to spend online or offline to solve their issues and whether they can be solved completely with the help of digital technologies on the digital platforms of public administration institutions.

Such services may include a wide range of services from property registration, doctor's appointment, appeal of court decision, etc. According to these measurements of the provision of digital services for citizens, the best results were demonstrated by countries such as Estonia, Malta, Luxembourg, which had an indicator of 90% in 2021. EU countries such as Malta, Estonia, Luxembourg, Latvia, Finland, Spain, Sweden, Denmark, the Netherlands, Ireland, Finland scored within 80% of digitalization of public services for citizens. The smallest volume of digital public services was observed in countries such as Poland and Bulgaria.

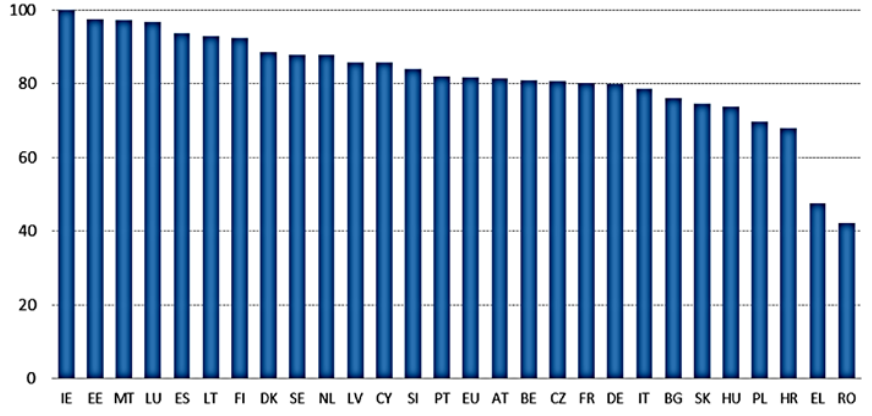

Fig. 3. Digital public services for citizens (score 0 to 100), 2021. Source: e-Government Benchmark, Capgemini (Digital Economy and Society Index, 2022).

Digital technologies in public administration are implemented in four directions, namely:

- government-to-government (G2G), which involves the establishment of interaction between public administration institutions through the implementation of a unified document flow, information exchange between authorities, and the application of the principle of unification between electronic registers;
- government-to-citizens (G2C) – involves interaction between citizens and the government, which provides for the provision of high-quality and timely public services for all citizens, ensures the

participation of citizens in making management decisions, forming state policy. Provides an opportunity to evaluate and control the activities of public institutions. The implementation of G2C provides an opportunity to obtain constructive communication between public authorities and citizens, which in turn not only increases the quality of public services, but also the quality of facilitating management decisions;

- government-to-business (G2B), provides interaction between business structures and public administration bodies, which is aimed at supporting business entities and developing business initiatives and provides for the provision of high-quality administrative and other services, provides for the development of public-private partnerships and participation business structures in the implementation of state policy;
- government-to-employees (G2E), which involves the use of digital technologies for the government's interaction with civil servants and makes it possible to ensure, using digital technologies, their training and improvement of competences, establishing communications using electronic document flow and online interaction.

Digital technologies make it possible to quickly take into account the opinions and views of economic entities, various microsocial groups and individual citizens. Involve citizens in solving existing problems through the adoption of management decisions. Digital technologies play a key role in optimizing the system of communications in order to overcome internal corporatism and bureaucracy, which gives new impetus to the development of public administration institutions.

But an important factor is not only the implementation of digital technologies in the public administration system, but also the necessary provision:

- expansion of the circle of consumers of information about the activities of public administration institutions;
- opportunities for participation of citizens in the implementation of public administration measures;
- wide access of citizens to receive e-services via the Internet;
- constant exchange of information between state authorities and its updating;
- stimulating the creation of digital infrastructure to ensure the implementation of reforms in the direction of the development of electronic governance;

- development of digital literacy, skills and competences among both citizens and civil servants;
- stimulation of citizens' digital participation in management decision-making by public administration institutions (introduction of participation);
- development of the digital economy as a key area of state policy;
- creation of broadband Internet access infrastructure throughout the country;
- ensuring the formation of a single information space throughout the country;
- increasing accessibility for citizens to modern services in the field of digital and telecommunication technologies;
- creation of a system of public access centers for the population.

Conclusion

Therefore, the main role of the introduction of digital technologies into the public administration system is not only to ensure the functioning of e-government, which turns the state into a digital service platform, but also to ensure the creation of equal opportunities, rights and freedoms of citizens, democratic social development and the involvement of citizens in decision-making in public management Digital technologies make it possible, through the involvement of citizens in the Internet, to guarantee the transparent activity of public administration institutions and their democracy. Digital technologies are the innovative toolkit that makes it possible to ensure the state-guaranteed freedoms, legal interests and duties of citizens.

The scientific novelty of the study is the development of directions for the activation of the implementation of digital services in public administration using an institutional approach, which were identified on the basis of the analysis of electronic governance models and digital technologies in public administration.

Further research is required on the issue of increasing the digital culture of citizens for the introduction of innovative developments and their acceptance in society, which will contribute to the activation of government programs on the digitalization of public administration.

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