

ІНФОРМАЦІЙНІ ТЕХНОЛОГІЇ

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DIGITAL TRANSFORMATION AND GOOD DATA GOVERNANCE IN UKRAINE

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The article proves that the digital economy is an accelerator for the development of the socio-economic life of Ukrainian society, since it is capable of rapidly increasing the GDP growth of the country. The authors substantiate the increasing of efficiency level of open government data's management as a consequence of the large-scale introduction of digital transformations in public administration. Recommendations for public authorities on the usage of mechanisms of effective growing volumes of data's management at the present stage of Ukraine's sustainable development: legal (legislative regulation of state registers and open government data, standardization of document circulation by the principle of "digital by default"), organizational (introduction of digital infrastructure of operation and exchange data sets), institutional (providing centralized management of data sets and using the interoperable platform X-Road), resource (introduction of STEM-education, Digital-Health, digital security services and "smart cities" technologies).

Key words: digital governance, digital transformation, digital technologies, open data, data governance.

ЦИФРОВІ ТРАНСФОРМАЦІЇ ТА ЕФЕКТИВНЕ УПРАВЛІННЯ ДАНИМИ В УКРАЇНІ

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У статті доведено, що цифрова економіка є акселератором розвитку соціально-економічного життя українського суспільства, оскільки здатна стрімко підвищити рівень зростання ВВП країни. Авторами обґрунтовано підвищення рівня ефективності управління відкритими урядовими даними як наслідку масштабного впровадження цифрових трансформацій у сферу публічного врядування. Наведено рекомендації щодо застосування органами публічної влади механізмів ефективного управління зростаючими обсягами даних на сучасному етапі сталого розвитку України: правового (законодавчого врегулювання державних реєстрів та відкритих урядових даних, унормування документообігу за принципом "цифровий за замовченням"), організаційного (упровадження цифрової інфраструктури функціонування та обміну наборів даних), інституційного (забезпечення централізованого управління наборами даних та використання платформи інтероперабельності X-Road), ресурсного (запровадження STEM-освіти, Digital-Health, сервісів цифрової безпеки та технологій "розумні міста").

Ключові слова: цифрове врядування, цифрові трансформації, цифрові технології, відкриті дані, управління даними.

The problem's presentation in general terms and its connection with important scientific and practical tasks. During 2014–2015, the Ukrainian government managed to stop the economic downturn, and in 2016–2017, the Ukrainian economy grew by 2,3% and 2,1% respectively. However, it is understandable, and international experience confirms that further acceleration of economic and social development (in 2018, GDP growth is projected to accelerate by 3,2%) is possible only under the condition of digital transformation. The digital economy is an accelerator of the socio-economic life of society in the modern world, as it is capable of rapidly increasing the GDP of the country.

Throughout the world, the share of the traditional economy is decreasing, while the digital one is increasing, giving powerful benefits today to countries such as Germany, the UK, Ireland, Sweden, China, Israel and Estonia, where the digital economy is a major priority for their development. The share of the digital economy in the world has already exceeded 20%, while in some countries, for example, China accounts for 30% of GDP.

Ukraine is obligated to launch a large-scale digitization of all economy sectors and basic spheres of life, especially public administration, education and medicine, investing mostly in digital infrastructures development, innovations and modern technologies.

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Otherwise, we risk falling behind the leading economies of the world forever. Ukraine needs a "digital leap". The scale and pace of digital transformation should become the key characteristics of the country's development.

Analysis of recent publications on the issues and the allocation of previously unsolved parts of the general problem. The problem of the digital transformations implementation in various spheres of life is actively debated by the scientific community in Ukraine and abroad. In particular, the issue of the digital economy's functioning and the development of digital society is devoted to many scientific works, among which particular mention should be made of the researches by U.Huws [7], T.Mesenbourg [8], D.Tapscott [9]. In public administration, P.Dunleavy [6], K.Schwab [10] and A.Williams [11], investigated the theoretical and practical aspects of implementing the Digital Era Governance concept and Technology Industry 4.0. In the national scientific works, the topic of digital transformation of the activities of the public authorities remains unresolved, as opposed to the concept of "e-government" already introduced in Ukraine on the basis of information technology technologies of public administration.

Formulating the goals (aim) of the article. The aim of the study is to provide a scientific and theoretical substantiation of mechanisms for implementing digital transformations in public administration in order to ensure efficient data governance in Ukraine.

Presentation of the main results of the research and their justification. The digital economy involves the transformation of all spheres of life, giving them significant economic and social benefits. In the digital economy, the underlying factor is the consumption of digital technologies, regardless of their scope. Ukraine also has some positive achievements, namely:

- in the agro-industrial sector, leading agribusinesses increase their ROI from 30% to 90% thanks to digital technologies. According to analysts' forecasts, as a result of digitization, 30% of the agrosector will increase its efficiency, and by 20% – the yield;

- for the medicine field, the constituents of the digital economy will contribute to the gradual transition to the online medical services use – for example, instead of periodic medical examination, the patient will have sensors and sensors of "online monitoring" regarding the state of functioning of his authorities (for example, for pregnant women – a sensor of observation for the heartbeat of the fetus in the womb, etc.);

- for education sector the digital economy – is the digital education services introduction. The

computer class (digital workplace) must be in the portfolio of each student. The goal is not to reduce the number of lessons, but to ensure that the process of new knowledges obtaining takes place in new digital formats.

Modern civil society is becoming more and more dependent on digital technologies, there is a "digital transition" from systems and processes of the industrial economy and the information society to the "digital" economy and "digital" society (Industry 4.0). Such a transformation leads to the emergence of new, unique systems and processes that make up their new value entity. The application of digital technologies and digital data in public relations, their regulation through the system of public governance will facilitate the change / transformation of management processes and provide for the creation of an appropriate environment for the functioning of digital governance.

In Ukraine we focus on building a dynamic open data ecosystem where government, civil society, and business partner in creating the new products and services for greater transparency and economic growth.

In order to do that Cabinet of Ministers and State Agency for e-governance provide strong and good data governance. For us data governance is strengthening legal framework and data infrastructure.

As to legal framework, our task is to make government ministries and agencies committed to publishing datasets and to provide a legal background for this.

Thus, after a number of consultations with public we made mandated opening more than 600 unique datasets through the Decree of Cabinet of Ministers which clearly states the principles of the Open Data Charter. For example, in 2015 we had only 300 datasets mandated to publish, and now we have 600 unique datasets mandated for publishing today.

But on our national open data portal we have more than 40 000 datasets which are published by 2000 state bodies.

As open data shows a dynamic growth in the country, the demand side is constantly increasing. Hence we have to constantly adjust legal framework of open data to be responsive to the need of open data community.

For governmental shared data we are developing a new law on public registers. We have many legislative documents that regulates the work of registers, and we understand that it's way too complicated. The new law will have one definition of the register, bans the duplication of registers, describes the order of the management of these registers, etc.

We also work on the Decree which will mandate Digital by Default principle so all regulations have to

go through the mandatory digital examination of all regulations. This expertise will ensure that all regulatory documents will include the requirement for implementation of the procedures described in their duties in the electronic form and for publishing open data. We believe that the combination of law of public registers, open data decree and Digital by Default will make the foundation of the strong legal framework for the data governance in Ukraine.

As to data infrastructure, our key challenge is to increase the quality of registers/datasets in government authorities and to share data across the government.

In 2017 we conducted E-Mapping Survey to systematize main state registries in the country. We found out that there are more than 135 state registers managed by 40 government authorities. This high number of government authorities managing state registers caused in-efficient data governance. So, we concentrated on building a sophisticated data governance model in Ukraine which is now a key priority for our Agency.

In this way we are introduce interoperability solution which effectively works in Estonia and several other countries and called X-Road. Introduction of X-Road will give us an opportunity to make state registers interoperable and to make sure that information is not duplicated.

Also significantly modified Ukrainian national open data portal using feedback from users. Ukrainian open data community is extremely developed and provided us with a constructive feedback about quality of the open data, usability, etc. In addition, Ministries and municipalities were requesting for guidance on how to open datasets. So the New portal now is user-focused and guide the development of the open data standards.

The Concept of eGovernment Development in Ukraine (by 2020) indicated that “the introduction of e-governance is a prerequisite for building an effective digital economy and digital market in Ukraine and its further integration into the EU Digital Single Market Strategy” [1].

In 2016, the European Commission adopted a new eGovernment Action Plan for 2020 [5], which indicated that if we want to successfully develop the digital economy, we need to make a digital basic life spheres transformation and first of all, the government should become digital. Digital Governance is already perceived as a digital implementation of public authority (digital form of public governance), which is a new stage in the evolution of the implementation of information and communication technologies into the activities of public authorities (“informatization of public administration” → “e-government” →

“digitalization of public governance”) [3; 4], the final stage of convergence physical, digital, and biological world, by Klaus Schwab [10].

Digitalisation of public governance is the process of implementing digital transformations in the public sphere (in the context of radical transformation of the public authorities activities), which will lead to a jump-free transition to digital governance (digital administration) through the use of digital technologies. Digitalisation of public governance is a leap-shaped process of digital transformation of public administration in digital administration (digital governance).

The digital transformations means the changes caused by using digital technologies’ changes in human nature, its thinking, life and management. In the context of public administration, we will understand digital transformations as a radical transformation of the public authorities activities on the basis of the digital technologies using’ possibilities.

Digital transformations contribute to “spin-off” development, that is, the transition not only of a separate organization or industry, but also of society, the state to a higher level of development, sometimes passing its intermediate stages. For Ukraine, digital transformations can promote spin-off development in many areas and become a real alternative to “catching up” development. As for public authorities, this tool will replace e-government. It should be noted that thanks to digital technologies, “spin-off” development enables developing countries to significantly accelerate the transition from the outdated to the modern technological environment. In advanced economies, new technologies are gradually replacing old ones, completing them, or completely updating them. Developing countries, for the most part, use out-dated technologies, while at the same time they have considerable potential for rapid development through the transition to the newest models, immediately after several generations of technologies. Such states can quickly overcome several stages of technological transition and increase the level of socio-economic development.

The State Agency for E-Governance of Ukraine, together with the Ministry of Economic Development and Trade of Ukraine and the Public Union “Hi-Tech Office Ukraine”, developed the Concept for the Development of the Digital Economy and Society of Ukraine for 2018-2020, essentially “Digital Agenda of Ukraine” (approved by the Decree of the Cabinet of Ministers of Ukraine dated January 17, 2018, No. 67-p.) and a phased plan for the public sector digitalization to remove barriers to digital

transformation and to implement priority initiatives. The digital infrastructure development is the digital economy and governance foundation. According to the Concept, there are two types of digital infrastructures – hard and soft:

– solid digital infrastructures include: broadband (fixed mobile) telecommunication infrastructure, digital television, technological “Internet of things” infrastructure, computing infrastructure, virtualization and data storage (cloudy and foggy), cyber security infrastructure;

– soft digital infrastructures include: identification and trust infrastructure, open source infrastructure, interoperability infrastructure, blockade infrastructure, electronic billing and transaction infrastructure, e-commerce infrastructure and online business interaction, e-government (public service infrastructure), life support infrastructure (medicine, education, public safety, transport, etc.), geographic information infrastructure, industrial digital infrastructure [2].

Conclusions and perspectives of further research. The digital era, which includes modern Ukrainian society, requires large-scale thinking and radical changes. Formation and implementation of digital transformations in public governance is an important direction both in scientific research and in practice-oriented activities. As a result of our research, we have formed a number of conclusions, suggestions and recommendations:

1. Today in Ukraine it is extremely important to reduce the digital divide. Remote villages and social facilities should be brought closer to the city's capabilities. The goal is that 95% of Ukrainian households should be connected to the stationary internet, and cities with high tourism potential should be fully covered by a modern Wi-Fi network, since digitalization of tourism is primarily a digital convenience. All this opens new powerful opportunities for the state, society and its citizens. Additionally, in 2011, the United Nations and the EU recognized the digital rights of a citizen (UN Report of 16.05.2011, Report of the Special Rapporteur on the promotion and protection of the right to freedom of opinion and expression), which provides access to IT infrastructure and the internet – is the basic right of a citizen.

2. The lack of systemic digital interactions leads to the citizens' need to spend a lot of time and resources in obtaining a large number of intermediary certificates and services in the process of servicing the authorities that spend time and resources on paper data exchange or duplication of data in registries. Together with the interoperability's development, the introduc-

tion of a mobile identifier – MobileID technology, which should provide citizens with accessible, reliable and convenient means of identification, and promote the development of digital services (both public and private), acquires a special significance.

3. It should be noted that the basic principle of accelerating the digitization of the public administration's system development in Ukraine is the implementation of the principle of “digital by default” (digital by default). For example, it is necessary to introduce a digital examination of all new documents of the Cabinet of Ministers of Ukraine, that is, each document should provide a digital form of implementation of the process specified by him. In our opinion, this will help to ensure the necessary prerequisites for the effective digital transformation of both the public sector and the country as a whole.

4. It is necessary also co-develop standards for open data publication together with open data community. Sure, that updated open data portal, introduction of interoperability solution for shared data, and creation of standards will really make Ukraine a country with modern data infrastructure which will simplify data exchange and sharing for government and open data publishing for business and civil society.

5. Digital transformation in Ukraine will spread to all areas of life through the use of industry technologies 4.0. In addition to public administration, digitization of basic spheres of life needs to be implemented through the digital transformation of high school and the development of STEM education, the introduction of Digital Health and digital security, the concept of “smart cities”. A separate important direction is the development of digital literacy of the population. Ukraine has all the conditions for the implementation of the “digital leap” and the transition to a higher technological level of development. The digital economy is not a mod and not a bad thing, it is a necessity and basis of our future.

6. Ukraine is obligated to launch a large-scale digitization of all economy sectors and basic spheres of life, especially public administration, education and medicine, investing mostly in digital infrastructures development, innovations and modern technologies. Otherwise, we risk falling behind the leading economies of the world forever. Ukraine needs a “digital leap”. The scale and pace of digital transformation should become the key characteristics of the country's development.

Further research intelligence should be aimed at studying the experience of institutionalization of the digital administration field of in order to accelerate the development of a digital economy and society in Ukraine.

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