

¹S.T. Ziyadin , ²A. Shaikh, ³G.Zh. Ismail

¹Doctor of Economic Sciences, Professor, e-mail:sayabekz@gmail.com

²PhD, Professor, Jyvaskyla business school, Finland, Jyvaskyla, e-mail:ajaz.a.shaikh@jyu.fi

³Doctoral student, e-mail: gulim.zharaskyzy@gmail.com

^{1,3}Al-Farabi Kazakh National University, Kazakhstan, Almaty

DIGITAL TRANSFORMATION OF PUBLIC ADMINISTRATION: PROACTIVE CUSTOMER SUPPORT

Abstract. The article considers the issue of digital transformation, which can become the basis for the further development of the principle of management by results of the state, since it allows you to overcome its previously identified limitations. The purpose of this article is a detailed study of new business models, including the so-called proactive service based on data, as well as the integration of modern fragmented information systems and communication channels. It is shown that despite the results achieved, problems associated with an insufficient level of openness, customer orientation and activity remain relevant. For example, government agencies are reluctant to disclose information that can be used to create added value in the form of relevant and relevant open data. The e-government development index (EGDI) in the Republic of Kazakhstan is analyzed. The results of the analysis revealed a high level of development of e-government. However, according to the authors, it is necessary to study in more detail new business models, including the so-called proactive service based on data, as well as the integration of modern fragmented information systems and communication channels to implement a multi-channel service model by creating a single "front office" aimed at providing the availability of information and services at anytime, anywhere and on any device (contact center, web portal, smart messengers, mobile applications, SMS messages).

Key words: public administration, digital transformation, proactive and omnichannel services, e-government development index.

¹С.Т. Зиядин, ²А. Шейх, ³Г.Ж. Исмаил

¹Э.ғ.д., профессор, e-mail: sayabekz@gmail.com

²PhD, профессор, Ювяскюля бизнес мектебі, Финляндия, Ювяскюля, e-mail: ajaz.a.shaikh@jyu.fi

³докторант, e-mail: gulim.zharaskyzy@gmail.com

^{1,3}Әл-Фараби атындағы Қазақ ұлттық университеті, Қазақстан, Алматы қ.

Мемлекеттік басқарудың цифрлық трансформациясы: проактивті қызмет көрсету

Аңдатпа. Мақалада бұрын анықталған шектеулерді еңсеруге мүмкіндік беретін нәтижелер бойынша басқару қағидасын мемлекеттің одан әрі игеруіне негіз бола алатын цифрлық трансформация мәселесі қарастырылған. Мақаланың мақсаты деректер негізіндегі проактивті деп аталатын қызметті қоса алғанда, жаңа бизнес-моделдерді егжей-тегжейлі зерттеу, сондай-ақ қазіргі заманғы шашыраңқы ақпараттық жүйелер мен байланыс арналарын интеграциялау болып табылады. Қол жеткізген нәтижелерге қарамастан, ашықтық, клиенттерге бағдарлану, белсенділіктің деңгейінің жеткіліксіз болуына байланысты өзекті проблемалар болып қалууда. Осылайша, мысалы, мемлекеттік органдар өзекті және талап етілген ашық деректер түріндегі қосымша құнды құру үшін пайдаланылуы мүмкін ақпаратты әлі де болса лажсыздан ашуда. Қазақстан Республикасында электрондық үкіметтің даму индексі (EGDI) талданды. Талдау нәтижелері бойынша электрондық үкіметті дамытудың жоғары деңгейі анықталды. Алайда, авторлардың пікірінше, деректер негізіндегі проактивті деп аталатын қызметті қоса алғанда, жаңа бизнес-моделдерді, сондай-ақ кез келген уақытта, кез келген орында және кез келген құрылғыда (байланыс орталығы, веб-портал, зияткерлік мессенджерлер, мобильді қосымшалар, SMS-хабарламалар) ақпарат пен қызметтердің қолжетімділігін қамтамасыз етуге бағытталған бірыңғай «фронт-офисті» құру жолымен, омниканальді қызмет көрсету моделін іске асыру үшін бүгінде шашыраңқы ақпараттық жүйелер мен арналарды интеграциялауды егжей-тегжейлі зерттеу қажет.

Түйін сөздер: мемлекеттік басқару, цифрлық трансформация, проактивті және омниканальді қызмет көрсету, электрондық үкіметтің даму индексі.

¹С.Т. Зиядин, ²А. Шейх, ³Г.Ж. Исмаил

¹д.э.н., профессор, e-mail: sayabekz@gmail.com

²PhD, профессор, Бизнес-школа Ювяскюля, Финляндия, г. Ювяскюля, e-mail: aijaz.a.shaikh@jyu.fi

³докторант, e-mail: gulim.zharaskyzy@gmail.com

^{1,3}Казахский национальный университет имени аль-Фараби, Казахстан, г. Алматы

Цифровая трансформация государственного управления: проактивное обслуживание

Аннотация. В статье рассмотрены вопросы цифровой трансформации, которая может стать базой дальнейшего освоения государством принципа управления по результатам, поскольку позволяет преодолеть его ранее выявленные ограничения. Целью данной статьи является детальное изучение новых бизнес-моделей, включая так называемый проактивный сервис на основе данных, а также интеграцию современных фрагментированных информационных систем и каналов связи. Показано, что несмотря на достигнутые результаты, проблемы, связанные с недостаточным уровнем открытости, ориентации на клиента и активности, остаются актуальными. Так, например, правительственные учреждения неохотно раскрывают информацию, которая может быть использована для создания добавленной стоимости в форме релевантных и релевантных открытых данных. Анализирован индекс развития электронного правительства (EGDI) в Республике Казахстан. По результатам выявлен высокий уровень развития электронного правительства. Однако, по мнению авторов, необходимо более детально изучить новые бизнес-модели, включая так называемый проактивный сервис на основе данных, а также интеграцию современных фрагментированных информационных систем и каналов связи для реализации модели многоканального сервиса путем создания единого «фронт-офис», нацеленного на обеспечение доступности информации и услуг в любое время, в любом месте и на любом устройстве (контакт-центр, веб-портал, смарт-мессенджеры, мобильные приложения, SMS-сообщения).

Ключевые слова: государственное управление, цифровая трансформация, проактивное и омниканальное обслуживание, индекс развития электронного правительства.

Introduction

Today, the Internet economy is growing at a rate of up to 25% per year in developing countries, while no sector of the economy can even come close to such a pace. 90% of all global data was created in just the last 2 years. Already 35 billion devices are connected to the Internet and exchange data – this figure is five times the total population of the world. Digitalization efforts lead to the creation of a new society where human capital is actively developing – the knowledge and skills of the future are brought up from a young age, business efficiency and speed are enhanced through automation and other new technologies, and the dialogue of citizens with their states becomes simple and open. The digital revolution is happening before our eyes.

These changes are caused by the introduction in recent years of many technological innovations used in different industries. The methods of production and gaining added value are radically changing, and new requirements for people's education and labor skills appear. The industrial Internet of things is shaping the future of manufacturing industries, leveraging the power of flexible and smart manufacturing, and revolutionizing productivity. Artificial intelligence is being introduced, including

in conservative industries, such as financial services and medicine. 3D printing technology is already contributing to the transformation of industries such as aviation, logistics, biomedicine and the automotive industry. Blockchain has all the prerequisites to make a global transformation of the monetary system. Big data and the widespread availability of communications are some of the factors that underlie the “sharing economy,” which is expanding globally at an accelerated pace. The leading companies in the “joint consumption in the absence of physical assets” segment in terms of capitalization exceed the value of traditional companies with multi-billion-dollar physical assets on the balance sheet.

The President of the Republic of Kazakhstan, N. Nazarbayev, in his traditional annual Address to the Nation of Kazakhstan on January 10, 2018, “New Development Opportunities in the Context of the Fourth Industrial Revolution” (Nazarbayev, 2018), pays special attention to ubiquitous digitalization. Kazakhstan within the framework of the State Program “Digital Kazakhstan” (State program “Digital Kazakhstan”, 2017) plans to introduce information technologies in five main areas: digitalization of economic sectors, transition to a digital state, implementation of a digital silk

road, development of human capital, creation of an innovation ecosystem. This program has set ambitious goals for digitalizing the activities of government agencies. To achieve these goals, a support infrastructure will be created in the form of adapted legislation, measures to support business, education and science, simplifying business procedures, and reducing transaction costs when interacting with the state. Moreover, the state will anticipate the needs of its citizens in obtaining services, freeing up time for productive labor and stimulating economically active behavior.

As of July 2017, more than 740 services and services were transferred into electronic form, 83 mobile services were implemented. In 2015, the volume of public services provided in electronic form on the web portal amounted to more than 36 million, in 2016 – about 40 million. As of September 2017, the number of registered unique users has reached more than 6.6 million people. As of October 2017, there are 349 service centers for the population in the country. In 2013, the Unified Contact Center was created on the basis of the Call Center of the “electronic government” with a free phone number of 1414. At least 14 thousand calls from citizens are received daily at the Unified Contact Center, with a projected growth of an average of 15% of the total appeals annually. This creates a big burden on operators, leads to problems with dialing and reduces the quality of services. A large number of calls contain the same type of calls; they could be transferred to the automatic processing or self-service mode. Despite the results achieved, problems associated with an insufficient level of openness, customer focus and proactivity remain relevant. So, for example, government agencies are reluctant to disclose information that can be used to create added value in the form of relevant and relevant open data.

The profile activities of state bodies are being automated – however, there are still areas of activity that are not sufficiently covered by informatization. The advent of new technologies makes it possible to provide services of higher quality than those that are currently implemented. For example, the use of big data technologies can lead to a fundamentally new approach to analyzing the needs of the population, and, as a result, improving the quality of service.

The purpose of this article is to detailed study of the new business models, including so-called proactive service based on data, as well as the integration of today’s fragmented information systems and communication channels.

Literature review

Digitalization has become a global trend. The development and development of digital technologies are associated with the possibility of achieving key goals of socio-economic development of Kazakhstan. An adequate digitalization of public administration is of fundamental importance for their implementation.

In foreign literature and practice, various versions of the agendas of digitalization of public administration have been formed and are being implemented (Giritli Nygren, 2012; Natalini et al., 2012; Wihlborget al., 2017; Kirov, 2017), including its digital transformation, versions of the evolution of digitalization of public administration are presented (Janowski, 2015; Kamolov, 2017; McNutt, 2014; Liu et al., 2015; Iovan, 2016), standards (models) of maturity of digital public administration are prepared and implemented (Andersen et al., 2011; Bertot et al., 2016; Valdés et al., 2011; Eom et al., 2014).

An analysis of recent research and publications has shown that the work of domestic and foreign researchers is devoted to the study of the essence of digital transformation of public administration. So, in the research of Weerakkody et al. (2016) examines how institutional pressures contribute towards the emergence of Digitally-Enabled Service Transformation (DEST) projects in public agencies and how newly introduced transformation is implemented and diffused within the institutional setting. The main goal of the research work of Janowski, T., Estevez, E., & Baguma, R. (2018) is to offer a conceptual framework for citizen-administration relationships under the platform paradigm. According to research of Tassabehji et al. (2016) the potential of e-government to enact organizational change in the public sector remains unclear, as well as in their work the role of ‘institutional entrepreneurs’ for Digital Era Governance (DEG) is emphasized. Mergel (2019) notes that national governments are setting up digital service teams (DST) – IT units outside the centralized CIO’s office – to respond to complex governmental and societal challenges in a responsive and agile manner. DSTs emerge as a third space between centralized and decentralized IT departments that are triggered by large-scale IT failures and the need to abandon black swan IT projects – tasks that traditional CIO offices were not able to handle so far. In the research of Smotrickaya et al. (2018) the current trends in the transformation of public administration in the context of the growing global

challenges of digital technological development are considered. Holodnaya (2018) analyzes the basic directions of development of e-government, as well as the possibility of practical implementation of the new principle of “digital by default” in relation to public services. In the research of Efimova (2019) discusses the main stages and results of digitalization of public administration in Estonia. The purpose of the article is to demonstrate the experience of digital transformation of Estonian public administration in the digital economy. In the research of Korchagin et al. (2018) the main factors of the emergence and development of the digital economy and its impact on public administration are analyzed. The world experience of using digital technologies to strengthen state control over socio-economic processes is described. The risks caused by the development of the digital environment are shown. Author’s recommendations on Russia’s adaptation to new digital realities are given.

Despite the presence of scientific interest in the research as a whole, currently the unresolved part is the problems associated with an insufficient level of openness, customer focus and proactivity remain relevant. On this basis, there is a need for a more detailed study of the new business models, including so-called proactive service based on data. Moreover, it is necessary to consider the integration of modern fragmented information systems and communication channels to implement a multi-channel service model by creating a single “front office”. A single “front office” is aimed at ensuring the availability of information and services at anytime, anywhere and on any device (contact center, web portal, smart messengers, mobile applications, SMS messages).

To analyze the concept of digital transformation in public administration, it seems useful to highlight the main stages of digitalization. Thus, OECD experts identify three main stages of digital transformation:

- digitization of processes, within the framework of which the implementation of traditional digital technologies is carried out to improve the efficiency of government, data management;
- e-government, involving the introduction of digital technologies, especially based on the use of the Internet, to improve public administration;
- digital government, in which the latest generation digital technologies (such as the Internet of things, artificial intelligence, predictive analytics) allow you to take into account the preferences of users in the formation of the composition of the services

and procedures associated with their receipt. Digital technologies are becoming a tool for implementing the strategy of modernizing public administration. They also largely determine the direction of change (OECD, 2016).

According to Gartner experts (2017), the digital transformation in public administration involves five stages of maturity from e-government to smart government. These stages differ both in their priority aspects and in the channels and technologies for the provision of public services, as well as in terms of implementation indicators, based on which it would be possible to measure the implementation of a particular stage. It is important to emphasize that technological solutions relevant to the initial stages of maturity of the digital government are not adequate in relation to the later stages of its formation. For example, portals of public services that are created at the e-government stage will largely become outdated after automating routine procedures and moving to machine-to-machine interaction at the “smart government” stage. If at the first stages of the state they seek to maximize the share of public services available in electronic form, then with the digital transformation, the composition of public services will change and the number of types of services provided will decrease. Similarly, the popular idea of “state as a platform” is not relevant for the stages of a fully digital and “smart government” (Table 1).

An analysis of the stages of maturity of digital public administration proposed by Gartner experts shows that an important sign of digital transformation is a change not only in the way public functions (public services) are implemented, including the processes and sub-processes performed in the implementation of public functions and public services, but and their understanding and composition.

We illustrate these considerations with the example of some types of state functions (services) (Figure 1).

Therefore, at present, one of the signs of a public service in accordance with applicable law is the fact of citizens applying for its provision. In the context of digital transformation, this feature may disappear in most public services: some of them will not be provided at all, because they will disappear (for example, if there is the possibility of checking data online, extracts from state registers and registers will not be required). Moreover, some services may be provided by default, that is, without a statement by citizens (Dobrolyubova et al., 2018).

Table 1 – Maturity stages of digital government: from e-government to smart government

Parameter	I – E-government	II – Open government	III – Datacenter government	IV – Fully digital government	V – “Smart Government”
	Initiation	Development	Definition	Control	Optimization
Priority aspects	Fulfillment of requirements, efficiency	Transparency and openness	Subjective value	Transformation	Sustainability
Main channel for the provision of public services	Government services portal	Public administration as a platform	Non-government channels	Using different channels	Automation replaces portals
Core technology	Service oriented architecture	Open data, open services	Opening all data	Things as data	Smart cars (robotics)
Performance indicators	Proportion of online services	Share of open data in total data	Number of services provided based on data	Share of data obtained on the basis of inter-machine interaction	Degree of reduction (optimization) of the number of services provided

Source: Gartner, 2017

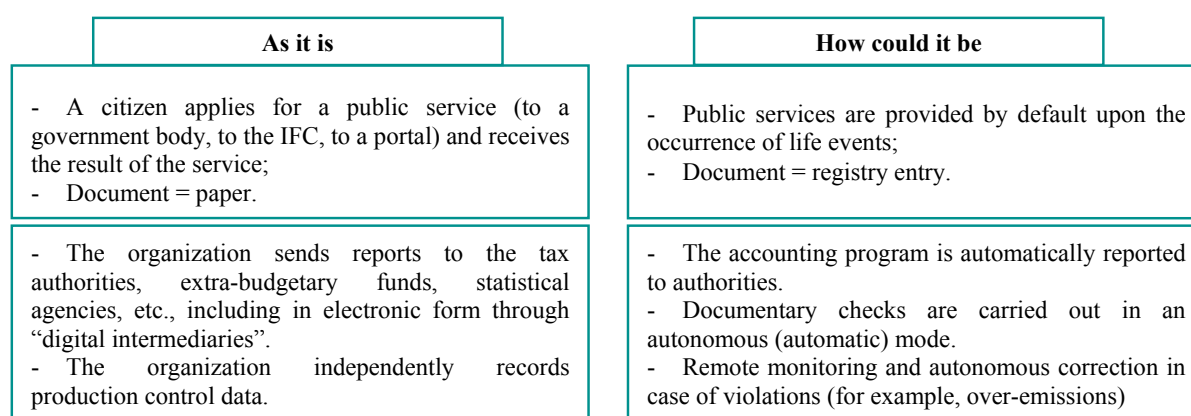


Figure 1 – The impact of digitalization on public administration
Source: Dobrolyubova et al., 2018

Methodology

The implementation of the event on digitalization of public administration, as a rule, is aimed at improving the effectiveness of public administration, including the quality of public services provided and its effectiveness that is, reducing the costs of the state, business and citizens associated with the implementation of certain public functions. Thus, we can assume that a high level of digitalization of public administration provides a higher level of quality of public administration in general or its individual parameters.

To analyze the level of digital transformation, the study used the e-government development

index. From a mathematical point of view, the electronic government development index (EGDI) is the weighted average of the normalized indicators for the three main aspects of electronic government:

The volume and quality of online services, expressed as an online service index (OSI);

The state of development of the telecommunications infrastructure or telecommunications infrastructure index (TII);

Internal human capital or human capital index (HCI).

Each of these indices is a composite indicator that can be extracted for independent analysis (UN E-Government Survey, 2018).

$$EGDI = \frac{1}{3}(OSI_{normalized} + TII_{normalized} + HCI_{normalized}) \quad (1)$$

Before normalizing the three component indicators, a Z-transform procedure is performed for each component indicator to ensure that the overall EGDI is determined equally on the basis of the three component indices. Thus, each component index reflects a comparable variance before the Z-transform. Without the Z-transform procedure, EGDI is mainly dependent on the component dispersion index with the greatest dispersion. After the Z-transformation, the sum of the arithmetic means becomes an appropriate statistical indicator in which “equal weight” really means “equal significance”.

$$Z_{transform} = \frac{x - \mu}{\sigma} \quad (2)$$

The formula of Z-transformation for each component indicator:

x – net standardized rate;

μ – average value of the sample;

σ – standard deviation of the sample.

The composite value of each component index is then averaged to a range from 0 to 1, and the total EGDI value is determined as the arithmetic average of the three component indices (UN E-Government Survey, 2018).

Results and discussion

The E-Government Development Index (EGDI) measures how countries use information and communication technologies to provide public services. It reflects the volume and quality of online services, the status of telecommunication infrastructure and existing human potential. Table 2 shows information on the indicator of the development of online services, ICT infrastructure, human capital in the Republic of Kazakhstan.

Table 2 – The level of three-component indicators of the E-Government Development Index (EGDI)

Country	The volume and quality of online services, expressed as an online service index (OSI)	The state of development of the telecommunications infrastructure or telecommunications infrastructure index (TII)	Human capital index (HCI)
Kazakhstan	0,8681	0,5723	0,8388

Note – compiled by the authors based on the source UN E-Government Survey (2018)

Based on formulas 1 and 2, the index of development of e-government was calculated.

$$EGDI = \frac{1}{3}(0,8681 + 0,5723 + 0,8388) = 0,7597$$

According to the results, Kazakhstan ended up in a group of countries with a very high rating. Despite the results achieved, problems associated with an insufficient level of openness, customer focus and proactivity remain relevant.

Conclusion

The digital transformation of public administration is not just automation and optimization of individual processes in the provision

of public functions, including the provision of public services, the introduction and use of various modern ICTs in the interests of ensuring the activities of government authorities. Digital transformation is conscripted to qualitatively change the content of public administration, including its individual procedures, stages of the managerial cycle, state functions, their composition and types. Such a change should lead to an increase in the quality of public administration: to ensure greater justification for government intervention (and reduce the role of the state in overall), increasing the effectiveness and efficiency of public authorities. The above calculations show that increasing the level of digitalization of public administration is closely interconnected with increasing the effectiveness of public administration, reducing corruption, and improving the conditions for doing business.

In Kazakhstan and in foreign countries, the digital transformation is traditionally considered primarily as a driver for increasing the availability and quality of public services. Digital technologies make it possible to transform the implementation of all types of state functions and the functions for their implementation – from standard-setting to control and oversight activities and revenue administration. An unprecedented expansion of the possibilities of working with a wide variety of data in real time allows government authorities to completely plan their results, monitor and evaluate their achievement, as well as the participation of their staff. In this sense, digital transformation is becoming a driver, a mechanism for implementing public administration based on results.

In order to ensure the use of digital transformation as a driver and mechanism for implementing public administration according to the results of the implementation of the state program “Digital Kazakhstan”, it is advisable to ensure the implementation of measures aimed at:

transition from the responsibility of departments for the preparation and submission of reports on achieved results to their responsibility for posting data on achieved results, generated mainly automatically on a single platform and making decisions based on these data;

expansion of the use of “big data” for the development of public policy, the formation of official statistics, revenue administration, audit of the effectiveness of budget expenditures and the implementation of other public functions;

expansion of methods for assessing the performance of state bodies: the transition from a binary assessment of “completed – not completed” to the use of predictive analytics, selective controlled trials, and other analytical methods based on artificial intelligence technologies;

use of digitalization as a tool for optimizing budget expenditures: introducing the practice of calculating transaction costs and evaluating their reduction through digitalization.

References

- Послание Президента Республики Казахстан Н. Назарбаева народу Казахстана. Новые возможности развития в условиях четвертой промышленной революции. – 2018, http://www.akorda.kz/en/addresses/addresses_of_president/state-of-the-nation-address-by-the-president-of-the-republic-of-kazakhstan-nursultan-nazarbayev-january-10-2018.
- Государственная программа «Цифровой Казахстан». Постановление Правительства Республики Казахстан от 12 декабря 2017 года № 827, <http://adilet.zan.kz/rus/docs/P1700000827>.
- Смотрницкая И.И., Черных С.И. Современные тенденции цифровой трансформации государственного управления // Вестник Института экономики РАН. – 2018. – №5, С. 22-36.
- Холодная Е.В. О некоторых перспективах развития электронного государственного управления в условиях цифровой трансформации // Гуманитарные и юридические исследования. – 2018. – №4, С. 193-199.
- Ефимова Н.А. Эстония: опыт трансформации государственного управления в условиях цифровой экономики // Самоуправление. – 2019. – №2(1), С. 217-218.
- Корчагин С., Польшиков Б. Цифровая экономика и трансформация механизмов государственного управления: риски и перспективы для России // Свободная мысль. – 2018. – №1, С. 23-36.
- Добролюбова Е.И. Южаков В.Н., Ефремов А.А., Клочкова Е.Н. Талапина Е.В. Старцев Я.Ю. Цифровое будущее государственного управления по результатам. – М.: Издательский дом «Дело» РАНХиГС. – 2019, 114 с.
- Giritli Nygren K. Narratives of ICT and organizational change in public administration // *Gender, Work & Organization*. – 2012. – vol. 19(6), pp. 615-630.
- Natalini A., Stolfi F. (2012) Mechanisms and public administration reform: Italian cases of better regulation and digitalization. *Public Administration*, vol. 90(2), pp. 529-543.
- Wihlborg E., Hedström K., Larsson H. E-Government for all—Norm-critical Perspectives and Public Values in Digitalization // *Proceedings of the 50th Hawaii International Conference on System Sciences*. – 2017.
- Kirov V. Digitalization of Public Services in Europe: Policy Challenges for the European Trade Union Movement. – Policy implications of virtual work, Palgrave Macmillan, Cham. – 2017, pp. 251-272.
- Janowski T. Digital government evolution: From transformation to contextualization. – 2015. – vol. 32(3), pp. 221-236.
- Kamolov S.G. Digital public governance: trends and risks // *Giornale di storia costituzionale*. – 2017. – vol. 33, pp. 185-192.
- McNutt K. Public engagement in the Web 2.0 era: Social collaborative technologies in a public sector context // *Canadian Public Administration*. – 2014. – vol. 57(1), pp. 49-70.
- Liu S.M., Yuan Q. The evolution of information and communication technology in public administration // *Public Administration and Development*. – 2015. – vol. 35(2), pp. 140-151.
- Iovan S. E-government, development and evolution // *Annals of Constantin Brancusi University of Targu-Jiu. Juridical Science Series*. – 2016. – vol. 4, pp. 20-26.

- Andersen K.N., Medaglia R., Vatrapu R., Henriksen H.Z., Gauld R. The forgotten promise of e-government maturity: Assessing responsiveness in the digital public sector // *Government Information Quarterly*. – 2011. – vol. 28(4), pp. 439-445.
- Bertot J., Estevez E., Janowski T. Universal and contextualized public services: Digital public service innovation framework. – 2016. – vol. 33(2), pp. 211-222.
- Valdés G., Solar M., Astudillo H., Iribarren M., Concha G., Visconti M. Conception, development and implementation of an e-Government maturity model in public agencies // *Government Information Quarterly*. – 2011. – vol. 28(2), pp. 176-187.
- Eom S.J., Kim J.H. The adoption of public smartphone applications in Korea: Empirical analysis on maturity level and influential factors // *Government Information Quarterly*. – 2014. – vol. 31, pp. 26-36.
- Weerakkody V., Omar A., El-Haddadeh R., Al-Busaidy M. Digitally-enabled service transformation in the public sector: the lure of institutional pressure and strategic response towards change // *Government Information Quarterly*. – 2016. – vol. 33(4), pp. 658-668.
- Janowski T., Estevez E., Baguma R. Platform governance for sustainable development: Reshaping citizen-administration relationships in the digital age // *Government Information Quarterly*. – 2018. – vol. 35(4), pp. 1-16.
- Tassabehji R., Hackney R., Popović A. Emergent digital era governance: Enacting the role of the ‘institutional entrepreneur’ in transformational change // *Government Information Quarterly*. – 2016. – vol. 33(2), pp. 223-236.
- Mergel I. Digital service teams in government // *Government Information Quarterly*. – 2019, 101389.
- OECD. Digital Government Strategies for Transforming Public Services in the Welfare Areas. – OECD Publishing, Paris. – 2016.
- Gartner. 5 Levels of Digital Government Maturity. – 2017, <https://www.gartner.com/smarterwithgartner/5-levels-of-digital-government-maturity/>.
- UN E-Government Survey. – 2018, <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018>.

References

- Andersen K.N., Medaglia R., Vatrapu R., Henriksen H.Z., Gauld R. (2011) The forgotten promise of e-government maturity: Assessing responsiveness in the digital public sector. *Government Information Quarterly*, vol. 28(4), pp. 439-445.
- Bertot J., Estevez E., Janowski T. (2016) Universal and contextualized public services: Digital public service innovation framework, vol. 33(2), pp. 211-222.
- Dobrolyubova E.I., Yuzhakov V.N., Efremov A.A., Klochkova E.N., Talapina E.V., Startsev Ya.Yu. (2018) Tsifrovoye budushchee gosudarstvennogo upravleniya po rezul'tatam [The digital future of governance by results]. M.: Izdatel'skiy dom «Delo» RANKhiGS, 114 p.
- Efimova N.A. (2019) Estoniya: opyt transformacii gosudarstvennogo upravleniya v usloviyah cifrovoi ekonomiki [Estonia: the experience of transforming public administration in the digital economy]. *Samoupravlenie*, vol. 2(1), pp. 217-218.
- Eom S.J., Kim J.H. (2014) The adoption of public smartphone applications in Korea: Empirical analysis on maturity level and influential factors. *Government Information Quarterly*, vol. 31, pp. 26-36.
- Gartner (2017) 5 Levels of Digital Government Maturity, <https://www.gartner.com/smarterwithgartner/5-levels-of-digital-government-maturity/>.
- Giritli Nygren K. (2012) Narratives of ICT and organizational change in public administration. *Gender, Work & Organization*, vol. 19(6), pp. 615-630.
- Gosudarstvennaya programma «Tsifrovoy Kazakhstan». Postanovleniye Pravitel'stva Respubliki Kazakhstan ot 12 dekabrya 2017 goda № 827 [State program “Digital Kazakhstan”. Decree of the Government of the Republic of Kazakhstan dated December 12, 2017 No. 827], <http://adilet.zan.kz/rus/docs/P1700000827>.
- Holodnaya E.V. (2018) O nekotoryh perspektivah razvitiya elektronogo gosudarstvennogo upravleniya v usloviyah cifrovoi transformacii [On some prospects for the development of e-government in the context of digital transformation]. *Gumanitarnye i yuridicheskie issledovaniya*, vol. 4, pp. 193-199.
- Iovan S. (2016) E-government, development and evolution. *Annals of ‘Constantin Brancusi’ University of Targu-Jiu. Juridical Science Series*, vol. 4, pp. 20-26.
- Janowski T. (2015) Digital government evolution: From transformation to contextualization, vol. 32(3), pp. 221-236.
- Janowski T., Estevez E., Baguma R. (2018) Platform governance for sustainable development: Reshaping citizen-administration relationships in the digital age. *Government Information Quarterly*, vol. 35(4), pp. 1-16.
- Kamolov S.G. (2017) Digital public governance: trends and risks. *Giornale di storia costituzionale*, vol. 33, pp. 185-192.
- Kirov V. (2017) Digitalization of Public Services in Europe: Policy Challenges for the European Trade Union Movement. *Policy implications of virtual work*, Palgrave Macmillan, Cham, pp. 251-272.
- Korchagin S., Pol'shikov B. (2018) Cifrovaya ekonomika i transformaciya mekhanizmov gosudarstvennogo upravleniya: Riski i perspektivy dlya Rossii [Digital Economy and the Transformation of Public Administration Mechanisms: Risks and Prospects for Russia]. *Svobodnaya mysl'*, vol. 1, pp. 23-36.
- Liu S.M., Yuan Q. (2015) The evolution of information and communication technology in public administration. *Public Administration and Development*, vol. 35(2), pp. 140-151.
- McNutt K. (2014) Public engagement in the Web 2.0 era: Social collaborative technologies in a public sector context. *Canadian Public Administration*, vol. 57(1), pp. 49-70.
- Mergel I. (2019) Digital service teams in government. *Government Information Quarterly*, 101389.

Natalini A., Stolfi F. (2012) Mechanisms and public administration reform: Italian cases of better regulation and digitalization. *Public Administration*, vol. 90(2), pp. 529-543.

OECD (2016) *Digital Government Strategies for Transforming Public Services in the Welfare Areas*. OECD Publishing, Paris.

Poslaniye Prezidenta Respubliki Kazakhstan N. Nazarbayeva narodu Kazakhstana (2018) *Novyye vozmozhnosti razvitiya v usloviyakh chetvertoy promyshlennoy revolyutsii* [New development opportunities in the conditions of the fourth industrial revolution], http://www.akorda.kz/en/addresses/addresses_of_president/state-of-the-nation-address-by-the-president-of-the-republic-of-kazakhstan-nursultan-nazarbayev-january-10-2018.

Smotrickaya I.I., Chernyh S.I. (2018) *Sovremennyye tendentsii cifrovoy transformatsii gosudarstvennogo upravleniya* [Modern Trends in the Digital Transformation of Public Administration]. *Vestnik Instituta ekonomiki RAN*, vol. 5, pp. 22-36.

Tassabehji R., Hackney R., Popovič A. (2016) Emergent digital era governance: Enacting the role of the ‘institutional entrepreneur’ in transformational change. *Government Information Quarterly*, vol. 33(2), pp. 223-236.

UN E-Government Survey (2018) <https://publicadministration.un.org/egovkb/en-us/Reports/UN-E-Government-Survey-2018>.

Valdés G., Solar M., Astudillo H., Iribarren M., Concha G., Visconti M. (2011) Conception, development and implementation of an e-Government maturity model in public agencies. *Government Information Quarterly*, vol. 28(2), pp. 176-187.

Weerakkody V., Omar A., El-Haddadeh R., Al-Busaidy M. (2016) Digitally-enabled service transformation in the public sector: the lure of institutional pressure and strategic response towards change. *Government Information Quarterly*, vol. 33(4), pp. 658-668.

Wihlborg E., Hedström K., Larsson H. (2017) *E-Government for all—Norm-critical Perspectives and Public Values in Digitalization*. Proceedings of the 50th Hawaii International Conference on System Sciences.