

Management mechanisms in the context of digitization of all spheres of society

Mecanismos de gestión en el contexto de la digitalización de todos los ámbitos de la sociedad

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Abstract

Digitalization transforms public policy. It forms new models of public administration based on knowledge about the behavior of social groups. This study experimentally confirms the lack of impact of e-government and digitalization on the quality of life. It is proved that the new state policy is not aimed at ensuring socio-economic well-being, but the management of the collective consciousness of the masses. The economic benefits of digitization are insignificant. Digital policy provides a greater level of transparency in order to obtain its own benefits: the development of public-private partnerships, attracting investment in digital infrastructure, openness of digital governance. The article proves that the modernization of public policy under the influence of digitalization forms a new era of digital leadership, which actually provides the possession of information about the behavior of social groups.

Keywords: Public Policy, Digitalization, Modernization, Digital Gap.



Resumen

La digitalización transforma las políticas públicas. Forma nuevos modelos de administración pública basados en el conocimiento sobre el comportamiento de los grupos sociales. Este estudio confirma experimentalmente la falta de impacto del gobierno electrónico y la digitalización en la calidad de vida. Está comprobado que la nueva política de Estado no tiene como objetivo garantizar el bienestar socioeconómico, sino la gestión de la conciencia colectiva de las masas. Los beneficios económicos de la digitalización son insignificantes. La política digital proporciona un mayor nivel de transparencia para obtener sus propios beneficios: el desarrollo de asociaciones público-privadas, la atracción de inversión en infraestructura digital, la apertura de la gobernanza digital. El artículo demuestra que la modernización de las políticas públicas bajo la influencia de la digitalización configura una nueva era de liderazgo digital, que en realidad proporciona la posesión de información sobre el comportamiento de los grupos sociales.

Palabras clave: Políticas Públicas, Digitalización, Modernización, Brecha Digital.



Introduction

Modernization of public policy involves the integration of digital technologies in order to automate and increase the efficiency of public administration (Henriksen, 2018). The socio-economic and political system is being transformed as a result of digitalization (Katz & Koutroumpis, 2013).

Problematic aspects of digital public policy are technological rediness in related areas: infrastructure, investment in telecommunications, Internet access, digital literacy, demand for digital services and awareness (Morganti et al, 2014). Therefore, a scientific discussion argues for the importance of a differentiated approach to digital public policy. However, in general, there are three main problems in this sphere - human capital development, investment in infrastructure (Katz & Koutroumpis, 2013), institutional barriers (Giest, 2017).

Countries that invest in the development of digital policy (technologies, applications) have received significant economic, social, political benefits from its integration. Countries with a high level of digitalization receive 20% more economic benefits in the context of reducing unemployment, improving quality of life, expanding access to public services (Sabbagh et al., 2012). Public policy becomes more transparent, efficient, open, transforming the concept of democracy (Calista et al., 2010). At the same time, research argues for the necessity to shift the focus of public policy from providing access to digital services to developing plans for their use and integration (Sabbagh et al., 2012; Morganti et al., 2014).

Taking into account the advantages and disadvantages of digitalization highlighted in the scientific literature, it can be concluded that research on the issue of modernization of public policy is limited. Transformation is accompanied by the problems that require new solutions from governments. Such problems in the context of the study are public confidence in digital public policy, e-democracy. Technology improves the quality of life, but the downside of the process is the use of technology against people in the interests of digital policymakers. The challenge is to balance the benefits of digitalization with the negative consequences: Does digital government aim at socio-economic well-being or the management of the collective consciousness of the masses? In this article we try to answer this question.

Literature review

In the scientific literature the concepts of “e-government” and “evidence-based policy making” are considered in the context of positive (Sabbagh et al., 2012; Morganti et al., 2014) and negative consequences of socialim pact on the economic system (Giest, 2017).

The concept of digital governance develops through the stages of digitalization (integration of technologies into public policy), transformation (formation of digital governance), involvement (e-government) and contextualization (e-policy management) (Janowski, 2015).

Recent studies suggest the formation of the concept of m-governance (Faisal & Talib, 2016; Reddick, & Zheng, 2017), which can be considered as an element of digital public policy. It is created to involve the public in the usage of electronic services. This leads to the development of the concepts of "Digital-era Governance (DEG), Data Readiness, Evidence-based Policymaking and Policy Design", which are integrated and forming new concepts of public policy (Giest, 2017). These concepts form a digital policy (Figure 1), which goes through stages from digitization of management information to joint decision-making / digital information management.

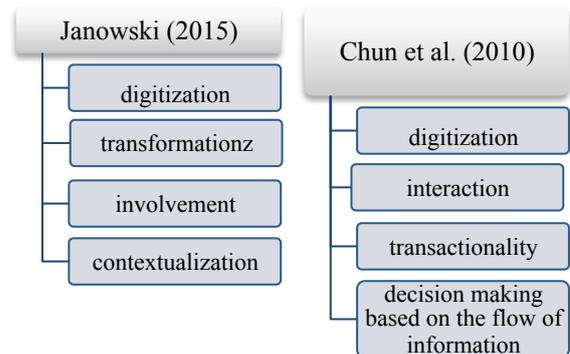


Figure 1. Digital policy formation and the comparison of its stages

At the first stage of digitization is the creation of sites of passive information nature of management information. The second stage involves the interaction of the state, citizens and organizations through the interactivity of digital communication tools. In the third stage, there are online transactions, such as tax payments, obtaining licenses, business registration. The last stage is the promotion by the government of "shared governance to transform how the government operates" (Chun et al., 2010).



This stage involves joint decision-making and a constant flow of information. Our research focuses on the last stage of digital policy, because the flow of information is the basis of public administration. It allows understanding the behavior, level of consciousness and intellectual development of citizens depending on the socio-cultural and economic environment. The level of public ownership of information about the potential risks of digital policy as digital methods of managing the behavior of social groups will determine the "digital gap" between government and society.

As a result, there will be a differentiation of society depending on the level of information and knowledge. Lower-level social groups will be more manageable, higher-level ones will be characterized by unpredictable behavior. Like differentiation by income level, today a new criterion of dividing society into classes is being formed - digital literacy.

In the process of digitizing public policy, countries with different levels of socio-economic development achieve different levels of efficiency and are characterized by instability in the integration of digital technologies. "Early adopters of digital government of ten find it difficult to maintain their performance... some late adopters experience dramatic performance improvements" (Calista et al., 2010).

In future, it determines the level of usage of technology by citizens: a higher level of use corresponds to a higher level of knowledge about the socio-cultural characteristics of society, patterns of behavior of certain groups. The level of human capital of the country determines the problems of modernization and formation of public policy in the context of digitalization.

So, Ukraine is characterized by problems of lack of digital skills, competencies, methods, organization and regulatory support, digital infrastructure, problems of digital technology exports, investment and integration into the EU digital space, digitaline quality. These problems are set out in the "Concept of development of the digital economy and society of Ukraine for 2018-2020" (Heeks, 2001; Verkhovna Rada of Ukraine, 2018).

Assessment of the state of digitization of public policy includes the measurement of the following indicators: "ubiquity, affordability, reliability, speed, usability and skills" (Katz & Koutroumpis, 2013). These characteristics serve as a basis for identifying the relationship between the development of digital policy and the quality of life of the population.

E-commerce is an element of modernization of public policy through trade, financial transactions using digital technologies. The effectiveness of e-commerce management is not sufficiently studied in the context of studying the psychological components, behavior of economic agents and their interaction (Akimov et al., 2020).

Data and methodology

Design, concept

This study is based on the concept of digital governance and digital government policy with an emphasis on contextualization (Janowski, 2015) or government promotion of "shared governance to transform how government operations" (Chun et al., 2010). Contextualization is an element of the management of the new state policy, which ensures a constant flow of information for decision-making in the economic, social and political spheres. Given the purpose of the study, the main hypothesis is as follows.

Modernization of public policy under the influence of digitalization forms a new era of digital leadership, which de jure aims to ensure socio-economic well-being, but in fact also the possession of information about the behavior of social groups. As a result, the state's digital policy can be aimed at managing the collective consciousness of citizens and the behavior of social groups.

Data and methods

The article studies the Digital Adoption Index and sub-indices for 2014-2016 of 180 countries according to the World Bank for an overall assessment of the formation of the digital economy, government and society. The Digital Economy and Society Index of EU countries was used to study the relationship between Connectivity, Human Capital, Use of Internet, Integration of Digital Technology, Digital Public Services and GDP per capita growth (annual%). Correlation analysis and regression models were used to identify the dependence. The analysis of the simulation results was performed on the basis of Adjusted R Square, F, Significance F, t Stat and P-value criteria.

Results and discussion

The Digital Adoption Index sub-indices (Table 1) show that the private sector is ahead of governments in terms of digitization (0.559 vs. 0.518 in 2014-2016), and society is the last to be affected by digital change. This means that the private sector, business are innovators / early adopters of digital technologies, the government has the opportunity to use innovative solutions, and society has virtually no influence on the



development, integration or management of digitalization.

Table 1. Digital Adoption Index

Period	World Average			
	Digital Adoption Index	DAI BusinessSub-index	DAI PeopleSub-index	GovernmentSub-index
2014	0,478	0,543	0,392	0,506
2016	0,516	0,576	0,447	0,530
Average 2014-2016	0,497	0,559	0,420	0,518

Source: World Bank (2016)

Countries differ significantly in the level of Digital Adoption Index (Table 2): the most developed countries are characterized by a higher level of digitalization, while in Korea the level of

digitalization of government is 0.981, business - 0.750, citizens - 0.842; in Ukraine - the government - 0.472, business - 0.668, citizens - 0.474.

Table 2. Digital Adoption Index by country, 2016

	Country	Digital Adoption Index	DAI BusinessSub-index	DAI PeopleSub-index	DAI GovernmentSub-index
1	Central African Republic	0,147	0,319	0,014	0,108
2	Niger	0,160	0,242	0,055	0,182
3	Equatorial Guinea	0,185	0,381	0,134	0,040
4	Guinea	0,207	0,130	0,148	0,344
5	Congo, Dem. Rep.	0,208	0,175	0,051	0,398
96	Ukraine	0,538	0,668	0,474	0,472
97	Mongolia	0,538	0,653	0,348	0,612
158	United Kingdom	0,764	0,904	0,799	0,589
159	Spain	0,765	0,781	0,674	0,840
160	Italy	0,765	0,747	0,676	0,873
161	Belgium	0,780	0,850	0,727	0,764
162	Portugal	0,785	0,758	0,726	0,871
163	Bahrain	0,786	0,748	0,840	0,770
164	Israel	0,788	0,774	0,740	0,850
165	Denmark	0,791	0,918	0,897	0,558
166	Lithuania	0,793	0,801	0,752	0,827
167	Norway	0,804	0,882	0,811	0,720
168	Finland	0,807	0,923	0,831	0,668
169	Switzerland	0,822	0,889	0,890	0,688
170	United Arab Emirates	0,823	0,781	0,802	0,886
171	Sweden	0,832	0,941	0,855	0,700
172	Estonia	0,833	0,847	0,800	0,853
173	Japan	0,835	0,761	0,835	0,909
174	Netherlands	0,838	0,910	0,796	0,809
175	Germany	0,840	0,868	0,780	0,871
176	Malta	0,855	0,942	0,786	0,838
177	Korea, Rep.	0,858	0,750	0,842	0,981



178	Austria	0,862	0,877	0,865	0,845
179	Luxembourg	0,863	0,944	0,874	0,772
180	Singapore	0,871	0,852	0,803	0,957

This means that economic development determines the digital capacity of government, business and society. In the least developed countries (Central African Republic, Niger, Equatorial Guinea), society is most detached from digital technology.

The level of Connectivity of the EU countries is 25.0%, the level of Human Capital development is 25.0%, the level of Internet usage is 15.0%, the level of Integration of Digital Technology is 20.0%, the level of Digital Public Services is 15.0% (Table 3).

Table 3. Digital economy and Society Index, 2015-2020

Average EU country	2015	2016	2017	2018	2019	2020
1 Connectivity	816,15	897,54	972,68	1043,76	1164,65	1304,58
2 Human Capital	1109,26	1126,07	1147,51	1194,36	1206,98	1244,19
3 Use of Internet	681,09	706,01	743,51	784,46	825,17	865,89
4 Integration of Digital Technology	604,40	672,39	732,23	780,37	823,77	872,36
5 Digital Public Services	763,46	826,43	875,02	940,06	1011,31	1081,74
Average	794,87	845,69	894,19	948,60	1006,38	1073,75

Source: European Commission (2020)

Countries differ significantly in the level of development of the digital economy and digital society. Human capital determines the development of the economy, the economy determines the level

of Internet use, technology integration and the development of digital public services. These variables are directly related (Table 4).

Table 4. Correlation matrix of variables Digital economy and Society Index

	1	2	3	4	5
1 Connectivity	1,000				
2 Human Capital	0,460	1,000			
3 Use of Internet	0,524	0,887	1,000		
4 Integration of Digital Technology	0,310	0,764	0,805	1,000	
5 Digital Public Services	0,498	0,582	0,637	0,569	1,000

Source: author's calculations

Regression analysis of the dependence of quality of life on the development of human capital, integration of digital technologies and digital public

services proves the impact of these factors on the welfare of the population (Table 5).

Table 5. Regression analysis results: dependent variable GDP per capita growth (annual %)

Regression Statistics			
	Human Capital	Integration of Digital Technology	Digital Public Services
Multiple R	0,1654	0,1676	0,1762
R Square	0,0274	0,0281	0,0311
Adjusted R Square	0,0206	0,0213	0,0243
Standard Error	2,4166	2,4157	2,4121
F	4,5833	4,1354	4,0245
Significance F	0,0339	0,0438	0,0467

Source: author's calculations

GDP per capita growth is explained by the development of human capital by 2.06%, the integration of digital technologies - by 2.13%,

digital public services - by 2.43%. This means the presence of many other influencing factors and proves that digital public administration does not



significantly affect the quality of life of the population. At the same time, the values of F-statistics and Significance F prove the ability to predict the quality of life depending on these indicators of digital development of the country.

With a significance level of 5% (Table 6), we can reject the null hypothesis of no connection and argue that the growth of Digital Public Services by

1 conditional unit will reduce GDP per capita growth (annual %) by -0.0019%, growth of Integration of Digital Technology by 1 conditional unit will reduce GDP per capita growth (annual %) by -0.002%, growth of Human Capital by 1 conditional unit will reduce GDP per capita growth (annual %) by -0.0014%. All parameters of the model are statistically significant, because the P-value is less than 5%.

Table 6. Beta-coefficients and significance

	Coefficients	Standard Error	t Stat	P-value
Intercept	4,5683	0,8242	5,5425	0,0000
Digital Public Services	-0,0019	0,0009	-2,1409	0,0340
Intercept	4,073	0,631	6,455	0,000
Integration of Digital Technology	-0,002	0,001	-2,034	0,044
Intercept	4,4818	0,8346	5,3701	0,0000
Human Capital	-0,0014	0,0007	-2,0061	0,0467

Source: author's calculations

The analysis shows that the digitalization of public policy does not determine the quality of life of the population, despite a number of positive arguments about the effectiveness of the concept of e-government.

It can be assumed that digital policy does not aim to increase the quality of life, despite the strategic guide lines approved by the government concepts and plans for digital development of society. Technology integrated into politics - a way to demonstrate openness, transparency of public policy in the context of the spread of e-democracy.

Technology integration does not improve the quality of life, but speeds up the obtaining of public services. The concept of e-democracy in general is only a consequence of technological development. At the beginning of the XXI century, scientists proved that "most e-governance initiatives fail" (Heeks, 2001). Our study proves that the reason for the quality of life is not in the development of new concepts of public administration in the digital age, but in the level of human capital development.

The study confirms the hypothesis that digital policymakers integrate technology in response to global trends and environmental demands, gaining an advantage in the form of the ability to control the collective consciousness of the masses.

Modernization of public policy under the influence of digitalization forms a new era of digital leadership, which de jure aims to ensure socio-economic well-being, but in fact also the possession of information about the behavior of social groups. "Digitization is defined as the social transformation triggered by the massive adoption of digital

technologies to generate, process, share and transact information" (Katz & Koutroumpis, 2012). We are sure that digitalization is transforming the socio-economic system by providing public policy actors with comprehensive information on the behavior of social groups. Other studies also confirm the conclusion that digital policy creates knowledge about society: "E-government involves producing knowledge - the close relationship between knowledge and power" (Björklund, 2016). The benefits of implementing the concept for the private sector are also insignificant: "The construction industry has invested around 1% or less in information and communication technologies (ICT) as their share of GVA; however, it has invested about 15% in ICT of their total investments (gross fixed capital formation)" (Leviäkangas, Paik, & Moon, 2017).

The policy of openness of public administration on the basis of digitalization (transparency, integration of digital technologies) is spreading within the EU as a new model of governance with different levels of differentiation. Therefore, we prove that the modernization of state policy is due to the penetration of technology. At the same time, the quality of life of the population is not the ultimate goal of the new model of public administration.

Competitive models of open governance are appearing in the EU through varying degrees of technology integration: public policy focuses on openness, innovation and governance to increase transparency, and ensure public-private partnerships (De Blasio & Selva, 2016). However, the digitalization of public policy does not provide contextualization as its final stage - today there are no examples of joint decision-making in public



administration due to conflicts of interest. Economic effects are a mitigating factor in the implementation of digital public policy (De Blasio & Selva, 2016), but do not provide significant changes in the quality of life.

Conclusion

Modernization of public policy under the influence of digitalization does not improve the quality of life of the population. Digital policy is formed under the influence of environmental trends, such as the automation of public services. The socio-economic development of countries remains at the same level despite the openness of data about the activities of public policy actors through the process of digitization of information. Contextualization is the final stage of digital policy and will ensure the management of social groups in the future through the flow of information about the behavior of society.

Our study confirms the hypothesis that the modernization of public policy under the influence of digitalization creates a new era of digital leadership, which de jure aims to ensure socio-economic well-being, but in fact also the possession of information about the behavior of social groups. As a result, the digital policy of the country can be aimed at managing the collective consciousness of citizens and the behavior of social groups.

Indicators of the development of the digital economy and society show that the private sector is ahead of governments in terms of digitalization, and society is the last to be affected by digital change. This means that the private sector and business are innovators / early adopters of digital technologies. The government has the opportunity to use innovative solutions and society has virtually no influence on the development, integration or management of digitalization.

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