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INNOVATION IN IT-MANAGEMENT: TOLERANCES AND LIMITATIONSIN THE PROCESS OF E-GOVERNMENT IMPLEMENTATION IN UKRAINE

ІННОВАЦІЇ В ІТ-МЕНЕДЖМЕНТІ: ДОПУСКИ ТА ОБМЕЖЕННЯ В ПРОЦЕСІ ВПРОВАДЖЕННЯ ЕЛЕКТРОННОГО УРЯДУ В УКРАЇНІ

The article reveals the possibilities of information technologies to improve the functioning of public administration in the country, increase the efficiency and transparency of local authorities. Conducting researches within the framework of scientific and technological development, which are concerned opportunities to provide e-government in Ukraine, are considered in this article together with the main stages of e-government formation. It has been researched the problems of e-government potential realization from another aspect that includes technological base being an integral part for e-government system creation.

It was analysed available infrastructure and technical supply needed for the full-fledged functioning of e-government such as: state of the Internet network and its indicators, the technical infrastructure, human resources for the e-government implementation. It was revealed tendencies related to the technological reinforcement of the e-government activity and to the current challenges faced by supporters of virtual government.

Determined and analysed many factors influencing on e-government implementation. In particular, substantiated the necessity of e-government system implementation in Ukraine in order to improve the service provision by government to the citizens.

The article deals with the modern government imperfection and state of information and telecommunication technologies in the context of public administration. Highlighted the problem of information security and cybercrime. In order to research it has been used the experience of foreign countries that has already been applying e-government as a service for remote interaction (South Korea, Estonia), and tools they use to provide secure data exchange between citizens and the e-government.

It was outlined the ways how to solve problems appearing in process of electronic system implementation, for example: layoffs, uneven implementation of e-government, etc. It was determined particularities and perspectives of e-government implementation in Ukraine. To traverse possible negative consequences in case of e-government provision there were developed some recommendations.

Keywords: e-government, electronic government system, implementation, Internet coverage, cyber-security.

Стаття розкриває можливості інформаційних технологій на шляху покращення функціонування державного управління в країні, підвищення ефективності та прозорості влади. У статті розглянуто етапи формування системи електронного уряду та проведено дослідження щодо можливостей впровадження даного інноваційного рішення в Україні в контексті науково-технологічного розвитку. Досліджено проблеми реалізації інноваційного потенціалу державного управління під іншим кутом, з точки зору технологічної бази, яка є невід'ємною частиною для створення системи електронного уряду.

Проаналізовано наявну інфраструктуру та технічне забезпечення, необхідне для повноцінного функціонування електронного уряду: стан інтернет-мережі та його показники, технічна інфраструктура, людські ресурси для впровадження електронного уряду. Виявлено тенденції, пов'язані з технологічним підкріпленням діяльності електронного уряду, та сучасні виклики, що постають перед прихильниками віртуального урядування.

Визначено та проаналізовано низку факторів, що впливають на процес впровадження електронного уряду. Зокрема, обґрунтовано необхідність впровадження системи електронного уряду в Україні, з метою поліпшення надання послуг державним сектором населенню.

У статті висвітлюється питання недосконалості сучасного урядування та стану інформаційних і телекомунікаційних технологій в контексті державного управління. Підкреслено проблему, пов'язану з інформаційною безпекою та кіберзлочинністю. Для порівняння використано досвід країн, що запровадили електронне урядування як засіб дистанційної взаємодії з громадянами (Південна Корея, Естонія), та засоби, які вони використовують для безпечного обміну даними між громадянами та електронним урядом.

Окреслено шляхи вирішення проблем, що виникають в процесі впровадження такої системи, наприклад: безробіття, нерівномірне впровадження електронного уряду тощо. Визначено особливості та перспективи впровадження системи електронного урядування в Україні. Розроблено рекомендації щодо подолання можливих негативних наслідків у разі впровадження електронного уряду.

Ключові слова: електронний уряд, система електронного уряду, Інтернет, Інтернет-покриття, кібербезпека.

Introduction. With the active increasing of population and development of telecommunication and information technologies, the quality of a bureaucratic system is losing its efficiency. To solve any problems the bureaucratic system, which is not capable of satisfying citizens` requests, extends officials volume, that doesn`t solve problem vice versa deepens it because the number of officials increases along with the intermediate managers slowing down the interaction processes (complaints, requests etc.).

With the expansion of telecommunications and the transition to the 3G Internet (in some countries up to 4G), the concept of government without government officials began to spiral. As the result, the innovative potential of public administration began to grow.

Thus, the relevance of this topic has increased since 2014. Contributed by dynamic changes in society, the topic of e-government concept became the subject of conversation forming camps of followers and opponents.

Setting objectives. The purpose of research is to determine main factors influencing on the e-government implementation process and fulfilling of analysis of each according to the current situation in Ukraine. To estimate the prospective of the e-government implementation based on foreign experience according to available infrastructure and to identify positive as well as negative consequences of e-government implementation for economy. To provide recommendations concerned possible barriers and the ways to overcome them.

Methodology. To achieve the purpose of the study it was applied the complex of general scientific and special methods and techniques: induction and deduction, analysis and synthesis to set research targets and their solution, generalization to assess the impact of the individual (local) indicator relative to the national.

Research results. E-government is a way of organizing state authority through local information networks and segments of the global information network that provides the functionality of government institutions in real time and makes easier and makes accessible daily communication with citizens, legal entities, non-governmental organizations [1].

It is necessary to be noticed that the formation and implementation process of E-government consists of 3 steps:

− The first one - At this stage, to implement e-government State Authority forms its own strategy and tactics, sets a base for further development. This step is accompanied by designing websites of public authorities, which contain information for its visitors.

− The second one - This step is dedicated to further integration of websites into one web portal. To begin with, Public authorities` websites are upgraded to interaction platforms which allow citizens to be provided with services online.

− The third one - transferring of communication mail online, wide provision of electronic communications (24h, 7 days per week), development of digital democracy [2].

Having investigated the stages of the process of formation and implementation of the e-government system, we can identify main factors that influence on that process:

1. The appropriate legislation that straightly describes the mechanisms of interaction between citizens and e-government.
2. Technical and technology base for e-government development.
3. The quality of the infrastructure that gives an access to remote interaction (Wi - Fi, appropriate technical equipment).
4. The Internet, which allows you to interact with the e-government system from any locality in the country (Internet coverage, Internet speed, accessibility for all citizens).

5.   Security system to prevent cyber attacks (preventing external influence on the functioning of e-government).

Concerning legislation part, it is necessary to emphasize, that being mostly on the first stage of e-government formation we should pay attention to the Order of the Cabinet of Ministers of Ukraine "On Approval of the Plan of Measures to Implement the Concept for the Development of the Electronic Services System in Ukraine for 2017-2018", which contains the plan of measures to implement United web portal, marking the approximation of the second stage.

The majority of higher education institutions that train qualified personnel in the field of information technology can provide this project with trained specialists to develop software, to support its work and to create a working group to develop a single portal with interactive elements that will integrate all web pages together.

The important factor that influence on the quality of e-government`s work and availability it for citizens is an access to the Internet, that is determined not only by the presence of appropriate technical means but by the Internet coverage. Unlike the countries that have reached the third stage of implementation of the e-government, where Internet coverage covers 90-95% of the country's territory (Estonia, South Korea, etc.), the situation in Ukraine is less encouraging. Today, principally, only densely populated cities and areas are covered by the Internet to the full extent, but concerning northern and south-eastern regions, especially in small villages located far away from big cities, the situation may dramatically differ: the coverage is weak or absent at all (Fig. 1).
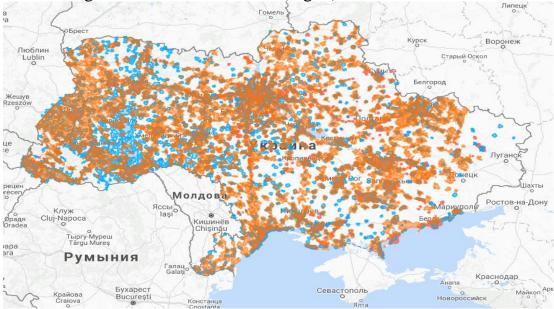

Figure 1 - 3G Internet coverage of the four largest mobile operators in Ukraine (Kyivstar, Vodafone, Lifecell, Triomob) *Reference: [3]*

If we consider the share of Internet users by the age and settlement, we will see that tenants of medium-size cities and villages of any size cannot use thee-

government system in a full swing type (Fig. 2). By the way the majority of the population aged 55 or over lives in rural areas.

For comparison, being a country with Internet coverage above 90 %, South Korea, where almost all the interaction between citizens and officials takes place in a remote or online mode, was granted second time in two years a title "country with the fastest Internet" [6].
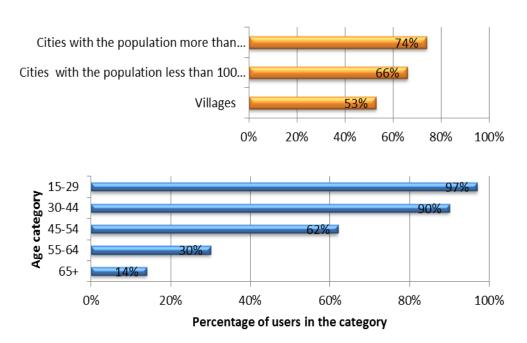

Figure 2 - Share of Internet users by age andtype of settlements
Reference: Developed by authors on the basis of [4]

The older generation has no proper training on the use of the Internet, nor does it have the necessary technical equipment. However, the number of Internet subscribers is increasing (Fig. 3), which indicates that the potential for market of Internet service providers will gradually be filled by new users regardless of age and place of residence - the Internet becomes more available.

Nowadays, the fact that over 70 % of households have Internet connection doesn't give any reasons for government in Estonian to stop investing money in cables installation, supporting internet providers in economically ineffective areas. The majority of projects is based on a private-public partnership, mainly by Estonian IT companies [7].

The other key element of Estonian e-government system is mandatory use of digital identification. Every citizen got a card with a chip that gives an opportunity to sign documents with an electronic signature [8]. Thus, the Estonian society was worried about cyber-security of personal data exchanged in the process of e-government interaction. The opponents of Id-cards warned that putting huge

amounts of confidential information on the Web is risky. This risk has been eliminated due to the creation of the so-called public key infrastructure of Estonia
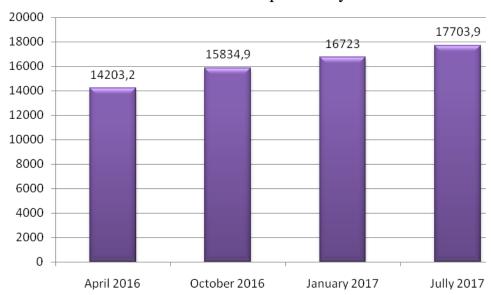

Figure 3 - Dynamics of Internet subscribers in Ukraine from 01.04.2016 to 01.07.2017, thousands man
Reference: Developed by authors on the basis of [5]

The point is that the state allocates to each Id-card user a certificate with two crypto keys: closed, known only to its owner, and open [7]. However, there are many other ways to disrupt the e-government functioning, when the Id-card appears to be useless. For example, being under cyberattack of the new form of PC virus "Petya", the activity of many states and private enterprises in Ukraine had been blocked for two weeks in 2017 at least before the solution was found.

Contrary to the existing threats, the implementation of e-government will lead to the following results: improving the quality of government information provision services; reduction of customer service time (for citizens and business); reduction of administrative barriers; decrease of administration costs; extension of a set of public services; increasing the efficiency of state institutions and the quality of services provided by them; increasing the rate of customer service satisfaction.

Among the political results it is possible to be noticed: openness and transparency of the authority activities; increasing the level of and authorities and citizen participation in the information society; increasing the rate of engagement of citizens in democratic processes; increasing the effectiveness of the policies being implemented [9].

Based on the foregoing, on the way of e-government innovation potential realization, it is appropriate to provide recommendations for certain obstacles to be overcome. The implementation has to be started on the local authority level - in cities with the population no less than 100 thousands and after a certain period have

to be applied for state institutions of smaller administrative units, while the Internet subscriber volume is growing. To achieve the results, we should use "step by step implementation" in settlements with different population and infrastructure accompanied by straight results control. The next recommendation focuses on unemployment, which can appear when the interaction between government and citizens becomes remote. Money, economized on layoffs, first of all, can be involved in former worker retraining which would adapt them for new protocols of e-government and, secondly, it can support former workers in case of being faired according to Ukrainian legislation protecting unemployed.

Thus, the e-government implementation demands a complex approach and strategic planning from the government`s side, because without rational and balanced state regulation this project will have never become integral and widespread across the country.

Conclusions. The scientific novelty of the research is to substantiate the need for the implementation of the e-government system in Ukraine. There are considered the problems of the e-government innovation potential realization from the other point of view, which concerns a technological aspect being an integral part of creating an e-government system. It has been proved that the implementation of e-government will help to improve the quality of state funded information services, reduce administrative costs, expand government services and increase the efficiency of public authorities. The research of economic and technological situation in Ukrainian localities has shown the impossibility of thee-government implementation in the near future. Determining unemployment as a consequence of the e-government implementation, it had been drafted recommendations to overcome this process and to decrease state budget expenditures.

There are many factors influencing on old- fashioned governance forcing it to be changed: globalization, Western vectors of Ukraine have chosen, before the emergence of an information society, which is gradually replacing old generations, predetermined by the vivid development of telecommunications. The introduction of a fully-fledged e-government system adapted to the Ukrainian realities has a high innovation potential, the implementation of which will greatly increase the quality and diversity of government services provided to both the population and private enterprises.

Taking into account available human and technological resources, the realization of this innovative potential can put Ukraine in line with a few countries in its region, which have already estimated the advantages of e-government, becoming a mentor for other post-Soviet countries in e-governance.

However, e-government in practical aspect is a new thing for Ukrainian society, every following new stage described above have to be accompanied with regular control, which makes this topic perspective for new researches.

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