



ISSN 1648-2603 (print)
ISSN 2029-2872 (online)

VIEŠOJI POLITIKA IR ADMINISTRAVIMAS
PUBLIC POLICY AND ADMINISTRATION
2022, T. 21, Nr. 5 / 2022, Vol. 21, No. 5, p. 606–617.

INNOVATIVE FOUNDATIONS FOR OPTIMIZING THE INFORMATION AND COMMUNICATION SYSTEM OF LOCAL GOVERNMENT

Oleg A. Diegtiar

O.M. Beketov National University of Urban Economy in Kharkiv
61002, 17 Marshal Bazhanov Str., Kharkiv, Ukraine

Tetyana A. Kravchenko

Classic Private University
69002, 70b Zhukovsky Str., Zaporizhzhia, Ukraine

Olena L. Yevmieshkina

V.I. Vernadsky Taurida National University
01042, 33 John McCain Str., Kyiv, Ukraine

Tetiana V. Sych

Luhansk Taras Shevchenko National University
92703, 1 Hohol Sq., Starobilsk, Ukraine

Yana M. Linetska

Kherson National Technical University
73008, 24 Beryslavske Highway, Kherson, Ukraine

DOI: 10.13165/VPA-22-21-5-07

Abstract. *The main indicator of the success of innovative municipal administration is the provision of high-quality, accessible, and timely public services to both the population and economic entities located in this territory. The purpose of the article is to study innovative methods of optimizing the information and communication system of the local government of Ukraine in the changing conditions of nowadays. As a result, the category “innovative municipal administration” was defined as a the most complex type of management activity, which emphasizes the use of scientific and intellectual management resources, which is formed by the introduction and use of an effective information and communication system for the effective reproduction, distribution and use of available and potential resources in order to ensure a high standard of living for members of the territorial community, which*

will allow balanced development of the three most important systems: nature, civil society, and the economy. The authors found out that the central place of the system is, on the one hand, the development of mechanisms for effective information and advisory support, and on the other, the transferring of public services into electronic form, which will reduce time consumption, increase distribution channels, increase the overall socio-economic development of the territories, as well as deepen the reform of decentralization of power and the course of integration into the European space

Keywords: *public service, civil society, municipal administration, socio-economic development, regional authorities*

Introduction

The problems of introducing an innovative component in the activities of local authorities at all levels of public administration in Ukraine and, in particular, the optimization of the information and communication system have become especially urgent in the past few years. To date, the highest authorities are engaged in dialogue with the territorial communities to modernize the political system in the provision of public services at the local level. The transition to innovative foundations in the organization of the process of governance and the exercise of their powers for local government is no less urgent than for regional or state authorities. This is a necessary step in the context of European integration, which dictates new standards and procedures, and also provides an impetus for the modernization of the entire system of public governance of Ukraine (Kosteniuk 2018, p 142-148).

Such a formulation of the question is due not only to the orientation of the modern European state towards the consumer of services according to the new vision of the role of local government in this process, but also to the new challenges that constantly arise along with the emergence and development of the information society, which determines the new format of interaction between the government and civil society, as well as a higher level of community members' demands for public services (Auanasova et al. 2022, p. 14; Gharaibeh et al. 2012, p. 6227-6237; Ginters and Aizstrauta 2018, p. 659-668). At the same time, ensuring the accessibility and quality of these services by local self-government bodies, municipal institutions and organizations is one of the most important tasks of reforming local government in Ukraine and should be implemented not only using organizational, legal and financial, and economic measures, but also accompanied by the formation of a new information and communication system to ensure this direction of activity, including on the basis of the introduction of innovative technologies. Thus, the main problem of the article is due to the need to eliminate the inconsistency of the modern unsatisfactory state of development of information support for the provision of public services by local self-government bodies of the territories of Ukraine with the requirements of Ukrainian society and the standards of European developed countries. This problem is primarily related to the lack of integrated scientific and applied development, and therefore requires the development of sound methodological

approaches for the development and implementation of an integrated information and communication system for the functioning of local authorities on the basis of innovation (Shalbolova et al. 2021, p. 585-597; Goussous and Al-Jaafreh 2020, p. 319-332).

The purpose of the article is to study innovative methods of optimizing the information and communication system of the local government of Ukraine in the changing conditions of nowadays. To achieve the purpose, the tasks are as follows: 1) to clarify the definition of “innovative municipal government”; 2) to identify specific features of the provision of public services; 3) to create an innovative information and communication system to ensure the activities of local authorities in the provision of public services; 4) to research the working subsystems of the developed system and suggest ways to improve and innovate them in the prospects of their development.

Materials and Methods

Current trends in the socio-economic development of Ukrainian municipalities exacerbate the importance of optimizing the information and communication system for providing public services offered at the local level. The main purpose of introducing and implementing reforms in local government is to improve the efficiency of the management of the authorities of budget and other resources. In general perceptions, innovations in local government can be differentiated by implementation area:

- in the legal sphere – improving the legal and regulatory framework for the activities of local self-government bodies, taking into account the requirements of state legislation and the interests of the modern civil information society;
- in the social sphere – for example, in the education close to the authors – the creation of educational programs relevant and in-demand on the Ukrainian and world labor market, the diversity of educational institutions, the introduction of modern information and applied products into the educational process, etc.;
- in the economic sphere – the creation of a new investment mechanism, new methods of planning and budgeting, the introduction of modern information technologies and software products, etc.;
- in the budgetary and financial sphere – the creation of credit conditions favorable for small, medium, and large businesses, application of effective methods of budget equalization on the basis of the introduction of new information technologies, etc.;
- in the scientific and management sphere – development of new methodological approaches to management, service performance standards, modern communication system, etc. (Auanasova et al. 2019, p 1-4; Yevsiukova 2016, p. 55-63; Korzhyk et al. 2017a, p. 121-130).

Thus, all areas of innovation in municipal governance in one way or another require the use of an effective, universal, and functioning information and communication system that will allow the fullest use of the innovative component. Based on the above assumption and synthesis of scientific sources (Auanasova 2019, p. 5-11; Kuchabskyi 2020, p. 122-126; Telytska and Vasylieva 2014, p. 19-28; Sharyi 2012, p. 198-206) the definition of the category “innovative municipal administration” can be clarified, it is the most complex

type of management activity, which emphasizes the use of a scientific and intellectual management resource, which is formed by the introduction and use of an effective information and communication system for the effective reproduction, distribution and use of available and potential resources in order to ensure a high standard of living for members of the territorial community, which will allow balanced development of the three most important systems: nature, civil society, and the economy.

Results and Discussion

It should be noted that the main indicator of the success of innovative municipal administration is the provision of high-quality, accessible, and timely public services to both the population and economic entities located in this territory. In Figure 1, it is appropriate to show the main specific features of the provision of public services according to the four criteria (“provision of services”, “restrictions”, “concentration of services”, “monopoly of services”), which reveal their essence and main areas of improvement.

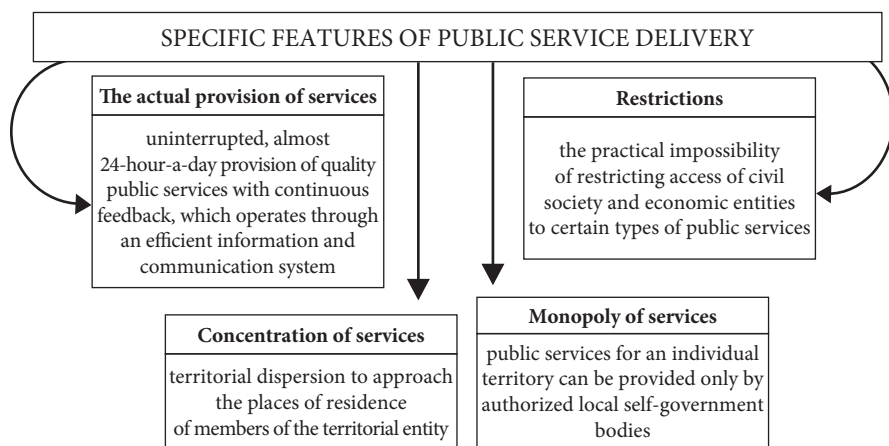


Figure 1. Specific features of public service provision

Source: Romanenko (2016), Lelechenko et al. (2020), Diegtiar et al. (2019)

Based on the study conducted in Figure 1, the author’s definition of the category “public service” can be provided, it is a specific administrative, managerial, social, and housing-communal service, which is provided within the powers of the local self-government body to civil society and economic entities that live or work in the relevant territory, the characteristic feature of which is the introduction and use of an effective information and communication system, as well as the absence of any restrictions on its use by consumers. So, now it is impossible to service the needs of civil society

and economic entities effectively without the involvement of information systems and technologies and requires the implementation of systematic information support for the management and service activities of local self-government bodies. Information support for public authorities should also be understood not only as separate activities but also as a complex factor in improving the efficiency of their management and service activities in the following areas, namely:

- effective interaction of authorities with citizens and enterprises;
- the effectiveness of the internal work of each agency;
- the effectiveness of mutually agreed interaction between state authorities and local self-government bodies (Nepomnyashchyi et al. 2020, p. 82-86; Buil et al. 2015, p. 95-102).

Based on the above theoretical and methodological studies, it is possible to develop a comprehensive innovative information and communication system for ensuring the activities of local self-government bodies to provide public services to the population and economic entities in Figure 2, which consists of the following interdependent and interconnected components:

- entrance to the system – is characterized by the presence of service providers, information and communication tools and contains the system's criterion apparatus;
- subsystem unit, which is divided into information and advisory support subsystem; regulatory and reference information subsystem; identification subsystem; electronic public service delivery subsystem; marketing subsystem; the monitoring, control, and assessment subsystem; electronic payment subsystem;
- exit from the system, which function is to analyze the quality of public services provided to the population and economic entities for the corresponding period.

As can be seen from Figure 2, a key aspect of the innovative information and communication system is the seven interconnected subsystems that form the core of the rest of the system. Therefore, it is appropriate to investigate each of the above subsystems and suggest ways to improve and innovate them in the prospects for their development.

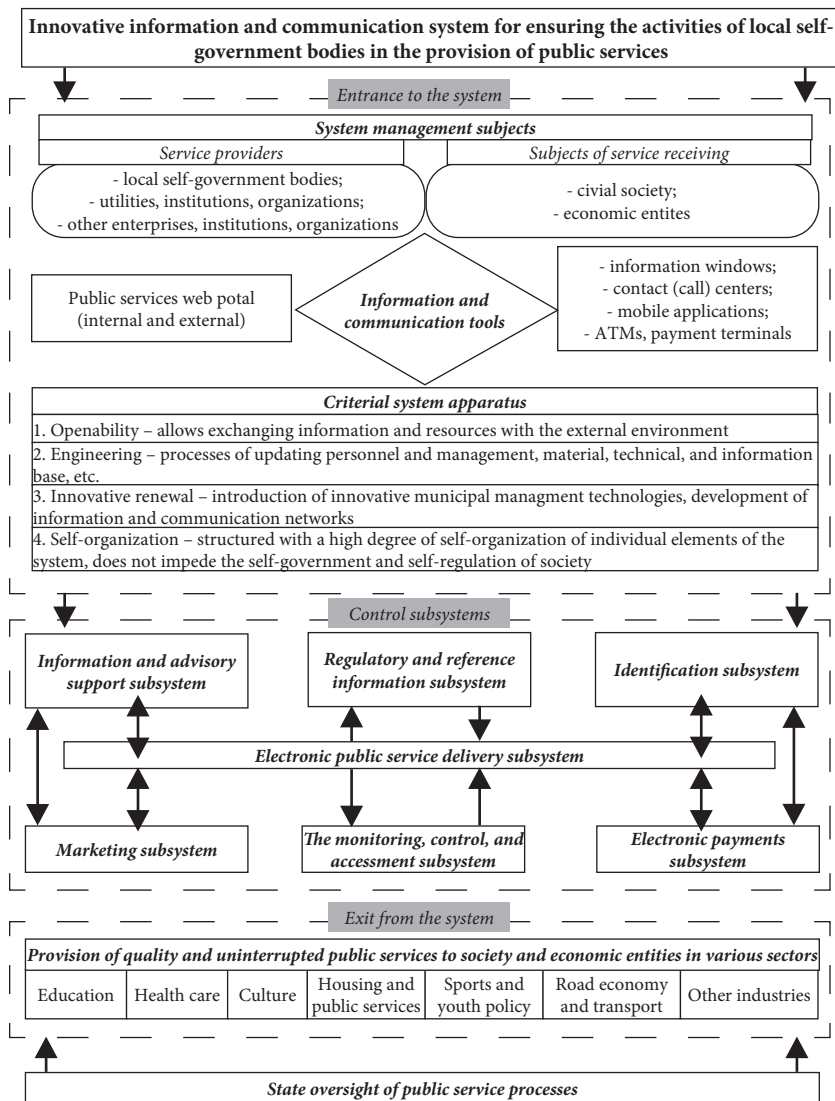


Figure 2. Innovative information and communication system for ensuring the activities of local self-government bodies in the provision of public services

Source: Shevchenko et al. (2020), Gevorikyan et al. (2018), Kruhlov and Tereshchenko (2019), Avanesova et al. (2020), Kuzmenko (2015), Kuibida and Smolova (2015)

I. Information and advisory support subsystem. The main objective of this subsystem is to introduce effective mechanisms for informing and advising the providers and recipients of public services (“entrance to the system,” Figure 2), as well as their training in the possession of available information and communication tools. This will allow remote access by civil society and business entities to the necessary data either independently or with the help of specialists. An important aspect of optimizing this subsystem is integration with existing information and reference systems of local self-government bodies, public, and other organizations, enterprises, institutions providing public services. But, as practical experience shows, local self-government bodies have their own electronic resources, which mainly reflect only reference information, but they are not enough, especially when it comes to the procedure, conditions, and timing of obtaining public services (Popova 2016, p. 254-260; Piera et al. 2013, p. 504-509). Therefore, it is proposed to introduce the web portal of public services (“entrance to the system,” Figure 2) as the main communication channel, where all available channels will become part of a multi-channel strategy that will provide the technical possibility of integrated electronic interaction of all management entities (feedback) by the system using various communication tools (information windows, contact (call) centers, mobile applications, etc.).

II. Regulatory and reference information subsystem. Its main purpose is to form and maintain regulatory and reference information databases on the provision of municipal services, that is, in other words, it creates and regulates the functioning of reference services. The creation of these resources is related to the following tasks: 1) the need to create comfortable conditions for assisting users of services by informing them about relevant changes in laws and regulations; 2) providing consumers with information on the specifics of the activities of local authorities and public service providers; 3) creation of appropriate transparency of electronic interaction.

III. Identification subsystem. This subsystem allows you to identify the subjects of obtaining municipal services, the formation, and maintenance of their personal database by remote (which is especially relevant at present pandemic COVID-19) reliable legal identification of a person in the process of electronic interaction. So, the user of public services should be personalized, the necessary level of his information security should be provided, which will optimize the process of functioning of other subsystems. Based on international experience, it is proposed to use an electronic ID number and password, smart cards, electronic digital signature to identify the subject (Popova 2016, p. 260-264; Shalbolova and Kenzheliyeva 2018, 05042). It should also be noted that information protection tools should correspond to the degree of importance of the document or information that is sent between subjects in electronically in order to save time and optimize the process of electronic interaction.

IV. Electronic public service delivery subsystem. The main purpose of this subsystem is to ensure uninterrupted support for the activities of local self-government bodies in the provision of public services, through the implementation of bilateral interaction between the providers and the receipt of these services in electronic form. Table 1 explores the main advantages of transferring public services into electronic form, as well as the disadvantages of this process, and suggests ways to solve them.

Table 1. Advantages, disadvantages, and solutions to the process of transferring public services into electronic form

No.	Advantages	
1	Allows exemption of citizens and economic entities upon obtaining public services from the presentation of any documents (passport, identification code, Unified Register of Businesses and Organizations code, other necessary documents), information about which is available in the information identification subsystem	
2	Allows to compare and extract information from information databases that were previously incompatible, since they were created at different times and on different platforms	
	Disadvantages	Ways to solve them
1	Lack of tools for interagency interaction.	Implementation of a single web-based public services portal where information will be collected from all subjects in the process
2	Lack of qualified professionals	Efficient operation of information and advisory support subsystem of knowledge training of available information and communication tools
3	Low level of information literacy of the population	Public awareness-raising, initial assistance of specialists, reduced complexity of operating information and software
4	Lack of resources for public service centres	Implementation of state assistance in this area as a key element in a certain course of government for decentralization and integration into the European socio-economic space
5	Resistance of officials to innovation, which limits their contact with customers (recipients) of services	Motivational measures to stimulate the effective work of civil servants in this direction, hiring qualified personnel for vacant prestigious positions

Source: Parhomenko-Kutsevil (2013), Polshakov et al. (2011)

In the results of the transferring of public services into electronic form, the following results will be obtained from the optimization of the entire system: 1) quick access to a complete information base for the provision of public services; 2) the possibility of obtaining information on the progress of the case through a personal electronic account or mobile applications; 3) implementation of “electronic” consultation; 4) introduction of “fast services”, popular in Europe; 5) monitoring of legality in the provision of public services (and the issuance of permits (licenses) throughout the territory by authorities at various levels; 6) monitoring the quality and timeliness of administrative services; 7) electronic interagency interaction: transfer and receipt of intermediate documents in electronic form in the process of providing documents of a permitting character, etc. Thus, the effective operation of this subsystem requires an integrated approach and is not possible without the preliminary or simultaneous implementation of other subsystems.

V. Marketing subsystem. It is necessary to fill the information flow with the necessary information for the functioning of departments and the work of their specialists (experts) in solving marketing tasks in order to improve the level of consumer satisfaction with the quality of public services. The main tasks and ways to optimize this subsystem are as follows: 1) clarification and synthesis of the list of subjects and objects of information;

2) systematization of information needs of other subsystems; 3) generation of a list of information sources; 4) improvement of the structure of the information database and description of its activities (updating, use, availability of search information on request, rearrangement of information according to the user's needs, etc.). Thus, the marketing subsystem is a supporting link between other subsystems and allows to group and organize existing information and find new sources of potentially important data and technologies.

VI. Electronic payments subsystem. As the international experience shows, this subsystem allows the correct, legitimate, and safe carrying out of the necessary electronic payments for public services provided on a fee basis (Vynohradova 2015; Korzhyk et al. 2017b, p. 1485-1497). Its implementation will provide the following benefits and results: 1) reduce the cost of organizing and maintaining the entire acceptance of payments infrastructure; 2) improving the speed and convenience of operations for all subjects; 3) monitor the current and potential status of debts and liabilities; 4) will enable the receipt of accruals and payment for public services provided 24 hours a day, 7 days a week.

VII. The monitoring, control, and assessment subsystem. It is developed to ensure the quality control of the results of the provision of public services to entities, which will contribute to improving the quality of their provision by constantly monitoring the procedure for their implementation, by providing "feedback" on the results of the implementation of requests and appeals of citizens, identifying "bottlenecks," abuses and corruption, as well as a comprehensive assessment of the performance of officials (Lelechenko et al. 2020, p. 9-14).

Conclusions

1. Based on the identification of the realization of innovations in local government (legal, social, economic, fiscal, scientific, and managerial) the definition of the category "innovative municipal administration" was clarified, it is the most complex type of management activity, which emphasizes the use of scientific and intellectual management resources, which is formed by the introduction and use of an effective information and communication system for the effective reproduction, distribution and use of available and potential resources in order to ensure a high standard of living for members of the territorial community, which will allow balanced development of the three most important systems: nature, civil society, and the economy.
2. An innovative information and communication system for the provision of public services by local self-government bodies has been established, consisting of the following interdependent and interrelated components: entrance to the system – is characterized by the presence of service providers, information and communication tools and contains the system's criterion apparatus; subsystem unit, which is divided into information and advisory support subsystem; regulatory and reference information subsystem; identification subsystem; electronic public service delivery subsystem; marketing subsystem; the monitoring, control, and assessment subsystem; electronic payment subsystem; exit from the system, which

function is to analyze the quality of public services provided to the population and economic entities for the corresponding period.

3. A generalizing conclusion is made that the central place of the system is, on the one hand, the development of mechanisms for effective information and advisory support, and on the other, the transferring of public services into electronic form, which will reduce time consumption, increase distribution channels, increase the overall socio-economic development of the territories, as well as deepen the reform of decentralization of power and the course of integration into European space.

References

1. Auanasova, A., Burkitbay A., and Nurpeisov, E. Bases and Legal Status of State Symbols of Kazakhstan: Historical and Legal Discourse. *Istoriya*, 2019, Vol. 10, No 1, p. 1–11. <https://doi.org/10.18254/s0002558-2-1>.
2. Auanasova, A., Nurpeisov, E., Auanassova, K., Kushenova, G., and Mukhlissov, N. The History of the Alash Party in the Context of the Impact on the Processes of Constitutional Acts. *Ancient Asia*, 2022, Vol. 13, No. 6, p. 14. <http://doi.org/10.5334/aa.234>.
3. Avanesova, N.E., Mordovtsev, O.S., and Serhiienko, Yu.I. Theoretical and methodical bases of identification and interrelation of the influential destabilizing factor on economic safety of the industrial enterprise. *Business Inform*, 2020, Vol. 9, p. 20-28. <https://doi.org/10.32983/2222-4459-2020-9-20-28>.
4. Buil, R., Piera, M.A., Gusev, M., Ginters, E., and Aizstrauts, A. Mass simulation for decision making in urban policy design: Bicycle infrastructure. *International Conference on Harbour, Maritime and Multimodal Logistics Modelling and Simulation*, 2015, p. 95–102. *Bergeggi: I3M Conference*.
5. Diegtiar, O.A., Orlova, N.S., Kozureva, O.V., Shapovalova, A.M., and Prykazka, S.I.. Financial capacity of territorial communities: european experience and ukrainian case. *Collection of Scientific Works "Financial and Credit Activity: Problems of Theory and Practice"*, 2019, Vol. 4, No 31, p. 516-526.
6. Gevorkyan, A.Yu., Druhova, O.S., and Klepikova, S.V. Factors influencing the determination of investment attractiveness and business value. *Bulletin of the National Technical University "Kharkiv Polytechnic Institute"*, 2018, Vol. 19, No 1295, p. 131-134.
7. Gharaibeh, B., Al-Refai, A., Goussous, J., and Shurrab, M. Effect of CCMS on customer satisfaction and loyalty in Jordanian banks. *Information (Japan)*, 2012, Vol. 15, No 12C, p. 6227-6237.
8. Ginters, E., and Aizstrauts, D. Technologies sustainability modeling. *Advances in Intelligent Systems and Computing*, 2018, Vol. 746, p. 659-668.
9. Goussous, J., and Al-Jaafreh, O. Sustainable tourism development in historical cities case study: Karak, Jordan. *Advances in Science, Technology and Innovation*, 2020, p. 319-332.
10. Korzhyk, V., Khaskin, V., Voitenko, O., Sydorets, V., and Dolianovskaia, O. Welding technology in additive manufacturing processes of 3D objects. *Materials Science Forum*, 2017a, Vol. 906, p. 121-130.

11. Korzhyk, V.N., Kulak, L.D., Shevchenko, V.E., Kvasnitskiy, V.V., Kuzmenko, N.N., Liu, X., Cai, Y.X., Wang, L., Xie, H.W., and Zou, L.M. New equipment for production of super hard spherical tungsten carbide and other high-melting compounds using the method of plasma atomization of rotating billet. *Materials Science Forum*, 2017b, Vol. 898 MSF, p. 1485-1497.
12. Kosteniuk, N.I. The main directions of reforming the system of local self-government in Ukraine based on the experience of foreign countries. *Public Administration and Local Self-Government*, 2018, Vol. 2, No. 37, p. 142-148.
13. Kruhlov, V., and Tereshchenko, D. Public-private partnership as tool for developing regional labor potential. *Science and Innovation*, 2019, Vol. 15, p. 5-13.
14. Kuchabskiy, O.H. *Administrative-territorial organization of Ukraine: theory, methodology, mechanisms of formation*. Lviv: Lviv Regional Institute for Public Administration of the National Academy for Public Administration under the President of Ukraine, 2010, p. 122-126.
15. Kuibida, V.S., and Smolova, L.M. Responsibility of representative bodies of local self-government before territorial communities: practical aspects of implementation. *Collection of Scientific Works of the National Academy for Public Administration under the President of Ukraine*, 2015, Vol. 1, p. 146-163.
16. Kuzmenko, O.V. *Theoretical principles of the administrative process*. Kyiv: Atika, 2015.
17. Lelechenko, A.P., Diegtiar, O.A., Lebedinska, O.Y., Derun, T.M., and Berdanova, O.V. Mechanisms of inter-state communications for solving sustainable development problems. *Asia Life Sciences*, 2020, Vol. 29, No 2, p. 1-14.
18. Nepomnyashchyi, O.M., Marusheva, O.A., Prav, Yu.H., Medvedchuk, O.V., and Lahunova, I.A. Certain aspects of the system of public administration of universities: World practices and the Ukrainian dimension. *Universal Journal of Educational Research*, 2020, Vol. 8, No 11D, p. 82-86. <https://doi.org/10.13189/ujer.2020.082411>.
19. Parhomenko-Kutsevil, O.I. Current trends in the development of reengineering in the public administration system. *Efficiency of Public Administration*, 2013, Vol. 36, p. 20-26.
20. Piera, M.A., Buil, R., and Ginters, E. State space analysis for model plausibility validation in multi agent system simulation of urban policies. In: *25th European Modeling and Simulation Symposium, 2013 (EMSS 2013)*, p. 504-509). 25-27 September, Athens, Greece.
21. Polshakov, V.I., Danchenko, O.B., and Polshakov, I.V. *Business process reengineering*. Kyiv: University of Economics and Law "KROK", 2011.
22. Popova, O.L. Rural development as a component of modern agricultural policy. *Scientific Bulletin of the National University of Life and Environmental Sciences of Ukraine. Series: Economics, Agricultural Management*, 2016, Vol. 247, p. 254-264.
23. Romanenko, Y. Place and role of communication in public policy. *Actual Problems of Economics*, 2016, Vol. 176, No 2, p. 25-31.
24. Shalbolova, U., and Kenzhegaliyeva, Z. Main directions of smart city development in the republic of Kazakhstan. *MATEC Web of Conferences*, 2018, Vol. 251, 05042.

25. Shalbolova, U.Zh., Chikibayeva, Z., Kenzhegaliyeva, Z., and Kim, E. Public-private partnership in the housing and communal services and university housing infrastructure of Kazakhstan. *Public Policy and Administration*, 2021, Vol. 20, No 5, p. 585-597.
26. Sharyi, V.I. Modernization of realization of the state policy of the organization of the organization of city self-government in Ukraine. *Public Administration and the Town of Self-Government*, 2012, Vol. 1, No 12, p. 198-206.
27. Shevchenko, I., Nepomnyashchyi, O., Marusheva, O., Medvedchuk, O., and Lahunova, I. Marketing communications management in the public administration system. *International Journal of Criminology and Sociology*, 2020, Vol. 9, p. 2882-2890.
28. Telytska, V.A., and Vasylieva, O.I. Activities of public authorities and local self-government in the field of administrative services as an object of control. *Scientific Bulletin of the Academy of Municipal Administration. Management Series*, 2014, Vol. 1, p. 19-28.
29. Vynohradova, O.V. *Business process reengineering in modern management*. Donetsk: Donetsk National University of Economics and Trade named after Mikhail Tugan-Baranovsky, 2015.
30. Yevsukova, O.V. Organizational and legal conditions for ensuring the results of the effectiveness of the service-oriented system of state and municipal government. *Scientific Bulletin of the Academy of Municipal Administration. Public Administration Series*, 2016, Vol. 2, p. 55-63.

Oleg A. Diegtiar – Full Doctor in Public Administration, Associate Professor, Department of Management and Public Administration, O.M. Beketov National University of Urban Economy in Kharkiv, Kharkiv, Ukraine

E-mail: diegtiar.ole.a@gmail.com

Tetyana A. Kravchenko – Full Doctor in Public Administration, Professor, Department of Public Administration and Land Management, Classic Private University, Zaporizhzhia, Ukraine

E-mail: kravchenko.teta@yahoo.com

Olena L. Yevmieshkina – Full Doctor in Public Administration, Associate Professor, Department of Public Administration and Economy, V.I. Vernadsky Taurida National University, Kyiv, Ukraine

E-mail: o.yevmieshkina@outlook.com

Tetiana V. Sych – Full Doctor in Pedagogy, Associate Professor, Department of Public Service and Management of Educational and Social Institutions, Luhansk Taras Shevchenko National University, Starobilsk, Ukraine

E-mail: tetsych.ua@gmail.com

Yana M. Linetska – Postgraduate Student, Department of Public Administration and Local Government, Kherson National Technical University, Kherson, Ukraine

E-mail: linetskayana@yahoo.com