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CITY SMART POTENTIAL AS A BASIS FOR SUSTAINABLE DEVELOPMENT

Abstract

The section paper makes the theoretical and methodological substantiation of conceptual foundations and mechanisms regarding public management of Smart-potential of the city as a basis for sustainable development in the conditions of post-war recovery in Ukraine.

The relevance of the chosen research topic is defined by the fact that Ukraine has joined the global pursuance of sustainable development in particular, Goal 11, which consists in ensuring the openness, safety, viability and environmental sustainability of cities and settlements, where residents have a decent standard of living, which encourages the search for ways to ensure this process. Public management of Smart-potential is a basis of this strategy at the state, regional and local levels.

It is established that the formation and development of Smart-potential of the city depends on a number of conditions and factors, which the authors divides into external and internal ones; their essence and features of influence are revealed. It is offered to classify the specified conditions into institutional, economic, social

and infrastructural ones. The essence of the complex mechanism in public management of Smart-potential of the city, which integrates the institutional, financial, social, and infrastructural mechanisms, is brought to light.

It is proved that the process of public management of Smart-potential of the city depends on the priorities of regional development, which serve as strategic guidelines for the movement and institutional design of a particular society that is formed as a result of social transformations.

The application of the methodological triad of research on the basis of integration of systemic, universalist, and activity-related paradigms allowed to determine the structural and functional characteristics of Smart-potential of the city.

Key words: public management, Smart-potential of the city, sustainable development, government authorities, local self-government authorities.

Problem statement. Successful management of the City Smart potential is one of the most important factors in ensuring the sustainable development of cities and the country as a whole.

The spread of smart ideology in the construction of urban space in Ukraine necessitates the creation of an integrated mechanism of public management of the City Smart potential, as well as the creation of conditions for its most effective use. The management of City Smart potential becomes one of the main priorities of the urban development of Ukraine under the conditions of comprehensive digitalization, rapid growth of population mobility and prospects for the post-war reconstruction of Ukraine.

Effective public management of City Smart potential involves the analysis and consideration of all the factors that influence the course of this process, including institutional, financial, social, and infrastructural factors.

The objective factors of the City Smart potential implementation are

economic, ecological, socio-political, psycho-physiological, ethical-aesthetic, legal, ideological factors, etc. The City Smart potential management process depends on the priorities of urban development that serve as strategic guidelines for the movement and institutional design of a particular society, which is formed as a result of social transformations.

Literature review. The theoretical and methodological principles of public management to ensure the achievement of sustainable development goals, urban development policies are substantiated in the works of Andriienko, 2018 [1]; Bashtannyk, 2016 [3]; Bobrovskyi, 2020 [4]; Buryk, 2017 [5, 6]; Lipovska, Khozhylo, 2021 [8] and others. In Ukraine, there are active processes of forming the electronic information space and integrating all the main branches of social activity into it. The introduction of digital technologies is defined as a priority task in a number of projects and national documents for the development of the Internet industry and the creation of an "electronic state" based on it (Order of the Cabinet of Ministers of Ukraine dated January 17, 2018 No. 67; Digital Agenda of Ukraine – 2020 [7, 9]).

An important achievement of the development of information technologies in Ukraine was the creation of a system of electronic governance, which consists in the implementation of management functions with the help of modern information and telecommunication technologies, electronic interaction and electronic information exchange in the processes of management communication, the creation of information and analytical support systems for public authorities. Today, it can be claimed that Ukraine has built a national system for the provision of electronic services that has significantly increased their timeliness and quality. The human-centric concept of the state has become a valuable paradigm for changes in the provision of administrative services.

Smart technologies have gained considerable popularity, and they have certainly already found their place in the composition of management

technologies. Smart technologies were considered in the works of Voronkova, Romanenko, Andriukaitienė, 2017 [12]; Ryzhova, Zakharova, 2018 [10]; Semenov, Stompel, 2011 [11]; Sokolovska, 2014 [21] and others, although specific methodological and practical recommendations regarding public management of the City Smart potential have not yet been proposed.

The term SMART was introduced by Peter Drucker in 1954 (Drucker, 2007) [15]. The interpretation of this abbreviation is as follows: S (specific) – specificity; M (measurable) – measurability; A (achievable) – achievability; R (relevant) – relevance; T (time bound) – time limitation. The conceptualization of the mentioned term led to the emergence of the terms smart education, smart technology, smart society, smart specialization of strategic and current activities, etc. Numerous scientific and technical conferences were held, thesis papers were defended, educational programs and training manuals appeared. Attention was also drawn to the creation of smart centers of public life. Smart society began to be seen as the improvement of all the areas of people's lives and the creation of information technologies to ensure the quality of life. Cities with clearly formed smart qualities (Kyiv – smart cities, smart regions, smart metropolises) appeared (Kyiv Smart City Concept 2020 [16, 17]) that chose their smart way of intelligent existence, intelligent performance of their social tasks in further development and intelligent organization of own life processes.

The purpose of the article is to investigate theoretical and methodological approaches to the interpretation of the smart potential of the city as the basis for sustainable development**.**

Presentation of the main material. The level of development of the smart potential of cities in different countries is different both by the totality of components and by individual functional areas. The components of the project of the smart potential of cities are different, since at the moment there are no specific generally accepted criteria for its assessment. However, a number of elements of

the digitization of the economy are highlighted that are part of the implemented strategies for creating "smart" cities.

The components of a "smart" city (or functional regions) traditionally include the following (Byrkovych T., Byrkovych V., Kabanets, 2019 [14]): transport (intelligent transport systems, payment systems for the use of infrastructure, "smart" parking lots, information alerts for citizens, ecological personal and public transport); energy ("smart" energy consumption meters, final consumption management, electric transport infrastructure, renewable generation); utilities ("smart" meters, water consumption control, leak detection and emergency management, innovative methods of water purification, monitoring of the working hours of utilities machines); urban environment (control of air pollution and noise level, "smart" lighting, "smart" waste disposal, road surface monitoring, urban planning and land use management, social services); security ("smart" video surveillance, communication of citizens with emergency services, systems for recognizing car license plates and shots from firearms for operational actions of special services); "smart" building (remote management of the building and apartment, "smart" devices, energy-efficient design of buildings).

The concept is also very relevant from the point of view of global plans of the UN: one of the goals of sustainable development until 2030 on the agenda of the 70th session of the UN General Assembly is dedicated to cities and settlements. According to the agenda, cities must remain productive: people must find decent work in cities, businesses can produce and trade efficiently, this requires a successful infrastructure, which means networks of roads, public transport, energy, water supply and sanitation, waste processing systems, an effective court system to enforce contracts and other elements; ensure social integration: the city should not be a place that widens the gap between the rich and the poor.

With the strengthening of the decentralization process, smart city concepts are being actively implemented in Ukraine. About 7-10 cities in Ukraine already

have relevant projects and initiatives. The concept of a smart city is a model of the city using digital technologies to solve the current problems of the city, its sustainable development and the comfortable life of citizens.

The history of Kyiv Smart City has begun in 2015 and is actively changing approaches in the management and implementation of services. The Kyiv Resident Card and a single travel card, online petitions, doctor's appointments, enrollment of a child in preschool education institutions, the operation of the city's video surveillance system with a system for recognizing faces, car numbers, road traffic management and much more have been introduced. However, the Smart City is being built not only in Kyiv. Taking into account world experience, in recent years, the implementation of both complete concepts of the "smart city" and individual tools has begun in some cities of Ukraine: Ivano-Frankivsk, Lviv, Zaporizhzhia, Drohobych, Poltava, etc. At the same time, not only large cities and regional centers are becoming "smarter", but also cities of regional importance – Mukachevo, Chervonohrad, Nikopol, etc.

Let’s analyze the public management of the smart potential of Nikopol city in the context of the activities of the Nikopol City Council. Nikopol city that is currently being destroyed day by day by daily shelling, before the start of the Russian-Ukrainian war, has been the fourth most populous city in the Dnipropetrovsk region, with more than 100,000 people living there.

The new version of the Nikopol City Council website was developed in 2015 by a local entrepreneur, the website is registered on the domain dp.gov.ua, hosted by UH.ua. The platform on which the site has been created allows, if required, to expand its functionality by introducing new services and tools provided within the framework of the E-reception system, in particular, the creation of an electronic office of a city resident. Information about electronic services implemented in the municipality is posted in a separate section of the city council's website – Services.

In addition, the link to these resources is duplicated on the main page of the site. Almost all of them, except for electronic appeals, work on free platforms.

City residents have access to the following electronic interaction tools:

Electronic appeals – on the official website of the city council in the "Questions to the Mayor" section, the user has the opportunity to send an appeal to the head of the city by filling out an online form and view responses to previously sent citizen appeals;

Electronic petitions – the account of Nikopol city is created on the Unified System of Local Petitions website, the link to the resource is posted on the website of the city council. The activity of city residents in the use of this service is practically zero – currently there is information about one registered electronic petition;

Participatory budget – the city account is created on the Unified System of Public Initiatives (Public Budget section), the users can familiarize themselves with the projects of public initiatives and, if desire, vote; Open City – a link is posted on the main page of the site, after clicking on which the user gets directly to the office of the city of Nikopol. The service has been operating in the city since 2016, but its use has been suspended (the last date is March 2018), because the city council has not identified those responsible for supporting the resource and has not developed an algorithm for receiving and processing citizens' appeals received through the platform;

Access to open data – there is an Open Data section on the city council's website, but information is published mainly in non-machine-readable formats. On the main page of the City Council website, there is also a link to the Unified State Web Portal of Open Data, the account of the City Council Executive Committee is created on this resource, but only 2 sets of data have been published. Other information managers of the City Council do not publish open data on the web portal; Access to electronic services – on the website of the city council, in the

Services section, the Provision of Electronic Services in Nikopol section is created that contains a list of electronic administrative services with the possibility to go to the State Services Portal using hyperlinks https://igov.gov.ua; Justice E-services Account – on the main page of the site there is a link to the Online House of Justice web service, using which the user can remotely receive services that are within the competence of the Ministry of Justice of Ukraine and its territorial bodies.

The achievements and experience of the Nikopol City Council that will become the basis for effective public management of the smart potential of the city:

–availability of an active informatization program – Electronic Nikopol;

–quite high level of software and technical support of the city council;

–availability of qualified specialists in the department responsible for the development of information and communication technologies;

–availability of an effective electronic document management system;

–experience of work with electronic appeals of citizens.

The state of development of smart e-governance as an innovative approach to solving the problems of «smart» city management is analyzed using the example of the Nicopol City Council. It was determined that taking into account the experience of using ICT and the improved mechanisms of remote work, e-governance can be understood as achieving a clear level of implementation of management tasks through ICT, which contributes to a smart, well-organized, fast, convenient, and transparent policy-making process with the provision of information and practical solutions for citizens in general, including the performance of management tasks during a crisis period (Andriienko, 2019).

The experience of cities demonstrates that some of the electronic resources created in municipalities are quite actively used by residents, while there is practically no interest in others. The reason for this is the different intensity of informing the community about the functionality and possibilities of the created services.

That is why, during the development of public management of the smart potential of cities, it is extremely important to develop an effective plan for an information and communication campaign in each city and ensure a high level of awareness and understanding of city residents regarding the features of using the created services, as well as the advantages and opportunities they provide in the communication process with local authorities. Each city chooses and determines the directions of smart development independently. Each city of Ukraine, as a rule, has its own priority tasks. For some, these are issues related to security, for others, improvement of the operation of public transport, for others, reduction of energy consumption at homes. But no problem will be effectively solved until the city has a basic smart infrastructure (Smart Cities of Ukraine, 2022 [16]).

The implementation of the "Smart City" concept in the management of a large city consists not only in the automation of management processes and digitalization of services, but in fundamental changes to the system of public management and the use of city services. Accordingly, the vision of the "smart city" of the city is the expansion of the space for the use of digital technologies for better management of the common resources of the community and reduction of the burden on the environment for the provision of modern and popular public services (Andriienko, 2019 [2]).

The effectiveness of public management of City Smart potential, the most complete implementation of the set goals, largely depends on the choice of options for construction of the system of City Smart potential public management, knowledge of the mechanism of its functioning, and the choice of the most optimal technologies and operation methods.

According to the authors, the structural elements of the City as a sphere of formation of City Smart potential include those of them that ensure production, use and dissemination of knowledge formed and functioning in a particular City, namely: the field of research (scientific research institutions) formed and operating

in the City; urbanal education system; urbanal innovation environment; cultural institutions of the City; and enterprises and organizations of all forms of ownership providing the capitalization of knowledge and innovation. These elements determine the content of City Smart potential of the City, forms of its manifestation and impact on sustainable development of the territory.

Thus, the public management of the City smart potential is a set of targeted influences on the extent of its ability at a given level of its development in a specific space-time continuum to implement the opportunities contained in its existing smart resources, with the aim of ensuring the priorities of urban development based on the totality knowledge, information, innovative technologies, intellectual property and the ability to set goals and achieve goals that is permanently reproduced.

In the process of City Smart potential public management, differences between cities and internal and external factors that influence this process should be taken into account. Internal factors are determined by the individuality of the city. The internal environment includes the objectives of the City Smart potential public management mechanism, resources, size, horizontal and vertical division of labor.

These factors are controlled to varying degrees. Decisions made by management regarding internal factors determine how effective, efficient and productive the integrated mechanism of City Smart potential public management will be.

External variables are environmental factors outside the city that significantly affect its development. External variables include other cities, social factors, government regulation, and others. At the same time, simply identifying which factors have a stronger influence on the development of the city, and which ones less, is not enough to determine the best solution for increasing the competitiveness of the city.

The implementation algorithm of the specified process contains a sequence of steps aimed at creation of a favorable innovation climate, protection of intellectual

property and its producers, development of the knowledge economy, and achievement of sustainable development priorities.

Inclusion of the problems of the City Smart potential public management in the list of the main goals and tasks of sustainable development of cities expands the tasks of management, changes the functions and structure of the relevant services. Not only regional state authorities, local self-government bodies, but also the city's leading enterprises and educational institutions, as well as public administration structures, are the subjects of public management of the City Smart potential.

The most important issues regarding the development of the smart city concept in Ukraine are the modernization of city infrastructure and the implementation of effective resource management (using the Internet of Things, green technologies, smart networks); transformation of the city management system based on the integration of systems and data; the need to define economic models of urban development taking into account not only natural, industrial, but also human potential (cities as centers of innovation and development of human potential).

Conclusions. Summing up, we can emphasize that the Smart City concept is not completely defined, it is mobile and changeable just like the technologies used in its implementation. Different researchers offer their options of the constituent parts of the concept. In this regard, there is no precise and unified definition and approved composition of elements characteristic of a "smart city", they may differ depending on the environmental conditions and needs of each specific urban community.

However, it is worth noting that different countries, leading international organizations and companies share a common vision of the Smart City concept. According to this vision, the city: becomes sustainable and flexible; involves the public, establishes a dialogue between the authorities and the population, applies common management methods; works at the intersection of various spheres of life

and urban subsystems; effectively uses the collected data; aims to improve the quality of services and the standard of living for citizens and other city users.

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