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ИССЛЕДОВАНИЕ СУЩНОСТИ И НЕОБХОДИМОСТИ ПУБЛИЧНОГО АУДИТА КАК ВЕКТОРА МОДЕРНИЗАЦИИ ГОСУДАРСТВЕННОГО УПРАВЛЕНИЯ И ФИНАНСОВОГО КОНТРОЛЯ В УКРАИНЕ

Раскрыта экономическая сущность и цели публичного аудита. Обоснована необходимость формирования института публичного аудита в Украине как предпосылки модернизации отечественной системы государственного управления и финансового контроля в направлении обеспечения прозрачности и эффективности реализации функций управления бюджетными средствами, государственным и коммунальным имуществом, открытости и подотчетности общественности с учетом зарубежного опыта.

Ключевые слова: гражданское общество, государственный финансовый контроль, государственное управление, подотчетность, публичный аудит.

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EVALUATION OF THE POTENTIAL OF SMART-SYSTEMS

Проведено аналіз SMART-технологій, що застосовуються для розвитку міст і територій. На основі аналізу міжнародного досвіду та розробки проблематики українських міст, визначено доцільність застосування поняття SMART-територій, що охоплює більшу кількість показників оцінки та дає більше можливостей для розвитку територій.

Ключові слова: SMART-технології, SMART-місто, SMART-території, потенціал розвитку, розвиток, оцінка потенціалу розвитку SMART-територій.

1. Introduction

The modern socio-economic and production systems develop under conditions of transfer to the new technological order – the use of innovative SMART-technologies. Their further development will help to provide the effective functioning of economic and social systems, give a possibility to transfer on qualitatively new level of population life, economy and production functioning. SMART-technologies gain more spread to provide the effective management of the subjects of economic activity, cities and territories.

2. The object of research and its technological audit

The use of SMART-technologies gained a wide spreading in European countries and the USA. Last years the Ukrainian local authorities start to introduce the leading experience of SMART-technologies use for the stable development of cities and territories. The effectiveness of these technologies use, proved on practice by many countries, makes them more popular, favors the permanent development and improvement. New-York, London, Barcelona, Copenhagen, Helsinki, Vancouver, Wien, Singapore, Brisbane, Los-Angeles, Montreal, Bogota and Sidney – the

cities that successfully combine innovative technologies that provide automatization of numerous processes of giving municipal services with provision of the high level of social standards of population (life level, eco-friendliness, comfort of city for living, medical, educational services, infrastructure development and so on) are at top-rating of SMART-cities for today. Ukrainian cities only start to develop in the direction of SMART-technologies use. If the questions of life comfort are considered in All-Ukrainian cities ratings, the aspects of «digital city development» are not yet usual for the analysis of Ukrainian cities potential. According to the life comfort level, the tree leaders were named in 2016 – Vinnytsia, Kharkiv and Lviv. The city rating was formed according to the following parameters: level of patriotism, level of corruption, level of confidence to the local and state authorities, evaluation of the quality of municipal, medical, educational and other consumer services. Although the level of evaluation of these parameters partially depends on technologies, used for organization of giving services to population, the distinct positioning of rating parameters is not applied to the SMART-technologies. So, the question of evaluation of potential of the development of Ukrainian cities and territories taking into account the general world tendencies of SMART-systems formation is urgent.

3. The aim and objectives of research

The aim of the article was to determine the parameters of evaluation of the development potential of cities and territories using SMART-technologies.

For attaining the set aim, the following objectives were determined and solved in the article:

1. The theoretical aspects of the notion of SMART-technologies were analyzed.
2. The international experience of SMART-technologies use for the cities development was analyzed.
3. The offers as to the improvement of the system of evaluation of SMART-cities development potential by using the parameters of agglomeration analysis were elaborated.
4. The definition of the notion of SMART-territories as more complex notion for analysis of development potential of city and regional systems was offered.
5. The selection and classification of the parameters of evaluation of development potential of the territories by the level of SMART-technologies introduction were carried out.

4. Research of existing solutions of the problem

The study of the problems of SMART-technologies and their use for the development of cities and territories is relatively new question, considered in the works of scientists, especially [1–10]. Thus, Dennis Mitzner and Julie Steiger elaborated the theoretical aspect of the research of the notion «smart technologies». As a result of research, the authors offered the set of parameters for the analysis of the level of SMART-technologies use. The works «Telecommunications and the city: electronic spaces, urban place», «Is there a Need for a Cloud Platform for European Smart Cities?», «Triumph of the city: how our greatest invention makes us more rich, clever, eco-friendly, healthy and happy» and other described the first results of SMART-technologies use in the different cities of the world, their specificity and features of the use. The world experience of evaluation of SMART-technologies use and ratings of the leading cities of the world were cited in innovative journal «Co. Exist». The rating parameters were elaborated on the base of the works of leading scientists, who worked on elaboration of this question.

5. Methods of research

The following methods were used for the solution of objectives, set in the article: the analysis and synthesis, structural-logical methods, generalization, statistical methods, analogy, comparison.

6. Research results

The notion of SMART-technologies includes the wide spectrum of elements, connected with technological renewal and using innovative approaches for the development of systems of different types. The works of SMART-technologies were used to raise the level of the management of socio-economic, technological development for providing the effective cities development and application of approaches of «municipalities competitiveness». The conception of SMART-city is directed on the transfer of urban system on

qualitatively new level of development. The SMART-city is a conception of using new technologies as an instrument of creating the comfort living conditions for urban population. At that the researchers of SMART-systems note that the conception of «smart» city is not only in technological re-equipment and automation but also in harmonious co-existence of all social and economic systems.

According to the professor Sam Musa, SMART-city is a conception of integration of information-communication technologies, directed on the increase of effectiveness of municipal management (management of property, assets, city real estate, housing economy, sphere of social and consumer services) as an element of city development for satisfying the needs of its dwellers [8].

The use of SMART-technologies is a widespread world practice. The international net of consulting companies «Pricewaterhouse Coopers» has presented the report as to the SMART-technologies development in five most intensively developing cities of the world that follow the SMART-conception. Among the cities, presented in the report, New-York, Barcelona, London and Sidney were noted. The development of each city was analyzed according to the system of criteria of SMART-technologies use and the leading positions were determined for each direction of the cities-leaders. The results are presented on the Fig. 1.

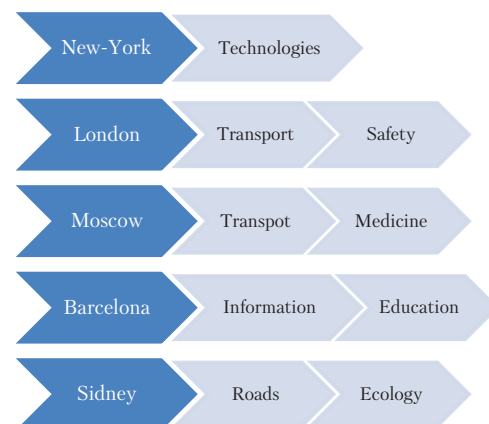


Fig. 1. The leading positions in using SMART-technologies of leading cities, developing in direction of SMART-conception

The cities, defined on the Fig. 1, as the leaders of SMART-technologies development have their own features. New-York is in the lead in using innovative technologies, applying different gadgets in the systems of the management of municipal development. This city gained the leading positions due to the activity aspect – holding of conferences, fairs, expositions that attract to the city the famous scientists, who accumulate their scientific experience and share it, providing the technological development. The one of such technological innovations is MODA system – technology of collection, processing, analysis of information as to the fires and their future prevention; BigBelly technology – automated system of monitoring of rubbish accumulation; Watson Health technology – technology of collection, processing, analysis of information about the health of population using the combination of indications of smart watches, bracelets, smartphones supplements and so on in integral system. London chose the use of Transport for London (TfL) – the open system that allows observe

the movement of public transport, to prevent crashes and supernumerary situations on the roads and with municipal transport using the supplement for smartphones and other gadgets. The SAS is also directed on fires prevention. It realizes the modeling of city districts according to the criteria that can cause fire, makes monitoring, collection and analysis of statistical data, directed on emergencies prevention. Barcelona uses the integral system of evaluation of indicators for all directions of the «smart city» development Sentilo that accumulates the great number of information and constructs on the base of its analysis the models of prognosticated development of all municipal systems. Sidney Coordinated Adaptive Traffic System is an adaptive system of control on the roads, used in Sidney before the invention of the notion «smart city». It provides the correction of the intervals of the work of automated systems of the transport management depending on traffic intensity. The environment protection in Sidney is carried out at the expense of the programs of monitoring of the state of city atmosphere at the expense of sensors of ecological factors, placed along the city, which analysis gives a possibility to detect the environmental problems and to provide the correcting effects to increase the eco-friendliness of development in one or another district of the city. Moscow is a single megalopolis that has the information system of health protection, the complex system of collection, processing, analysis of information about the population morbidity, monitoring and determination of managerial decisions as to the increase of medical service effectiveness [12].

The analysis of international experience of the use technologies of SMART-city construction gives a possibility to determine the main directions for city development within SMART-conception – the results of research are united in the Table 1.

Table 1

The parameters of evaluation of SMART-technologies use for the city development

Author	Offered parameters
Frost, Sallivan [9]	SMART-management, SMART-energetics, SMART-home, SMART-mobility, SMART-infrastructure, SMART-technology, SMART-medicine, SMART-citizen
Giffinger R., Fertner C., Kramar H., Kalasek R., Pichler-Milanovic N., Meijers E. [10]	Smart economy, smart mobility, smart environment, smart people, smart life, smart management
Ganin O. B., Ganin I. O. [11]	Effective innovative infrastructure, Creation of comfort business-environment, Technological platforms, Housing stock, Energy supply, Infrastructure, transport, Health protection, education, Safety, Spatial development
Professor Sam Musa [8]	Strategic planning, Mobility, E-transport, E-governement, Energetics, Cyber-safety

Having analyzed the data of the Table 1, we can separate two main approaches to the formation of parameters for evaluation of city development using the conception of SMART-technologies. Several scientists divide these parameters according to the functional directions of city development; the other ones define the SMART parameters from the point of view of the object of management that the SMART-technologies can be applied to.

The department of business and innovations of Great Britain has defined the SMART-conception as non-static one that is the development of technologies can be used for increase of effectiveness of municipal systems work favors the permanent addition and improvement of this conception and directly the theoretical definition of the notion «smart city». So, it is expedient to add the possible list of parameters for evaluation of development potential from the point of view of SMART-technologies use.

The consideration of a city as an object of SMART-technologies use within the SMART-conception limits the possibilities of this conception. It is expedient to consider SMART-conception from the point of view of agglomerations. It is offered to give the wider definition of the space of this conception application – SMART-territory. SMART-territory is a space of SMART-technologies use, where the central object is a city, and the adjacent territories are from the one side the serving subject for the development of central object, from the other one – develop in parallel with the central object, because they also use the SMART-technologies.

The offered conception of SMART-territories is wider and more system than the one of SMART-city. Because of widening the space of use, it would be logical to widen the function, included in this conception. Especially, the SMART-development of territories must be attended with food programs that provide creation of new agricultural production on adjacent territories, creation of more favorable conditions for work and dwelling of urban population and supply of the central object of SMART-territory with production of own agglomeration. The additional possibilities for tourism development at using the system of SMART-territories must be also noted. This conception gives the additional possibilities for realization of territories potential for the development of ecological, green, ethnographic, rural, sport and other types of tourism. Taking into account the offers as to consideration of SMART-system as a wider one – including not only the city potential but also the one of adjacent territories – it is offered to form the following list of parameters for evaluation of SMART-territories development potential – Fig. 2.

So, the conception of evaluation of SMART-territories development potential, offered in the article, is wider and more system. It includes the whole spectrum of functional directions for using SMART-technologies, considers the problems of development of not only cities but also the adjacent territories complexly. The use of SMART-territories conception for further social development has a series of advantages, especially, more harmonic development of urban and rural territories that will increase the life level of rural population, city functioning under condition of self-sufficiency that will increase the safety of territory development, widen the space for further development of technologies in different functional directions.

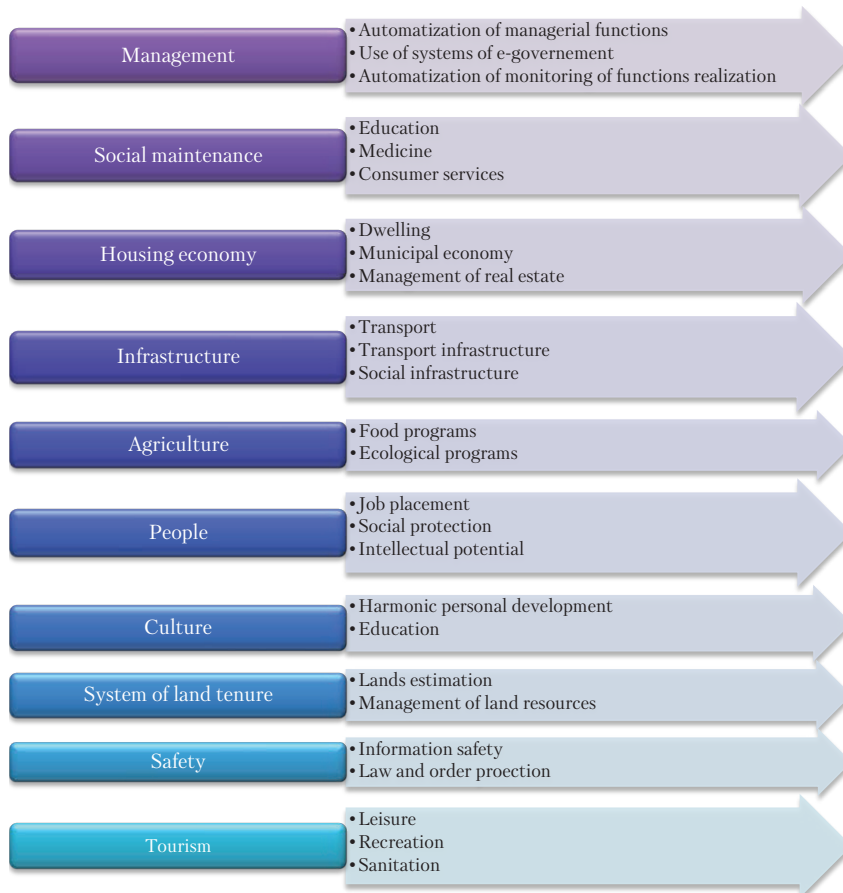


Fig. 2. The list of parameters for evaluation of SMART-territories development potential

7. SWOT-analysis of research results

Strengths. The strong side of realized research is the offered conception of SMART-territories that will provide the qualitatively new level of cities and agglomeration development due to the wider use of SMART-technologies. This conception is especially topical for Ukrainian system, because the rural territories are in the conditions of low technological development, are characterized with lower life level, comparing with urban one, and are depressive very often. Their development is possible only in the system of mutual development with a city as a central object of SMART-system.

Weaknesses. The weak side of research is the absence of informative data, necessary for creation of the rating of SMART-territories, because the rating of Ukrainian cities is not realized according to the criteria of evaluation of effectiveness of SMART-technologies use, the Ukrainian ratings determine only several aspect of comfort of the cities for population life that cannot be the starting material for evaluation of SMART-territories development potential.

Opportunities. The opportunities of further researches are the complex evaluation of the development potential of Ukrainian SMART-territories, creation of their rating and formation of SMART-map of the development of Ukraine with elaboration of offers as to the SMART-technologies, necessary for each separate territory.

Threats. The threats to the results of research are the socio-economic instability that can negatively influence the SMART-technologies development and decelerate their

use for improving the life quality of Ukrainian population.

8. Conclusions

Having analyzed the theoretical-methodological aspects of international experience and Ukrainian practices of SMART-technologies use, the following conclusions were made in the article:

1. The analysis of theoretical aspects of the notion of SMART-technologies demonstrated that this notion is not static and permanently develops, so its addition and improvement is urgent.

2. The analysis of international experience of SMART-technologies use gave a possibility to select the important parameters for evaluation of SMART-cities and SMART-territories development potential.

3. The system of evaluation of development potential was added with the parameters of agglomeration analysis that is wider than the separate analysis of the city development parameters.

4. On the base of analysis of international experience and determination of the native problems of SMART-systems development there was offered the more complex definition of SMART-territories for further consideration of the question of SMART-technologies use.

5. On the base of analysis there were elaborated the offers as to the improvement of the system of evaluation of SMART-territories development potential, the parameters of evaluation of the development potential of territories were selected and classified according to the degree of SMART-introduction and the totality of parameters for complex evaluation was offered.

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ОЦЕНКА ПОТЕНЦИАЛА РАЗВИТИЯ SMART-СИСТЕМ

Проведен анализ SMART-технологий, которые применяются для развития городов и территорий. На основе анализа международного опыта и разработки проблематики украинских городов, определена целесообразность применения понятия SMART-территория, которое охватывает большее количество показателей оценки и дает большие возможности для развития территорий.

Ключевые слова: SMART-технологии, SMART-город, SMART-территории, потенциал развития, развитие, оценка потенциала развития SMART-территорий.

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