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IMPROVEMENT OF METHODS FOR QUALITY ASSESSING OF SOCIAL SERVICES TO THE POPULATION

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Abstract

The subject of this research is the analysis of indicators of standards and their projects that allow assessing the level of sustainability of territories and service enterprises in the digital economy. The purpose of the article is a theoretical and practical analysis of the digitalization of social services in the context of the digital transformation of the economy. Research hypothesis: completeness of the list of indicators for assessing the quality of social services and achieving sustainable development of cities in the Russian Federation in comparison with international standards; standardized indicators for comparing different cities; whether a method for calculating these indicators has been developed. Methodological basis of the research: substantiating the introduction of digital technologies in the service sector. Sources of information: research by scientists on the stated issues, regulatory legal acts of the Russian Federation, ISO standards, as well as national standards of the Russian Federation and their projects, statistical data of the Federal state statistics service of the Russian Federation and the results of their own empirical research. The research substantiates the strategic significance of the processes of digitalization of social services for the sustainable development of cities. Insufficient indicators of smart cities in the areas of education and health were identified. Additional indicators of social services for smart cities have been identified. Prospects for further research are seen in the study of the formation of a model of sustainable development of social services enterprises using the mechanisms of the digital economy in the Russian Federation.

Keywords: Sustainable development, indicators of the quality of social services, calculation methodology, Russian Federation

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1. Introduction

Digitalization as a driver of innovative economy is becoming more and more important vectors of development of social and economic systems of modern countries. António Guterres UN Secretary-General listed a number of global challenges, which include “fair globalization”, migration issues, instability of financial markets, climate change, as well as a number of perspectives, with the digital cooperation between countries in the first place. The rapid development of technologies (production, telecommunications, information, Smart Technology) and digitalization along with changing the world provide the basis for sustainable development of territories and enterprises situated there (Lodbrok & Limberg, 2015). Artificial intelligence systems, virtual or augmented reality technologies, the Internet of things (Alam et al., 2017), cloud storage of "big data", blockchain transform the economy into the digital format, forming the "digital economy" (Sudarushkina & Stefanova, 2017). The reality is characterized by the digitalization integrated into almost every field and sector of the economy, including the service sector, which emphasizes the relevance and practical importance of the digital transformation as well as the methodology of the service sector economy development (Simchenko et al., 2019).

2. Methods

The methodological basis of the study was the fundamental provisions of economic theory to justify the introduction of digital technologies in the service sector, as well as modern scientific research of foreign and domestic scientists in the field of digitalization of social services, the formation and use of indicators of smart and sustainable cities. The main research methods were methods of analysis, synthesis, analogy, and comparison.

3. Results and discussions

The service sector has great potential, as evidenced by the high share of the service sector in the global GDP: over the past 10 years, the share of the service sector has been growing steadily and now makes up more than half of GDP, while the share of industry remains almost unchanged and amounts to a little over ten percent. According to the World Bank 2018, the share of the service sector amounted to 54.92% of the global GDP, compared to the share of industry being only 12.50% of GDP (calculated according to Global Economy). In Russia, since 2007, the added value in services has steadily formed more than 50% of the national GDP (in 2018, the share of the service sector amounted to 54.12% of the GDP).

The service sector employment analysis has revealed more than 80% of the population (which makes more than 90% of the labour force) in some countries being employed in this sector. For example, in the UK, Luxembourg, the Netherlands, Sweden, the Bahamas, Cyprus and Samoa, more than 80% of the population is employed in the service sector (United Nations Population of Urban and Rural Areas at Mid-Year (thousands) and Percentage Urban, 2018). The figure for Russia is 67%. In the G20 countries, the average percentage of the population employed in the service sector as of 2018 was 67.53% calculated according to Economic Data (2018).

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It should be noted that most of the world's population is concentrated in cities: on average, in 2018, the world's urban population indicator amounted to 55.29% (Population of Urban and Rural Areas at Mid-Year (thousands) and Percentage Urban, 2018) of the world population (Figure 1).

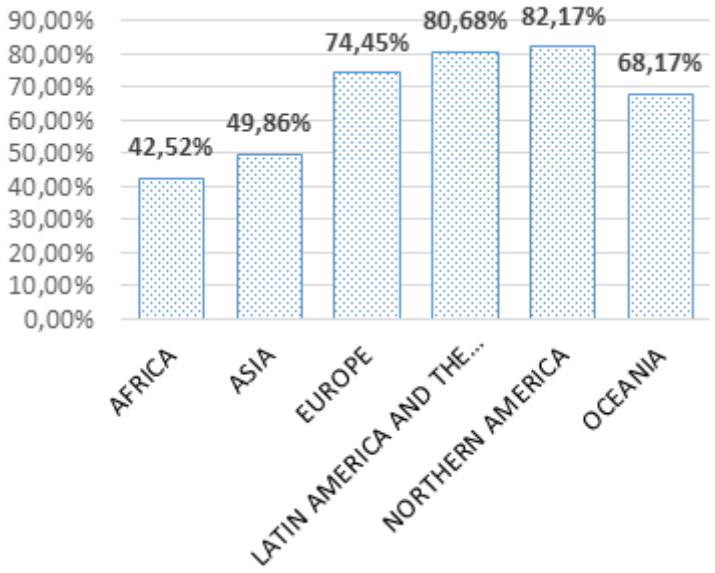

Figure 1. Percentage of urban population to total population, % (Source. Population of Urban and Rural Areas at Mid-Year (thousands) and Percentage Urban, 2018,)

In the G20 countries, this indicator in 2018 was 59.37%. According to Russian Federal State Statistics Service (Rosstat, 2019), in Russia, as of January 1, 2019, the percentage of the urban population amounted to 74.59% of the national population. According to the UN forecasts, by 2030 about 60.4% of the world population will be urban, and by 2050 this figure will rise up to 68.4% (Percentage of Population at Mid-Year Residing in Urban Areas by Region, Subregion, Country and Area, 1950-2050), while by 2030 the cities with the population of not less than 10 million people will be inhabited by 730 million people, which makes 8.7% of the world population.

It should be noted that the urban population growth trend along with both information technology (IT) development and human orientation make the smart methodology, which is aimed to develop effective Smart Sustainable Cities (Huovila et al., 2019). The Smart city model, developed by National research institute of Technologies and Communication (NIITS), implies “the systematic approach to the use of information technology based on data analysis in order to provide services for the natural, energy and urban resources management conducive to sustainable economic development and ensuring high living standards”.

In 2017, Professor Dr. Rudolf Giffinger with a group of European researchers at Vienna University of Technology identified six key areas of the smart city development: Smart- Governance, Environment, Living, People, Mobility and Economy. These areas enable the sustainable development of the region itself and the enterprises situated there as well as support the achievement of the Goal 11 of the UN Sustainable Development Goals (UN SDG 11). At the same time, the Smart Living, or Smart Life strategy is aimed at improving the life quality of the city residents and visitors by applying an inclusive strategic approach among all age groups and focuses on integrating digital technologies into the social sphere (the use of

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electronic services, connection of households to broadband Internet), on improving healthcare and caring for the elderly (e-health, telemedicine, the environment to assist people with disabilities), housing and intelligent building safety, thereby ensuring the sustainable development of service companies in a smart city. New methodologies of civil and social interaction, as well as new technologies (for example, IT based on Wi-Fi technology or LPWA network) are used to improve accessibility and quality of services for citizens in all (Chamoso et al., 2020; Huovila et al., 2019).

In Russia, ensuring the introduction of digital technologies in the social sphere is one of the priority development goals (Decree of the President of the Russian Federation No. 204 of May 7, 2018 "on national goals and strategic objectives for the development of the Russian Federation for the period up to 2024»). To achieve this goal, the social sphere is to be ready for digital transformation, which implies service companies' readiness for digitalization and implementation of digital technologies and citizens' willingness to take advantage of the digital services provided. The analysis of Russian Federal State Statistics Service reporting showed that in 2018 the number of households provided with the broadband Internet access to receive electronic services varied from one region to the next (Figure 2).

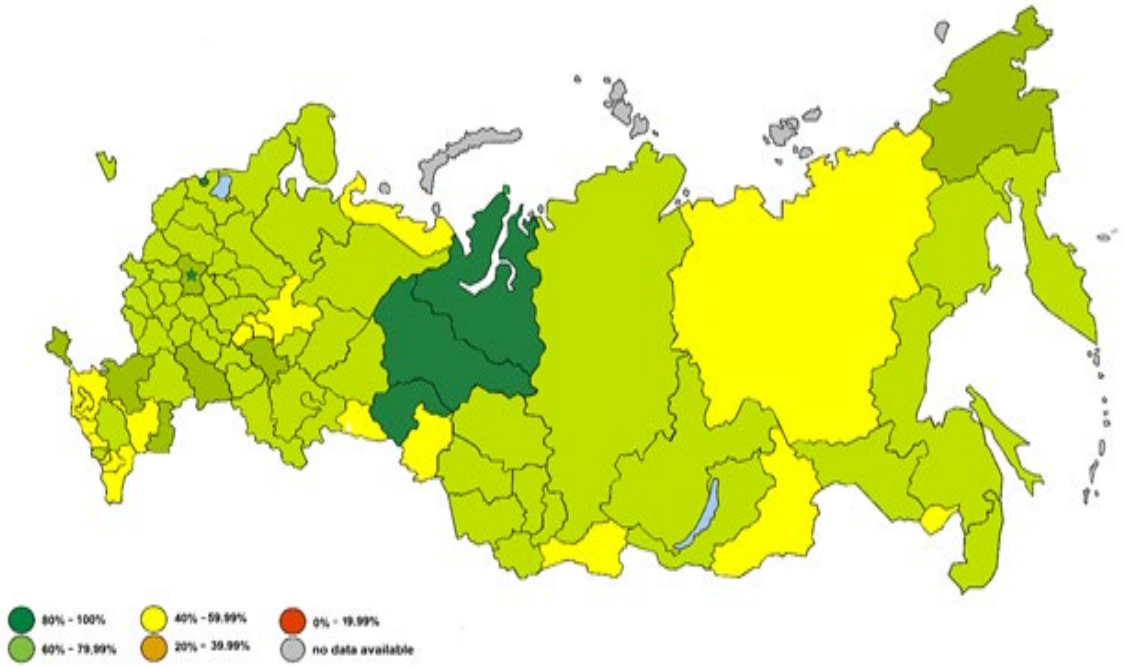

Figure 2. Households' availability of Internet access from a home computer of the total number of households of RF, % (Source. Compiled according to Russian Federal State Statistics Service data 2018. based on the methodology for calculating the indicator)

The indicators calculated by the author, i.e. the proportions of households with a home computer connected to broadband Internet, were divided into five categories using the Pareto principle: more than 80% belong to "extremely high level of provision" category, less than 20% to "extremely low level of provision". The results of the study give hope that the majority of the population have access to the Internet and can take advantage of the information services provided by service companies, which means the prerequisites existing in the Russian Federation, for the development of "smart cities, implying the

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integration of information technology, blockchain and Internet of things into the everyday life of the citizens.

In addition, the concept of Sustainable City is also widely used in the modern world. The Intergovernmental Panel on Climate Change (IPCC).

> Dall'O et al. (2017) give the definition of sustainability. Sustainability is the ability of the system and its components to predict, absorb, comprise or recover from the consequences of a hazardous event in a timely and effective manner, including by ensuring the preservation, restoration or improvement of its underlying structures and functions. (pp. 193-202)

The global challenges of our time, the rapidly growing population of the world, accelerating urbanization and the growing influence of IT on the quality of services provided by companies act as a driver for the development of “Sustainable Smart Cities” of any size (Cariolet et al., 2019).

Thus, development of digital technologies and intelligent systems enables the improvement of the quality of services and the quality of life of the population of the territories and first of all of the cities as the most populated territories around the world. Systematization of data collection and assessment of the effectiveness of services provided by the city to the population, methodology for calculating indicators are possible under condition of the availability of a standard as a guarantor of uniform requirements for the list of data, their units of measurement and their openness to residents as well as comparability of data from different territories and different times. Therefore, development of international standards and on their basis of national standards is a priority task for the world community to achieve sustainable development goals.

Therefore the research tested the following hypothesis: if the list of indicators that characterize the quality of social services provided to the public is complete, if the calculation methodology for the indicators is provided, if it is possible to use the indicators to compare different cities in different time periods in terms of social services provided to the public in the field of smart city information technologies.

Several standards for the Sustainable and Smart Cities that include the indicators directly related to development and implementation of IT have been already developed in the Russian Federation along with the Draft National Standard "Information technology. Smart Cities. Indicators" (Hereinafter referred to as the Draft National Standard) (Moustaka et al., 2019). The indicators mentioned in these standards are divided into categories, in each category the indicators are stated, and the methodology of calculation and collection is specified. Following international standards for Sustainable and Smart Cities were analysed during the research ISO/IEC 21972; ISO/IEC 37107; ISO/IEC 30146; ISO 37120:2018; ISO 37122:2019; ISO 37123:2019. "Indicators for smart cities" as well as the state standards and the Draft National Standard "Information technology. Smart cities. Indicators".

In order to assess the sufficiency of the standard indicators for the Smart Cities that promote the service sector including social services in the field of information technologies the ISO 37120, ISO 37122, ISO 37123 standards and the Draft National Standard were analysed. The results of the analysis are presented in table 1.

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Table 1. Results of analysis of ISO 37120, ISO 37122, ISO 37123 standards and the Draft National Standard.

Indicator	Standard indicators (qualitative / quantitative)			
	ISO 37120	ISO 37122	ISO 37123	Draft National Standard
Referring to a Smart or Sustainable City Standard	sustainable city	smart city	sustainable city	smart city
The indicators are defined on N citizens	100 000	100 000	100 000	100 000
Amount of indicators	111	80	68	38
Iindicators in IT, %	1.80	55.00	1.47	100

The analysis showed that the development of digital technologies is reflected to a greater extent in the standards ISO 37122 and Draft National Standard, which demanded the further indicator group's analysis for these standards (Table 2).

Table 2. Comparative analysis of standardized indicators for ISO 37122 and the Draft National Standard

Indicator	Amount of indicators /among them ICT	
	ISO 37122	Draft National Standard
Economy	4 / 3	3 / 3
Education	3 / 1	2 / 2
Energy industry	10 / 2	2 / 2
Environment and climate change	3 / 2	3 / 3
Finances	2 / 1	N/A
Governance, management	4 / 4	7 / 7
Health	3 / 3	2 / 2
Household	2 / 2	N/A
Demography and other social conditions	4 / 1	N/A
Recreation	1 / 1	N/A
Safety	1 / 1	3 / 3
Solid wastes	6 / 4	4 / 4
Culture and sport	4 / 3	2 / 2
Telecommunications	3 / 3	2 / 2
Transport	14 / 8	8 / 8
Agriculture and food security	3 / 1	N/A
Urban planning	4 / 1	N/A
Drainage	5	N/A
Water	4 / 3	N/A
Digital Technology and IT Indicators	44	38
Among them indicators of social services enabled by the development of IT	9	9

The comparative analysis of the standards showed that in order to assess the quality of social services that are possible to be delivered due to the development and implementation of IT, both standards generally use equal number of indicators, but there is qualitative difference in these indicators. The Draft National Standard has the indicators that are not included in ISO 37122:

• "6.2 the number of references to e-learning materials in secondary educational institutions per 1,000 students";

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• "9.5 the availability of digital services that enable citizens to participate at the municipal level in decision-making on the development and functioning of the city."

At the same time, the Draft National Standard does not have the indicators for the social services such as:

• a percentage of the city budget allocated for programs to overcome the digital divide (at the beginning of 2019 in the Russian Federation 11.11% of settlements with a population of 500 to 10,000 people and 40.85% of settlements with a population of 250 to 500 people did not have broadband Internet access) (category "Demographic and social conditions" 13.4);

• the number of public libraries and electronic books per 100,000 inhabitants;

• Percentage of public transport lines with the Internet connection provided by municipal authorities and / or controlled Internet connection for passengers.

Thus, in order to compare SmartCities indicators (Stefanova & Hirasawa, 2018) in different countries, as well as to detail national standards indicators, it is recommended to take into account a number of social sphere indicators related to education and healthcare.

In order to achieve the significant result in Healthcare for the indicator "10.2 The annual amount of the remote doctor consultations per 100 000 citizens (main indicator)" it is recommended to have the annual monitoring of the following additional indicators that allow to take into account the fact that the workplace is or is not properly equipped for the remote consultations, that there is a demand for the electronic booking of a medical appointment (booking per Internet), that the citizens have the possibility to book an appointment or have a remote consultation:

1) the share of medical consultations for the outpatient treatment in state medical institutions that were booked via Internet using the service for online consultations booking in the Unified State Information System for the Healthcare of the total number of relevant medical consultations:

a) requirements for the indicator: calculated by dividing the number of medical consultations for the outpatient treatment in state medical institutions that were booked via Internet using the service for online consultations booking in the Unified State Information System for the Healthcare by the total number of medical consultations for outpatient treatment in the state medical institutions (denominator); the result is expressed as a percentage;

b) Source of the data: the data shall be obtained from Departments or Ministries that are responsible for providing the healthcare services to the citizens (On Amending Certain Legislative Acts of the Russian Federation on the Use of Information…, 2017);

2) the share of doctor workplaces equipped with computers for the remote consultations that need online video chat or video conference calls (telemedicine):

a) requirements for the indicator: calculated by dividing the number of the workplaces equipped for the remote doctor consultations using the online video chat or video conference calls as of January 1 of the following year (nominator) by the total number of doctor workplaces in the state medical institutions as of January 1 of the following year (denominator); the result is expressed as a percentage;

b) Source of the data: the data shall be obtained from the Departments or Ministries that are responsible for providing the healthcare services to the citizens.

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In the field of Education, the remote provision of materials on public educational institutions disciplines (modules), digitized books from public libraries offers an alternative to the traditional way of obtaining books, which takes into account the needs of city residents with disabilities (in particular reduced mobility), as well as the needs of city residents to save time. Therefore, it is recommended to introduce the following indicators (supporting indicators) and the methodology for its calculation:

1) the share of digitized books from the city public libraries that can be sent to recipients of services via the information and telecommunication network (Internet):

a) requirements for the indicator: calculated by dividing the number of digitized books of city public libraries as of January 1 of the following year by the total number of books of public libraries as of January 1 of the following year (denominator); the result is expressed as a percentage;

b) Source of the data: the data shall be obtained from relevant Departments or Ministries of the city.

2) the share of available educational resources on the disciplines (modules) of institutions of secondary education, vocational training, higher education and additional professional training provided to students with the help of remote educational technologies via the information and telecommunication network (Internet);

a) requirements for the indicator: calculated by dividing the number of educational resources on the disciplines (modules) of public educational institutions, placed in the electronic educational environment of the institution, provided to students with the help of remote learning technologies via information and telecommunication network (Internet) (numerator) by the total number of disciplines (modules) (denominator); indicators are calculated as of January 1 of the following year;

b) Source of the data: the data shall be obtained from relevant Departments or Ministries of the city responsible for education.

4. Conclusion

We can say that the development of digital technologies significantly affects the sustainability of cities and supports the emerging of new Smart Cities, improving the quality of services offered to their residents, including social services, which in turn affects the achievement of sustainable development goals.

Unified approach to defining the “Sustainable City” and “Smart City” concepts, as well as to defining the indicators of the basic level of city sustainability and development of Smart technologies in them, allows us to assess the level and state of world development and achievement of SDG 11. The research proved that the service sector as the most significant for countries' GDP and population employment is sufficiently represented by indicators of standards, but a number of indicators characterizing the impact of information technology on the development of the service sector, including social services, can supplement the national system.

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