Digitalization management system of Russia's federal cities focused on prospective application throughout the country

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Abstract. The spread of digital technology around the world is accompanied by the uneven development of digitalization processes on the territory of different countries. Russia is no exception. The problem of digitalization management in the Russian Federation must be solved by building an effective system of its management. In order to implement digitalization management throughout the country, it is necessary, first of all, to establish this process on the territory of federal cities: Moscow, St. Petersburg and Sevastopol. Federal cities have all opportunities for building an effective system of digitalization management which in the future could be applied in other Russia's regions without any serious failures and significant losses. The review and assessment of trends in the current development of digitalization in Russia's cities of federal importance, the identification of priority digital technologies and priority areas of digitalization in them, the evaluation of their digital life level indicates the unresolved issues of digitalization management in the cities under consideration. A competent organization of digitalization management in federal cities based on the proposed directions will ensure the successful development of digital transformation processes within their territories, and other Russia's regions will be able to adopt their experience in the future.

At present, digital technologies are rapidly developing in all parts of the world, generating new trends in the digital reality in the socio-economic space of all countries. Russia, along with other foreign countries, is fully aware of uneven digitalization development on its heavily populated territory [1]. The existence of this problem requires the Russian authorities to make specific decisions related to digitalization management issues in numerous regions of the Russian Federation through the creation and implementation of various management tools. However, we believe that in order to build an effective system of digitalization management throughout the country, in the first place, it is necessary to establish this process in individual territories, which in the future will serve as a guide in the development of digitalization processes for other countries' subjects.

From our point of view, establishing digitalization management processes in Russia should primarily be implemented on the territory of federal cities, such as Moscow, St. Petersburg and Sevastopol. This position is justified by the following facts. Firstly, federal

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cities make a significant contribution to the development of the Russian economy, their contribution to the total GDP of the country is about 25% [2]. Accordingly, the coverage of digitalization management in federal cities will give rise to the long-term development of the digital economy as a whole. Secondly, cities of federal importance have certain preferences in contrast to other territorial entities due to the special features of their status. Thus, federal cities that have the right to create their own legislation, as well as their own system of budget distribution will be able to see all the nuances of managing the digital transformation of the economy in order to transfer their accumulated experience in building a system of digitalization management to other regions. Thirdly, the most advanced qualified personnel are concentrated in the cities of federal importance. Therefore, the processes of digitalization management in federal cities with the presence of such personnel will be most evident.

Consequently, the cities of federal importance have all the opportunities for creating an effective system of digitalization management, which can be used by other Russia's regions without any serious downsides and significant losses.

The questions of digitalization management, as well as those of regional digitalization are considered in the works of both domestic and foreign authors, including: Stepanova O. A. [3], PozharitskayaI. M. [4], Ageev A. I. [5], Batrakova L. G. [6], Oborin M. S. [7], Barinov M. A. [8], Costa L.S., Pereira L., Akkari A. C. S. [9],Gaponenko T. V., Gavrilenko S. A., Dovbysh V. Y., Rudenko V. A., Golovko M. V. [10], Khachaturyan A. A., Khachaturyan K. S., Shirkin A. A. [11]. However, in our opinion, an insufficient attention has been paid to the consideration of digitalization management system of Russia's federal cities which is focused on its prospective application in the regions.

The given paper makes an attempt to identify the fundamental directions of digitalization management system in Russia's cities of federal importance in order to progressively develop the digital economy in them and transfer their experience to other regions. The implementation of this goal involves the consideration and assessment of trends in the development of digitalization in Russia's federal cities, the identification of priority digital technologies and priority areas of digitalization in them, the evaluation of their digital life level, the development of directions for digitalization management system in Russia's cities of federal importance.

Let us consider the main trends in the development of digitalization that have established in Russia's federal cities. The development of digitalization processes in Russian cities of federal importance, as in other regions, is based on the use of certain digital technologies and pursues specific areas of socio-economic life that are priority for them in the context of digitalization. Fig. 1. shows the priorities of digitalization in Russia's cities of federal importance in relation to the use of digital technologies, as well as in connection with priority areas of digitalization[12].

An analysis of digitalization priorities in Russian cities of federal importance allows us to establish that the most widely used digital technologies in Moscow, St. Petersburg and Sevastopol are the following ones: Big Data, artificial intelligence, new production technologies, distributed registry systems, wireless communication technologies, and the Internet of Things. Among the areas of digitalization that are priority for Russia's federal cities are such areas of socio-economic life as: transport, housing and communal services, urban environment, health care, and education.
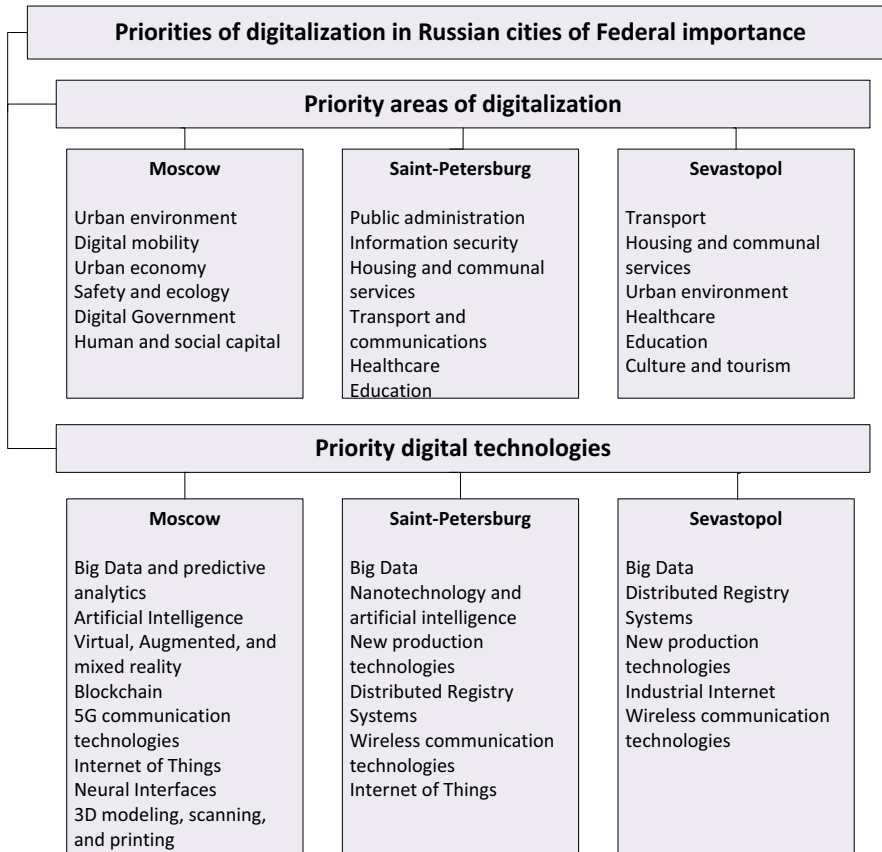
Fig. 1. Priorities of digitalization in Russia's federal cities

Thus, in Russia's cities of federal importance one can see the specific features of digitalization process development. However, with similar priorities in relation to the digitalization process, Russia's federal cities have different levels of its current progress. For example, according to the independent Russian research consultancy in the field of mass media "Medialogia", there is a significant gap between Sevastopol and St. Petersburg as compared to Moscow in terms of such an indicator as Media Index for the first half of 2020 (Fig. 2).

It should be noted that Media Index shows the media rating of federal cities' companies in the context of digitalization and is an indicator of the qualitative state of media space formed by the mass media [13]. In this case, Moscow's leadership according to Media Index can be accounted for by the fact that Moscow has a special status, that is, it is the capital, and also, according to the TechCities of the Future 2020/21 rating, Moscow is among the most promising technology cities in Europe and occupies the 18th position out of 76 [14].
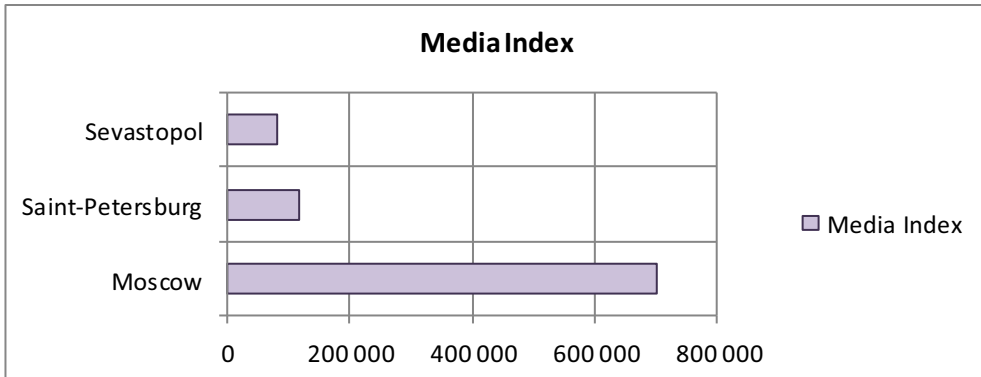
Fig. 2. Media Index of Russia's federal cities for the first half of 2020

Along with Media Index, the development of digitalization processes can be judged by the values of Digital Life Index that was calculated by the scientists of Moscow School of Management SKOLKOVO for 2020 according to the methodology developed by them. Digital Life Index is determined based on the assessment of the demand for digital services and the assessment of digital services supply [15]. Figure 3 shows the values of Digital Life Index of Russian cities of federal importance for 2020.
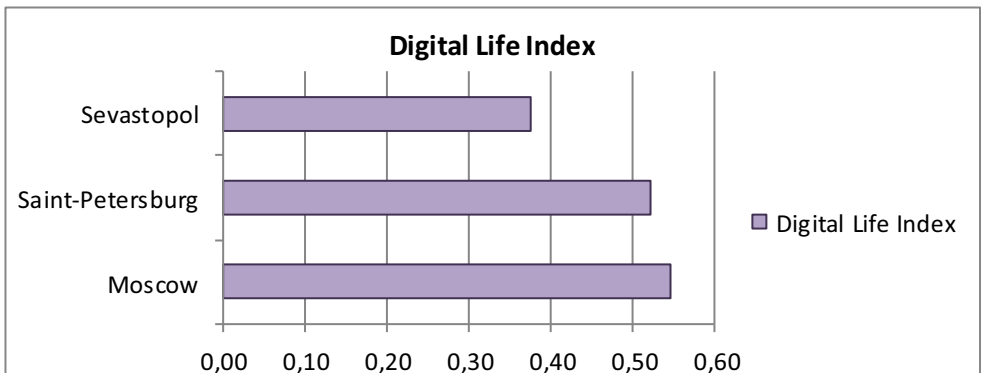
Fig. 3. Digital Life Index of Russia's federal cities for 2020

Moscow is the leader among the cities of federal importance in terms of digital life, Sevastopol ranks worst, and St. Petersburg occupies an intermediate position. The current trends of digital life development in federal cities are explained by the different number of population in them, the output of their gross regional product, which directly creates different opportunities and needs in relation to the processes of digitalization.

Digital Life Index is detailed in seven areas: transport, finance, trade, healthcare, education, media, and administration; the level of their development in federal cities can be traced in the spider diagram (Fig. 4).
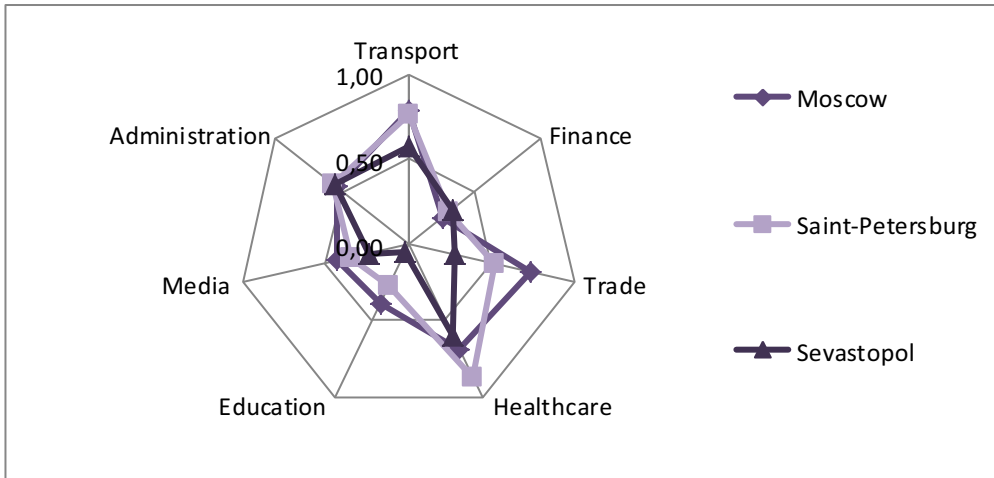
Fig. 4. Detailing of Digital Life Index in Russia's federal cities for 2020

In our case, finance digitization was most developed in Sevastopol, health care and administration digitization – in St. Petersburg; the other areas in terms of their level of digitalization are most developed in Moscow. If we compare the current state of these areas' digitalization, which is shown by Digital Life Index, with the priority areas of digitalization for federal cities, which were indicated in Figure 1, one can determine that there are problems in digitalization processes management in federal cities.

It has to be said that Moscow has the lowest rate of administration digitization among the cities of federal importance, despite the fact that the priority area of digitalization is the digital government. In its turn, Sevastopol among the cities of federal importance has the lowest figures of digitalization in the areas of transport, education and health. Nevertheless, in Sevastopol these spheres belong to the priority areas of digitalization. In St. Petersburg, the situation is more favorable. Such priority areas of digitalization as healthcare and public administration have the best indicators among the federal cities, and other areas that are presented by Digital Life Index have an intermediate level of digitalization. Thus, the existing situation testifies to the unresolved issues of digitalization management in federal cities. This problem requires solutions aimed at ensuring the effective functioning of digitalization management system (Fig. 5).

Thus, in order to ensure the effective functioning of digitalization management system in federal cities, it is necessary to build the management process on the basis of the following directions:

- digitalization projects management;
- budget effectiveness of digitalization projects;
- availability of a digitalization management strategy;
- improvement of legislation in the field of digitalization;
- using the best foreign digitalization practices;
- development of an effective organizational and control model of digitalization management [16].

It is implied that with the competent formation of digitalization management in federal cities on the basis of the above mentioned areas, an effective functioning of this management system will be achieved. This will ensure the successful development of digital transformation processes within the territory of federal cities, the experience of which in the future could be adopted by other Russian regions.

Thus, creating a system for managing the digitalization of Russia's federal cities focused on promising applications in the regions is a very important area of research, the development of which will allow for the further successful progress of the digital economy all over the country.
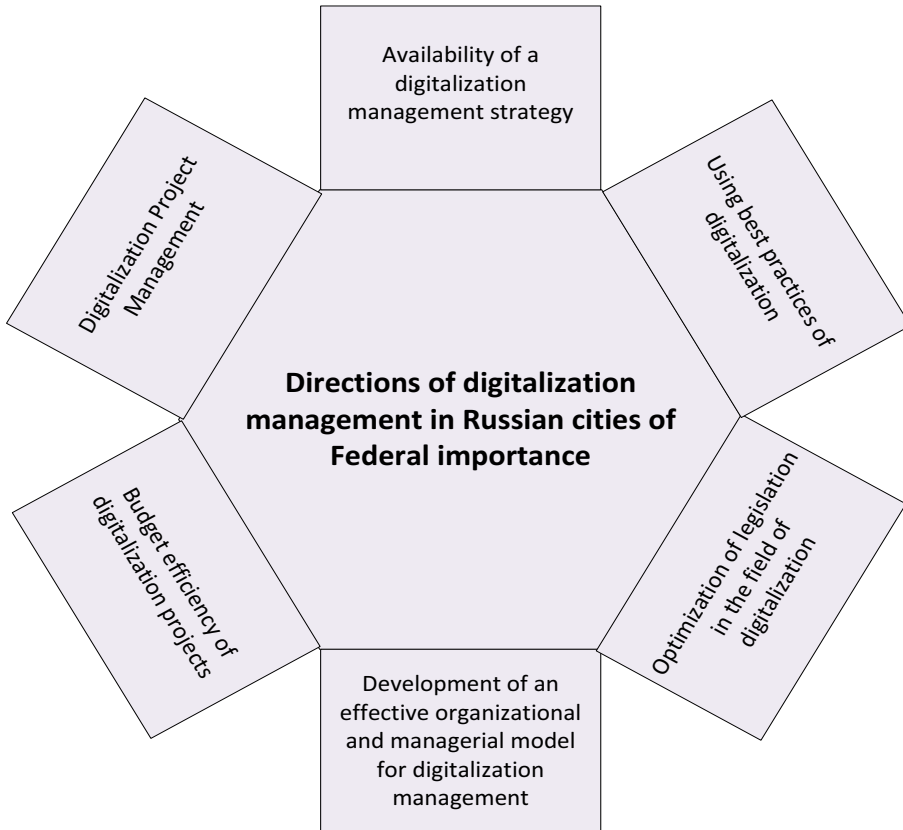

Fig. 5. Directions of digitalization management in Russia's cities of federal importance

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