

# Digitalization Processes in Supply Chain Management as a Factor of Forming Smart Cities and the Improvement of the Quality of Urban Environment

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**Abstract-** The concentration of population in large cities causes the emergence of problems leading to a decrease in the quality of the urban environment. Currently, one of the key urban trends of modern times is represented by smart cities (“smart-city”). The development of the digital environment, which is reflected in the functioning of various spheres of citizens' life, contributes to the formation of a high-quality urban environment in modern conditions. The aim of this work is to examine the digitalization processes in Russian and foreign practice, which act as prerequisites for the creation of smart cities in the context of improving the quality of the urban environment. The authors use such theoretical research methods as analysis, synthesis and scientific synthesis. The concept of “smart city” (“smart-city”) involves reducing the environmental burden, efficient use of resources, the introduction of digital technologies, the creation of a comfortable and healthy living environment. This concept is implemented in a number of developed countries in Asia, Europe and America. Russia is also exploring and attempting to implement the concept of "smart city". Researchers recognize the impact of the digital economy on the quality of the urban environment, with particular attention being paid to developing a methodology for assessing the needs of citizens in various digital services as components of the digital economy environment in the context of improving the quality of the urban environment. Thus, determining a long-term development strategy, and developing approaches to introducing digital technologies and services by municipal authorities and city administrations.

**Keywords-** *digital economy, supply chain management, smart city, quality of the urban environment.*

## 1. Introduction

Currently, intensive urbanization processes lead to an

increasing concentration of population in large cities, which leads to the emergence of a number of environmental, social and economic problems, leading to a decrease in the quality of the urban environment. The qualitative urban environment from a sociological point of view is an environment that meets a wide range of generalized needs of the modern citizen that is the need for health, education, work, recreation and communication. The opportunity to implement these requirements in one way and another generally determines the quality of life and social wellbeing of the population [1]. Currently, one of the key urban trends of modern times, which act as the main vector of the socio-economic development of urban systems, is represented by smart cities “Smart-City”. Within smart cities, the familiar environment is transformed through the active introduction of intelligent and information and communication technologies, the Internet of things, which contributes to the more efficient management of urban processes. The development of a digital environment that affects the functioning of various spheres of life of citizens (housing conditions, the availability of various services, transport connectivity, environmental conditions, landscaping, security, etc.) contributes to the formation of a high-quality urban environment in modern conditions. The purpose of the work is to consider the digitalization processes that exist in Russian and foreign practice, which act as prerequisites for the creation of smart cities in the context of improving the quality of the urban environment.

## 2. Methods

The authors use such theoretical research methods as

analysis, synthesis and scientific synthesis. An empirical analysis of published materials and information provided in Internet sources made it possible to identify the main features of the processes of digitalization and the creation of smart cities. The identification of cause-effect relationships and patterns in solving the problem of improving the quality of the urban environment through the introduction of digital technologies into it is implemented using structural-genetic synthesis. Scientific generalization allowed to single out a single in a diverse, common in a single, natural in a random, as well as to type and combine the phenomena into different groups.

### 3. Results and Discussion

The concept of "Smart City" involves reducing the environmental burden, efficient use of resources, the introduction of digital technologies, creating a comfortable and healthy living environment. This concept is implemented in a number of developed countries in Asia and Europe [2- 6] and America [7]. Russia also studies and attempts to implement the concept of "smart city" [8-10]. The concept of "Smart City" is based on three basic parameters, such as technology, intellectualization, focus on lifestyle. Smart City is an eco-friendly, safe, energy-intensive, opening wide opportunities and providing the most comfortable life of the urban system [11]. The quality assessment of the urban environment of traditional urbanized systems is based on various methodologies based on different approaches to the concept of "urban environment", which is common for an attempt to characterize certain aspects of the urban environment, for example, housing conditions, accessibility of various services, transport connectivity, environmental furnishings, landscaping, a sense of comfort in the urban environment by residents, safety. As for smart cities, there are marked processes, on the one hand, changing the significance of certain aspects of the urban environment, and, on the other hand, processes that form new factors that need to be studied. One of those aspects that determine the quality of the urban environment and the quality of life in a smart city is the digital environment, as a result of the emerging digital economy. Increasing the importance of the digital environment requires a rethinking of the existing conceptual approaches to understanding the quality of

the urban environment and the quality of life, and methodological and methodological approaches to their measurement. The process of converting information into digital form, called digitalization, has now led to significant changes in the socio-economic sphere of our society [12]. The creation of a system of the so-called digital economy, in which digitalization acts as a key factor of production in all spheres of society and improves both the competitiveness of the city and the quality of life of the population, has become in demand. Currently, a number of foreign countries have adopted programs aimed at the development of the digital economy. The first national programs for building a digital economy appeared in the US and China, and then similar programs were developed in other countries, but often the content of these programs provides only for digitalization in the economic sphere. Among the programs that claim to digitalization and in the social sphere, we can note the strategy of the "creative economy" of South Korea, the strategy of digital development of Denmark, the program "Smart nation" of Singapore and some others. Among the projects of digitalization at the regional and local levels, it should be noted the programs of smart cities implemented in Barcelona, Chicago, cities of Germany and other countries. Russia has long been excluded from the digitalization process, but today the country has all the conditions for the development of the digital economy. Currently, the importance of creating a digital economy system is recognized at the national level - the program "Digital Economy of the Russian Federation" has been adopted as part of the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030. There are programs at the regional and local levels, for example, the State program of the Moscow region "Digital Moscow Region" for 2018-2021, the Concept of introducing intelligent digital technologies in the Ulyanovsk region "Smart region" for 2017-2030, the Project "Digital economy in Kaluga region ", Regional State Program" Digital Economy of the Republic of Dagestan 2017-2024 ", the concept of the priority project "Smart Sevastopol" etc. According to expert estimates, in 2015, the share of the population of large Russian cities using the Internet regularly exceeded the 70% threshold, and the use of digital services in their daily lives became a routine everyday operation for their residents. Digitalization processes are intensively taking place

in smaller towns. Thus, we are witnessing a transition from the “primary digitalization” stage (related to the development of digital infrastructure) to the “secondary digitalization” stage, when the issues of effective use of this infrastructure and the formation of digital competencies among the population come to the fore. A feature of this stage is the emergence of a large number of individual digital solutions, leading to the creation of multidimensional digital information systems, which are characterized by an increasing increase in value for users. In general, these processes create a new quality of life in cities, and this causes research interest in studying the digital environment as a component of the quality of the urban environment, identifying its features, place and role among other components of the urban environment. In Europe, in recent years, programs to support the development of “smart functionality” of cities have been actively developed. The category of smart European cities includes Barcelona and Madrid in Spain, Amsterdam in the Netherlands, Manchester and Milton Keynes in the UK. It should be noted that the features and “mind” in each of these cities are implemented in a peculiar way. In Barcelona, the emphasis was placed on automating urban transport and automatic watering of parks, in Amsterdam on opportunities for developing small businesses and smart electric power, in Milton Keynes, the network was based on a network of intercity highways with circular interchanges that made it easier to get to without a traditional urban center. Such innovative urban elements and processes that positively affect the quality of the urban environment are implemented in South Korea, Japan, Israel, and the USA. According to a number of experts, the global market for smart city services will reach \$ 400 billion in 2020. The ambitious plan for the construction of “smart cities” developed in India, it is the need to create 100 new cities, which will then be gradually transformed into smart cities. Projects to create smart cities are being developed in Russia. The development of standards of “smart cities” is engaged in the National Center for Information. In 2016, at the Moscow Urban Forum, Moscow announced the initiative to build a smart city, and in 2017 the Sochi administration. In total, by 2024, 18 cities from 15 regions of Russia should go into the category of “Smart”.

Technological solutions of Russian smart cities will

be concentrated in 6 areas:

- “smart” housing and communal services;
- affordable, comfortable and safe for the health of citizens urban environment;
- Innovative urban infrastructure;
- digitalization of construction;
- digitalization of territorial planning;
- Development of urban transport systems.

In 2014, the Smart City program began to be implemented in the Republic of Tatarstan. The new Smart city of Innopolis was founded near the city of Kazan (part of the Kazan agglomeration). The specified city was created within 3 years, its opening took place on June 9, 2015. The main economic processes in the city are realized on the basis of high-tech industries. The city is characterized by a unique urban environment, represented by a modern developed residential infrastructure, an environmentally friendly environment, a safe environment, a wide range of educational opportunities and professional improvement. Innopolis University implements programs of higher education and also conducts research in the field of modern information technology. Innopolis is a project characterized by the introduction of high technologies, the concept of Smart City” here is implemented in an area of more than 1,200 hectares. The design population is 155 thousand inhabitants.

#### 4. Conclusions

In sum, the researchers recognized the impact of the digital economy on the quality of the urban environment. Particular attention should be paid to developing a methodology for assessing the needs of citizens in various digital services as components of the digital economy environment in the context of improving the quality of the urban environment, defining a long-term development strategy, and developing approaches to the introduction of digital technologies and services by municipal authorities and city administrations.

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