18+

SCIENCE, CULTURE AND YOUTH:

Сборник трудов по материалам
VIII Международной студенческой
научно-практической конференции
(23 марта 2023 г.)

ТЕХНОЛОГИЧЕСКИЙ УНИВЕРСИТЕТ
ИМ. А.А. ЛЕОНОВА

Коллектив авторов

Science, Culture and Youth: Сборник трудов по материалам VIII Международной студенческой научно-практической конференции

(23 марта 2023 г.)

Издательские решения
По лицензии Ridero
2023

УДК 8
ББК 80
К60

Шрифты предоставлены компанией «ПараТайп»

Коллектив авторов
К60 Science, Culture and Youth: Сборник трудов по материалам VIII Международной студенческой научно-практической конференции : (23 марта 2023 г.) / Коллектив авторов. — [б. м.] : Издательские решения, 2023. — 684 с.
ISBN 978-5-0060-0859-5

Сборник трудов по материалам VIII Международной студенческой научно-практической конференции «Science, Culture and Youth» (Королев, «МГОТУ», 23 марта 2023 г.), организованной кафедрой иностранных языков ГБОУ ВО МО «Технологический университет».

В сборнике представлены доклады участников по 4 секциям: «Актуальные проблемы современности», «Роль иностранного языка в жизни и профессии», «Инновационное развитие технических, естественных наук» и «Мировые тенденции развития научной мысли».

УДК 8
ББК 80

18+ В соответствии с ФЗ от 29.12.2010 №436-ФЗ

ISBN 978-5-0060-0859-5

Радунцева А. А.
Impact of smart city technologies on the consumer habits of the population

Raduntseva A.A., 3rd year student {Business Informatics}
Scientific adviser: Arutyunyan D.D,
PhD {Pedagogy}, Associate Professor, Associate Professor of the Department of Foreign Languages Technological University (UNITECH), Korolev, Russia

This article presents a study on the impact of smart city technologies on consumer habits of the population. The positive and negative aspects of the transition of ordinary cities to the category of smart ones are considered. Measures for optimal smart digitalization of cities and human potential development are proposed.

Keywords: smart city, digitalization, smart technologies, human development.

According to the UN forecast, the global population will increase to 9.7 billion people by 2050, and by the end of the century there may be about 11 billion people living on Earth [11]. For this population it is necessary to prepare an economically and environmentally sustainable infrastructure now. Theoretical and practical work in this direction began in the U.S. in the 1990s. As a result of the confluence of two trends — urbanization and the digital revolution — the concept of the smart city was born.

Smart cities add AI (artificial intelligence) to the urban world and use it to solve public problems and achieve a higher quality of life. There are three criteria that make a typical city smart: the technical base (networks of connected devices and sensors), smart applications with the ability to analyze data and propose solutions, and the traditional physical and social infrastructure.

The main goal of smart cities is to improve the quality of life of the population. The government is interested in such projects because it can set its own requirements and reduce the burden on local governments. As a rule, the government invites tenders from various business-oriented enterprises to implement smart city projects. It is them who are responsible for the planning, design, implementation and maintenance of digital cities. Thus, we can conclude that the operation of smart cities is related to the commercial part, but the government can only manage individual data.

Increasing security is another goal for the government. Through the use of video analytics (AI machine vision) technologies and the detection of suspicious sounds and noises, the number of thefts, robberies, burglaries and murders is expected to decrease by 30—40% [11]. At the same time, the optimization of traffic and street lighting will reduce the time it takes ambulances, firefighters and police to get to the necessary point by 20—35% [11].

Unmanned cars, «smart» parking, solar panels, «smart» public transport — these and many other technologies of the smart city save people time, money and energy. For example, by optimizing the transportation system, people will be able to reduce travel time by 15—30 minutes [11].

SmartCity changes the perception and interaction with the urban environment. The use of digital technology in municipalities has only recently entered modern life, but it has already justified the expectations of its creators and provided comfortable conditions for the population and optimized processes on the part of the organizers. In many regions of Russia it is possible to pay fines, obtain documents or make an appointment with a doctor without leaving home, and the concept of a smart city will expand the range of digital services. In addition, the control center should provide its residents with a platform for interaction with technology and authorities, which will allow them to leave feedback and directly influence the adoption of urban decisions. This, in turn, will affect the social consciousness of the individual, his civic position and activity.

In 2018, the consulting firm McKinsey & Company published a multi-page research report «Smart city solutions: What drives citizen adoption around the globe?» [9]. According to the results of the study, Moscow became the absolute leader in the categories of «public services», «virtual medical registry» and «civic engagement». [2].

From the environmental point of view, experts' opinions on the positive and negative aspects of the introduction of smart cities differ. On the one hand, it is expected to contribute to the achievement of sustainable development goals of the state. Governments are interested in reducing emissions of harmful substances into the atmosphere and supporting the development of technologies that can have a positive effect on climate change, and by optimizing the use of water and electricity, largely with the help of low-carbon and energy-efficient strategy, it will be possible to reduce the amount of emissions into the atmosphere by 10—15% [11].

To solve the problems of waste management it is planned to include sorting and recycling in the obsolete chain: collection → transportation → disposal [10]. Effective management and control of the main process chains of urban waste management lies in the use of intelligent management systems.

On the other hand, charging batteries (for a constant backup power supply), collecting and processing data from a huge number of sensors and cameras in real time involves higher energy consumption. Ultimately, it can be assumed that the use of energy-saving technologies will cover the increase in energy consumption for the existence of the city.

Other disadvantages of smart cities include capital intensity and social stratification due to technological gaps. The use of a large number of expensive high-tech devices, cameras and sensors directly affects the growth of real estate costs. And the gap in technology between a smart city and an ordinary city will lead to a bifurcation of the masses, as privileged citizens will prefer to move to smarter cities.

Besides, there is not always enough money to finance smart city projects. It is

difficult to name the exact amount, but it is measured in tens of billions of rubles. If we take Tomsk as an example, its annual budget is about 13 billion rubles, so we can conclude that there are no funds for the introduction of smart technology. This situation is observed all over the world. Money is allocated, but its volume is not enough for the transition to the status of a smart city in full.

Despite the above-mentioned difficulties, projects have already been implemented in some vital areas (education, medicine, social sphere, etc.). In 2022, based on last year's results, the Ministry of Construction published a rating of the new Index of digitalization of urban economy («IQ of cities») [8]. Moscow was the most «smart» city in Russia, it got 117,16 points from 120 possible. Also, among million-strong cities, the top three included St. Petersburg (98.13 points) and Nizhny Novgorod (88.26 points). Among the cities with a population of 250,000 to 1 million, Tyumen (100.75), Ryazan (87.76) and Surgut (86.25) topped the rating. In the category of cities with populations under 100,000, the first places were taken by Khanty-Mansiysk (91.85), Reutov (85.69) and Korolev (83.86) near Moscow.

Since 2020, the Russian state corporation Rosatom has launched the «Smart Cities» project. This is a unified information framework for the implementation of digital city services, which allows the platform to be adapted to the existing infrastructure of cities of different sizes and specifics of development. 54 cities where the corporation is present are connected to the platform, and more than 3.5 million residents have access to digital services. This platform solves the problem of involving residents in the development of the urban environment, as well as increasing the efficiency of city management and energy efficiency through the digital transformation of municipalities of nuclear cities.

Smart cities in Russia are aimed at creating comfortable conditions for citizens, entrepreneurs and administration employees. To this end, digitalization issues are being addressed in the following areas:

— Urban Environment. This includes the development of urban spaces, transport, «Smart Housing and Utilities» (lighting, heating, elevator dispatcher, power, garbage), street cleaning (implemented module «Smart City Rosatom» which informs about street cleaning schedule and movement of special equipment in order not to create traffic jams).

— Safe City. This area includes public, transport and environmental safety, emergency response and safe utilities. There is also a focus on combating natural disasters and the development of monitoring and forecasting systems (fires, hurricanes and floods), as well as a unified integrated network of video surveillance, prevention and control of public order.

For example, the Smart City modules of Rosatom:

— police — allows you to always be in touch, giving up-to-date information about precinct addresses and precinct officers' contacts;

— transport — shows the movement of public transport in real time (a similar service also provides Yandex.Maps and Transport);

— medicine — provides residents with information on the work schedule of doctors in the nearest hospitals and clinics.

3. Digital city management. Various agencies coordinate with each other, and citizens receive high-level public services.

Among the modules of Rosatom's Smart City have already been implemented:

— city institutions — providing information on all state and municipal organizations, educational and cultural institutions;

— appeals — collecting reports from residents about problems and helping the responsible services to respond to them promptly;

— constituencies — visualizes the boundaries of deputies' constituencies and publishes current contacts of deputies.

Examples of digital public administration at the federal level are: the official website of the State Traffic Police [3], the website of the Federal Tax Service [4], the official website of the Russian Interior Ministry [6], the official website of the Government and Governor of Moscow Region [5], and, of course, the portal of public services of the Russian Federation [7].

4. Well-being of people. The idea is to promote a healthy lifestyle and attention to the social sphere, culture (for example, introducing young people to culture through the Pushkin Card), education and tourism);

In particular, Rosatom has implemented the following modules:

— attractions — tells city residents and tourists about the city's main attractions and their operating schedules;

— booking and payment — allows online payment for tickets to events, sports sections, school meals, etc;

— provision of mobility — it shows on the city map the places equipped for people with disabilities.

5. Investment Climate. Emphasis on a sustainable economic system and innovation.

Smart technology can improve different aspects of the quality of life in cities. Among alternative gradations of smart city solutions are: cost of living, safety, transportation, health, environment, connectedness, and work [13].

Conclusions and suggestions.

The transformation of an ordinary city into a smart city is a long, expensive and difficult, but quite realistic way. Many projects all over the world feel the need for investment to implement the concept of a smart city. For this purpose, it is necessary to attract private investors. Because of the long-term dividends, investors must be fully interested in the project. This requires the development of a multifaceted plan of action. the first problem we face is the lack of qualified personnel. The idea of SmartCity is not very well developed, although there are many examples and ideas; the market lacks experienced specialists. Secondly, copying of approaches to solving private problems has a negative impact. Cities differ from each other by territorial peculiarities, natural conditions, mentality of people and other things, the technologies and methods that worked in one city are not necessarily viable in another one.

Smart city technologies can improve the quality of life of city residents:

— fast and comfortable traffic;

— rapid response of city services to emergencies;

— improvement of health and reduction of morbidity;

— reduction of mortality;

— clean and environmentally friendly environment;

— creating digital communities and strengthening social connections.

References:

1. Makarenko Ekaterina Dmitriyevna «Smart City» Technologies. AS A FACTOR AND POSSIBILITY OF DEVELOPMENT OF HUMAN CAPACITY // Sociology. 2022. №3. URL: https://cyberleninka.ru/article/n/tehnologii-umnogo-goroda-kak-faktor-i-vozmozhnost-razvitiya-chelovecheskogo-potentsiala (date of reference: 12.03.2023).

2. Megapolis brains. How smart technology affects people's lives in different countries [Electronic resource] URL: https://news.rambler.ru/other/40492050-mozgi-megapolisa-kak-umnye-tehnologii-vliyayut-na-zhizn-lyudey-v-raznyh-stranah/ (Access date: 12.03.2022).

3. Official website of the State Automobile Inspection [Electronic resource] URL: https://гибдд.рф/ (Date of reference: 12.03.2022).

4. Official website of the Federal Tax Service [Electronic resource] URL: https://www.nalog.gov.ru/rn77/ (Date of access: 12.03.2022).

5. Official website of the Government and Governor of the Moscow Region [Electronic resource] URL: https://mosreg.ru/ (Date of access: 12.03.2022).

6. Official website of the Ministry of Internal Affairs of Russia [Electronic resource] URL: https://мвд.рф/ (Date of access: 12.03.2022).

7. Portal of public services of the Russian Federation [Electronic resource] URL: https://www.gosuslugi.ru/ (Date of reference: 12.03.2022).

8. Results of assessment of the progress and efficiency of digital transformation of urban economy of the Russian Federation (iq cities) at the end of 2021 [Electronic resource] URL: https://www.minstroyrf.gov.ru/upload/iblock/672/REZULTATY-OTSENKI-KHODA-I-EFFEKTIVNOSTI.pdf (Date of access: 12.03.2022).

9. Smart City Technologies: What Affects Citizens' Choice? Report from McKinsey&Company [Electronic resource] URL: https://www.mckinsey.com/ru/~/media/McKinsey/Industries/Public%20and%20Social%20Sector/Our%20Insights/Smart%20city%20solutions%20What%20drives%20citizen%20adoption%200globe/smartcitizenbook-rus. pdf (Date of access: 12.03.2022).

10. Smart City waste management with technological smart systems [Electronic resource] URL: http://ecopress.center/page3818993.html (Date of reference: 12.03.2022).

11. Smart city: concept, technologies, examples [Electronic resource] URL: https://trasscom.ru/blog/umnyj-gorod (Access date: 12.03.2022).

12. Vorobyeva O.V., Manzhula E.A., Yashina A.V. Smart Citizen in a Smart City: Overview of Approaches in Russia and Abroad // International Journal of Open Information Technologies. 2019. №5. URL: https://cyberleninka.ru/article/n/umnyy-gorozhanin-v-umnom-gorode-obzor-podhodov-v-rossii-i-za-rubezhom (date of reference: 12.03.2023).

13. What is a «smart city»? How technology can improve the quality of life of citizens (INFOGRAPHICS) [Electronic resource] URL: https://budport.com.ua/news/10940-chto-takoe-umnyy-gorod-kak-

tehnologii-mogut-uluchshit-kachestvo-zhizni-gorozhan-infografika (Date of reference: 12.03.2022).

14. Zorin Grigory Evgenievich TECHNOLOGIES «SMART CITY». AND THEIR APPLICATION IN TERRITORY MANAGEMENT // Vestnik RUK. 2021. №1 (43). URL: https://cyberleninka.ru/article/n/tehnologii-umnyy-gorod-i-ih-primenenie-v-upravlenii-territoriey (date of reference: 12.03.2023).