лагалось соответствие экспертных оценок регулируемых цен фактическим значениям. Результаты расчета (MAE(1) = 0,12, MAE(2) = 0,16, MAE(3) = 0,19) подтверждают высокие прогностические свойства представленного подхода на прогнозном периоде до трех месяцев и может применяться в рамках процесса среднесрочного прогнозирования.

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# SMART CITIES LEAD THE DIGITAL ECONOMY

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At present, the world is opening a new chapter on technological and industrial transformation based on digital technology. At the same time, the digital economy has also had a profound impact on the main body of economic and social operation. The process of urban digitalization has a great impact on urban economy, resource utilization, quality of life, time cost and sustainable development. The continuous increase of urbanization and population, city managers around the world are facing increasingly severe challenges. This paper discusses the basic content of smart cities under the digital economy, combines the role of digital economy development in the construction of smart cities, studies the challenges of digital economy and discusses how to accelerate the construction of digital government and strengthen digital governance.

*Keywords:* Smart city; Digital Transformation; Digital Economy; Modern trend; Urban governance.

# УМНЫЕ ГОРОДА – ДВИГАТЕЛЬ ЦИФРОВОЙ ЭКОНОМИКИ

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В настоящее время мир открывает новую главу в области технологических и промышленных преобразований, основанных на цифровых технологиях. В то же время цифровая экономика оказала глубокое влияние на основные направления экономической и социальной деятельности. Процесс цифровизации городов оказывает огромное влияние на городскую экономику, использование ресурсов, качество жизни населения, затраты времени и устойчивое развитие. В связи с непрерывным ростом урбанизации и численности населения городские власти по всему миру сталкиваются со все более серьезными проблемами. В этой статье обсуждается основное содержание умных городов в условиях цифровой экономики, анализируется роль цифровой экономики в строительстве умных городов, а также обсуждается, как ускорить создание цифрового правительства и усилить цифровое управление.

*Ключевые слова:* умный город; цифровая трансформация; цифровая экономика; современный тренд; городское управление.

COVID-19 became an «examination» to test the level of construction of smart cities around the world, through the epidemic prevention and control work focused on reflecting the failure to accurately apply intelligent technology, the existing business systems can hardly cover all the problems in urban operation, in response to the sudden «black swan» «Gray rhinoceros» type of events, urban management often seems to be caught off guard. With the deepening of the construction of smart city around the scale of data convergence, various lines of departmental systems to further open up, smart city construction mode more and more mature. On this basis, to improve the development efficiency of urban wisdom applications and system emergency response speed has become a new requirement for the upgrading and iteration of smart cities. The long-term spread of the epidemic forces the joint prevention and control applications to come online quickly, and the city brain can also provide a solid foundation for business system development, supporting the micro-framework, low-code, agile development and rapid online of upper-level scenario applications, and promoting the improvement of urban resilience and high-quality development of citizens' healthy life [1].

According to the United Nations, the global urbanization rate will double within 100 years from 1950 to 2050, and nearly 70 % of the world's population will live in cities in 2050 [2]. In the process of rapid urban expansion, advanced technologies will help cities achieve sustainable development and lead them to a better future. With China in 2021. Korea applies to join Digital Economy Partnership Agreement (DEPA). In order to meet the challenges brought by urbanization, smart city construction has become an important task for the development of each country at this stage, becoming the main driving point to promote the creation of a modernized economic system, which is conducive to the further optimization of urban industrial structure and enables the national economic development to move to a new level. The 11th item of the UN 2030 Sustainable Development Goals (SDG) is «Sustainable Cities and Communities». Using advanced technology to achieve sustainable urban development is becoming the expected best solution, especially the smart

city armed with artificial intelligence will lead the future development of cities. The digital economy, which focuses on data collection and processing, will accelerate the effective integration of the digital economy into the process of building smart cities. By 2050, close to 70 % of the world's population will be living in cities. Asia, where China and India are located, will be the most rapidly urbanizing region in the world [3]. Whether in developed Europe and the United States, developing Africa and parts of Asia, most countries in the world are actively engaged in the construction of smart cities, with Europe, North America, Japan and Korea leading the way (figure 2). China is actively piloting smart cities, resulting in the largest number of smart cities in the world (figure 1).
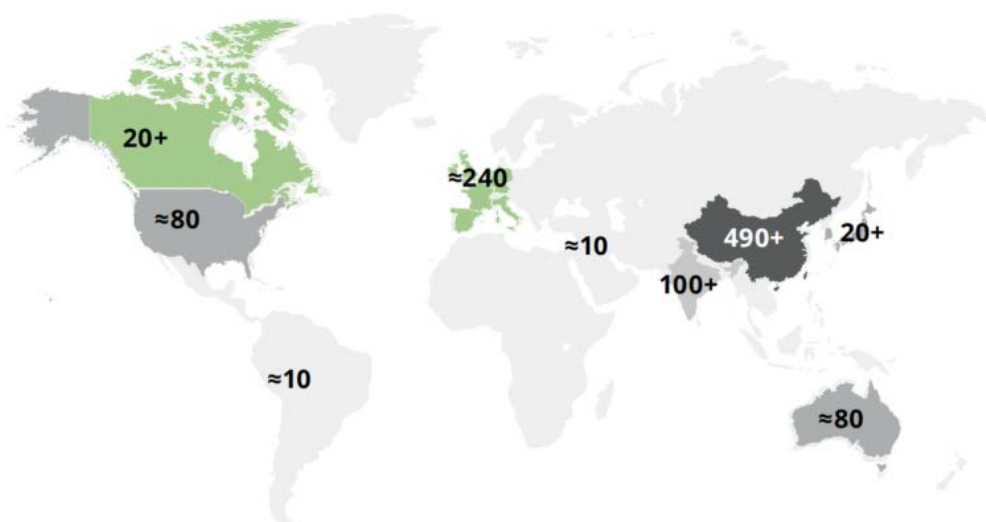


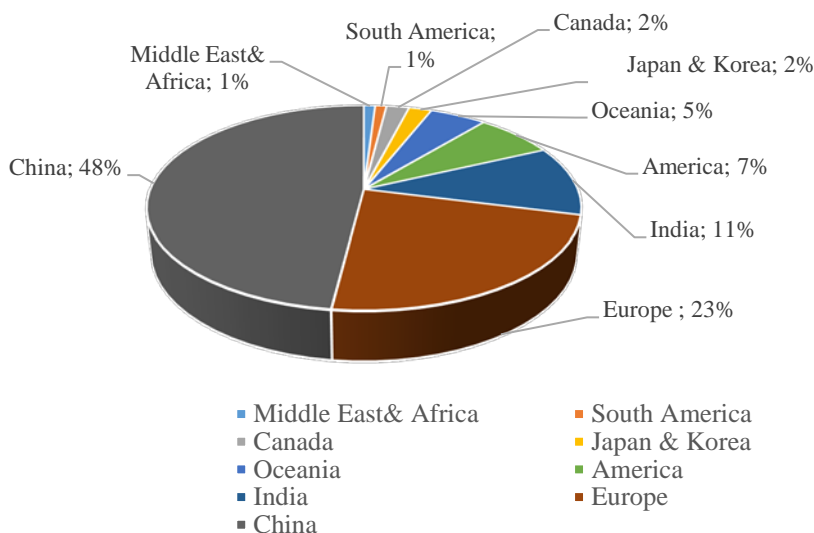*Figure 1* – **Number of smart cities under construction worldwide**



*Figure 2* – **Global number of smart cities under construction by country share**

Scource: Deloitte report, Public information of various governments; Smart City Council; Navigant.

**New Stage of Smart City – Super Smart City.** Artificial intelligence empowers smart cities and provides new momentum for smart cities.

The artificial intelligence city industry chain includes the basic layer plus the core technology layer, and then the vertical applications. The verticals are subdivided into product and application intelligence systems. Real-time perception, high-speed transmission, autonomous learning, autonomous decision-making, autonomous collaboration, automatic optimization, and autonomous control. These seven characteristics are interrelated and indispensable, and the future super smart city needs to have all these characteristics.

IoT and cloud computing technologies are improving smart city construction: IoT platforms link all kinds of terminals and resources.

Cloud computing technology to achieve real-time connectivity, convergence and storage of urban data. Government and enterprises cooperate to build data centers to promote the construction of smart cities. The current smart city data is fragmented, with a huge population and a more general Internet infrastructure generating huge data, but the data in each field is still fragmented, showing data «islands», in the future smart city, all systems can be connected and data can be uploaded and stored in the Cloud. Open data will break the data silos and create a synergy effect between data, creating an intelligent system ecosystem.

**People-oriented, focus on citizen participation, and shift from a smart city to a smart society.** Based on the smart city so that citizens have a greater sense of access and happiness, the local government is also increasingly focused on the citizen experience, in order to achieve smooth citizen participation, with the help of big data, e-government and other means of technology means the way to technology as a springboard, once again emphasizing the development of smart cities to need the citizen participation behavior in the process of smart city construction.

In 2013, the Seoul Metropolitan Government of South Korea successfully designed 9 nighttime bus routes through big data analysis of 3 billion nighttime call records and taxi driving records, solving the city-wide nighttime travel problem. In 2017, 35 urban construction proposals submitted by citizens were included in the government budget, and citizens truly participated in urban construction decision-making and shared the financial budget.The characteristics of the city itself are reflected in the construction of smart cities, and the trend is to develop smart cities according to local conditions.

The new smart city draws on the construction experience of the classic city circle, where large cities drive small cities, a city cluster model, to clarify the positioning of members and form regional development characteristics. Each big city to create a smart city to play their own characteristics, while promoting regional economic integration construction. Especially after COVID-19, new cities and towns in various countries, new infrastructure in energy, transportation, education, health care, community, government and other areas to accelerate the pace of development, the development of smart cities according to local conditions has become the development trend.

**Data security becomes a key area of focus.** Data security technologies such as blockchain and privacy computing are the guarantee for urban operation. The safe and orderly flow of data will become an important factor in the development and application of smart cities, and data has become one of the five production factors. As artificial intelligence technology breaks through the limitation of algorithm computing power, On the premise of ensuring data security and not leaking private data, the free flow and sharing of data is realized. Data security technologies such as blockchain and privacy computing are rapidly developing and popularizing applications, so that data is available and invisible, and data can be confirmed and can be used. Traceability can effectively solve the problem of data silos.

**The city's ability to sustain innovation is valued.** The existing super smart city cities have good innovation mechanisms in place, but they fail to mobilize all subjects. Improving the level of inter-collaboration of universities and research institutions, and enhancing the efficiency and transparency of their support for innovation in commercial enterprises. It is

crucial for the government to invest in increasing the size, type, and scope of incubators and shaping the city's innovation climate.

In the face of many challenges, if today's city managers want to break through the confines of traditional smart cities and gradually transform and upgrade into «super smart cities», they need to think about the framework of nine capability dimensions (strategy, data, technology, capability, openness, innovation, ecology, solution, security) in the construction process. At the same time, it needs to be combined with the actual needs of its own city, with the goal of creating a higher quality of happiness society.

The creation of a super smart city is not a flash in the pan, but a year-by-year development. During this development journey, cities need to evolve from the early maturity stage to the full maturity development stage. It is critical to establish a super smart city evaluation metric system maturity model to assess the current maturity level and set targets for the desired maturity level.

**Smart City and Digital Economy.** Don Tapscott, the «Father of the Digital Economy», proposed that the digital economy is an emerging economic model based on digital network applications and the increase of human capital. It is characterized by digitalization and intelligence, and can realize the interconnection of the global economy through self-learning and innovation. The digital economy refers to a series of economic activities that take data resources as key production factors, modern information networks as an important carrier, and the effective use of information and communication technology as an important driving force for efficiency improvement and economic structure optimization. In digital economic activities, smart city construction is a very important part, which is directly related to the development of the market economy. The new smart city is helping city managers to cope with challenges, and its global deployment has brought practical benefits to cities , including GDP growth, lower unemployment, improved quality of life, and improved safety and health. This enables city managers to achieve scientific decision-making, refined management, rapid response, and enhance the city's competitiveness. At the same time, the development of the digital economy can in turn play a certain role in promoting the construction of smart cities. Therefore, the development of the digital economy plays an important role in the development of urban economic modernization. From a sociological point of view, the construction process of a smart city is aimed at social and economic prosperity. A smart city is a smarter method to change the government by using a new generation of information technology centered on the Internet of Things, cloud computing, etc. , the way enterprises and people interact with each other, and respond quickly and intelligently to various needs including people's livelihood, environmental protection, public safety, urban services, and industrial and commercial activities, improve urban operation efficiency, and create a better urban life for residents. The average commute time in large cities is more than 30 minutes, cities with better smart transportation development, such as London, New York, and Shanghai, spend less commuting time at the same distance.

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