

original article

## **National Strategic Planning for the Digital Economy: a Competitive Analysis on material of China and Russia**

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**Abstract:** At present, the wave of digital economy is sweeping the world. Countries all over the world are competing for the strategic commanding height in digital economy. In order to firmly seize this major historical opportunity and to transform and upgrade its economic structure faster, Russia keeps on strengthening the core capabilities of the digital economy such as information infrastructure, new generation information technology, ICT industry, human resources, information security, and digital environment supervision.

**Research purpose:** a competitive analysis of the national strategic planning for the digital economies in China and Russia.

**Research objectives:** 1) to provide definition for the digital economy; 2) to show the current improvement of the digital economy; 3) to study Russia's digital economy; 4) to explore China's digital economy.

**Research methodology:** study of theoretical literature, data collection and analysis.

**Research results.** "Strategy of the Information Society Development in the Russian Federation for 2017–2030" (2017) implies creating conditions for developing large companies in the information and communications technology industry in order to protect national interests in the digital economy. In 2021, Russia's investment in the development of the digital economy reached the total of 4.094 trillion rubles. It represents an increase of 7.8 % compared to 2020 and amounts to 3.7 % of GDP. Over the past decade, China's digital economy has made world-renowned development achievements. The overall scale has been the second best in the world for many years. The construction of information and communication networks is a global leader in terms of scope. The "Broadband China" strategy has been diligently implemented. The country has built the world's largest fiber optic and mobile broadband network. The length of optical cable lines increased 2.7 times from 14.79 million km in 2012 to 54.81 million km in 2021. By June 2022, the total number of data center racks in China exceeded 5.9 million standard racks, and 153 national green data centers were built. Key core technologies have experienced breakthroughs. Investment in research and development of digital technologies is increasing every year. The level of digitalization in the service sector has increased significantly. The digital transformation of agriculture is making steady progress. In China, the deep implementation of the development strategy focused on innovation, promoting key technology research, accelerating the forging of long boards, making up for short boards, and building an independent and controlled industrial ecology.

**Keywords:** digital economy; competitive strategy; organizational structure; culture; economic environment; economic activities; digital technologies

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## Национальное стратегическое планирование цифровой экономики: конкурентный анализ на материале Китая и России

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**Аннотация:** В настоящее время мир захлестывает волна цифровой экономики. Страны всего мира соревнуются за стратегическую командную высоту в цифровой экономике. Чтобы твердо использовать эту важнейшую историческую возможность и быстрее трансформировать и модернизировать свою экономическую структуру, Россия продолжает укреплять основные возможности цифровой экономики, такие как информационная инфраструктура, информационные технологии нового поколения, индустрия ИКТ, человеческие ресурсы, информационная безопасность и контроль цифровой среды.

**Цель исследования:** конкурентный анализ национального стратегического планирования цифровой экономики Китая и России.

**Научно-исследовательские цели:** 1) дать определение цифровой экономике; 2) показать текущее улучшение цифровой экономики; 3) изучить цифровую экономику России; 4) исследовать цифровую экономику Китая.

**Методология исследования:** изучение теоретической литературы, сбор и анализ данных.

**Результаты исследования.** «Стратегия развития информационного общества в Российской Федерации на 2017–2030 годы» предполагает создание условий для развития крупных компаний отрасли информационно-коммуникационных технологий в целях защиты национальных интересов в условиях цифровой экономики. В 2021 г. инвестиции России в развитие цифровой экономики достигли в сумме 4,094 трлн рублей. Это представляет собой увеличение на 7,8 % по сравнению с 2020 г. и составляет 3,7 % ВВП. За последнее десятилетие цифровая экономика Китая добилась всемирно известных достижений в области развития. Общий масштаб был вторым лучшим в мире в течение многих лет. Строительство информационных и коммуникационных сетей является мировым лидером по масштабам. Стратегия «Широкополосный Китай» была тщательно реализована. В стране построена крупнейшая в мире оптоволоконная и мобильная широкополосная сеть. Протяженность оптических кабельных линий увеличилась в 2,7 раза с 14,79 млн км в 2012 г. до 54,81 млн км в 2021 г. К июню 2022 г. общее количество стоек центров обработки данных в Китае превысило 5,9 млн стандартных стоек, и было построено 153 национальных экологически чистых центра обработки данных. В ключевых основных технологиях произошли прорывы. Инвестиции в исследования и разработки цифровых технологий увеличиваются с каждым годом. Уровень цифровизации в сфере услуг значительно вырос. Цифровая трансформация сельского хозяйства неуклонно продвигается вперед. В Китае глубокая реализация стратегии развития была сосредоточена на инновациях, продвижении ключевых технологических исследований и построении независимой и контролируемой промышленной экологии.

**Ключевые слова:** цифровая экономика; конкурентная стратегия; организационная структура; культура; экономическая среда; экономические действия; цифровые технологии

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## 数字经济国家战略规划：中俄材料竞争分析

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**摘要:** 当前，数字经济浪潮席卷全球，已成为世界各国竞相争夺的战略制高点。为牢牢抓住这一重大历史机遇，加快经济结构转型升级，俄罗斯正在进一步加强信息基础设施、新一代信息技术、ICT产业、人力资源、信息安全、数字环境监管等数字经济核心能力建设。

**研究目的:** 对中国和俄罗斯两国数字经济发展的国家战略规划进行竞争分析

**研究目标:** – 界定数字经济的含义

– 展示现阶段数字经济的进展情况

– 研究俄罗斯的数字经济

– 探讨中国的数字经济

**研究方法:** 理论文献资料研究、数据收集与分析

**研究结果:** 《俄罗斯联邦 2017–2030 年信息社会发展战略》（2017 年）中提出，要为信息和通信技术产业大型企业的发展创造条件，以保护数字经济领域的国家利益和在俄罗斯的大型互联网公司。2021 年，俄罗斯发展数字经济的总投资达到 4.094 万亿卢布，比 2020 年增长 7.8%，占 GDP 的 3.7%。十年来，中国数字经济取得了举世瞩目的成就。总体规模连续多年位居世界第二。信息通信网络建设规模居世界领先地位。认真实施“宽带中国战略”，建成了全球最大的光纤和移动宽带网络。已建成光缆线路总长度增长了 2.7 倍，从 2012 年的 1479 万公里增加到 2021 年的 5481 万公里。截至 2022 年 6 月，中国数据中心机架总规模已超过 590 万标准机架，将建成 153 家国家级绿色数据中心。关键核心技术取得突破。数字技术研发投入逐年增加。服务业数字化水平显著提高。农业数字化转型稳步推进。中国深入实施以创新为核心的发展战略，推进关键技术攻关，加快锻造长板、补齐短板，构建自主可控的产业生态。

**关键词:** 数字经济；竞争战略；组织结构；文化；经济环境；经济活动；数字技术

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## 1. INTRODUCTION

Since human society entered the information age, the rapid development and widespread application of digital technology has given rise to the digital economy (Digital Economy). It is very different from the agrarian economy in the agrarian era and the industrial economy in the industrial era. The digital economy is a new economy, a new momentum, and a new format. It has triggered profound changes in society and the economy as a whole.

At this stage, digital technologies, goods, and services are not only penetrating into traditional industries faster in multiple directions, layers,

and chains, i.e. industrial digitization. The continuous development and growth of the digital industry chain and the industrial clusters represents the digital industrialization. China is focusing on promoting the 5G network, data center, industrial Internet, and other new infrastructure, which essentially constitute the digital economy infrastructure around the new technology industry. The digital economy has become a new engine driving China's economy to achieve healthy and rapid growth. The various new formats that have emerged will also become new important points of growth for Chinese economy.

In order to accelerate the development of the digital economy, Russia is focusing mainly on setting development goals, improving laws and regulations, adhering to national interests in the digital economy, and ensuring the soundness of relevant institutions. The above measures will certainly play a positive role in consolidating the foundation for the development of the digital economy and promoting the digitalization of the economy. While promoting the development of the digital economy, Russia is sure to face pressures such as the blockade of digital technology imports, the availability of financial allocations, and the lack of efficiency of the management system.

## **2. CONCEPT DEFINITION AND STUDY OF RELEVANT LITERATURE**

### **2.1. Defining digital economy**

Digital economy, as an economic concept, is the identification, selection, filtering, storage, and utilization of big data (digital knowledge and information), guiding and realizing the rapid optimal allocation and regeneration of resources, and the realization of high-quality economic development.

### **2.2. Perfecting Digital Economy**

In the digital economy, the continuous upgrading of network infrastructure and information tools, such as smart machines, Internet-cloud computing, blockchain, Internet of Things, and other information technologies, has continuously improved the ability of humans to process the quantity, quality, and speed of big data, and promoted the human economic form<sup>1</sup>. The transition of economy from an industrial type to an information / knowledge / smart type greatly reduces social transaction costs, improves the efficiency of resource allocation, increases the added value of products, enterprises

and industries, promotes the rapid development of social productivity, and at the same time surpasses backward countries. The digital economy, also known as the intelligent economy, is the essential feature of Industry 4.0 or the post-industrial economy, and the core element of the information / knowledge / smart economy.

## **3. NATIONAL STRATEGIC PLANNING FOR THE DIGITAL ECONOMIES IN CHINA AND RUSSIA**

### **3.1. Russia's digital economy**

The goal of Russia's digital economy is to promote economic growth and protect national sovereignty. Russian President Vladimir Putin has explained this brilliantly: "The digital economy is a necessary tool for promoting national prosperity. It is an indispensable condition for competitiveness, a strategic component of ensuring the country's economic sovereignty, and an issue of Russia's national security and independence."

"Strategy of the Information Society Development in the Russian Federation for 2017–2030" suggests that the protection of the national interests in the field of digital economy requires conditions for the development of large companies in the information and communications technology industry; Russia's large Internet companies need cross-industry alliances in the digital economy on the basis of banks, communications operators, operators of payment systems, financial market participants, and state-owned companies; Russian companies should be supported in entering foreign markets for goods and services; Russian companies operating in the digital economy with foreign companies must comply with the antimonopoly law and implement the same tax conditions; it is necessary to create conditions for the localization of foreign companies producing or using information and communication products in Russia<sup>2</sup>.

<sup>1</sup> Novikova IV. The Concept of Employment Strategy for the Digital Economy. Kemerovo: Kemerovo State University, 2020. 254 p. <https://doi.org/10.21603/978-5-8353-2609-9>

<sup>2</sup> The Government of the Russian Federation. (2017). Program "Digital Economy of the Russian Federation". [Order of the Government of the Russian Federation "On the System for Managing the Implementation of the Program 'Digital Economy of the Russian Federation'"]. (No. 1030). URL: <http://government.ru/docs/29003/>

Academician V. L. Kvint's concept of strategizing is unique because it relies on intuition, multiplied by diligence, to build the forecast necessary to create a strategy<sup>3</sup>. However, Baller, Dutta and Lanvin note that theory remains the immutable locomotive for all other elements of strategic genius<sup>4</sup>. When the first elements of the theoretical toolkit are developed, strategists and leaders gain significant competitive advantages over equally gifted individuals who lack these powerful character traits and natural abilities.

V. Kvint in his book expounds on modern economic systems and explains that strategists work to find new perspectives and project new scenarios for the future modern economic systems<sup>5</sup>.

In 2019, Russia officially approved the implementation of the national project "Digital Economy", including federal sub-projects "Digital Economy", "National Governance", "Technology Development", "Information Technology Infrastructure", "Artificial Intelligence", and "Network Security".

The Russian Ministry of Digital Development, Communications and Mass Media (hereinafter referred to as the "Digital Ministry") is responsible for the specific implementation of the project.

This report is based on 2 aspects: the development of Russia's domestic digital economy and Russia's position in the international digital economy rankings. It analyzes the status quo of Russia's digital economy development in combination with data.

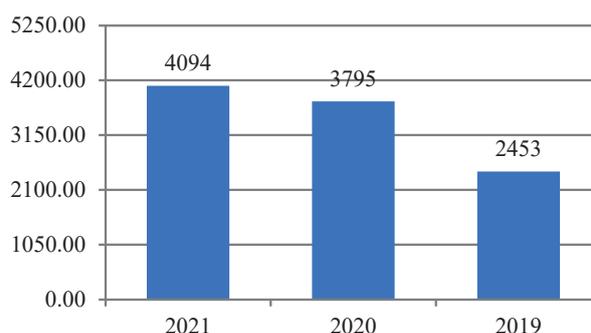
In 2020 and 2021, the Digital Ministry of the Russian Federation, the Russian State Statistics Service, and the Russian Higher School of Economics jointly published the "Digital Economy: A Brief Statistical Handbook" to analyze the development of the Russian digital economy in 2018 and 2019 respectively. In summary, it covers eight aspects: investment in the development of the digital economy, social

coverage of the digital economy, public satisfaction with the digital technology, digitization in business, digital governance, digital economy practitioners, digital infrastructure, and information and communications technology (ICT)<sup>6</sup>.

In 2021, Russia's total investment in the development of the digital economy reached 4.094 trillion rubles, an increase of 7.8 % over 2020, accounting for 3.7 % of GDP. In 2020, Russia's total investment in the development of the digital economy reached 3.795 trillion rubles, accounting for 3.6 % of GDP (fig. 1). Among them, Russian households spent 1.641 trillion rubles on digital technology products and services (accounting for 1.5 % of GDP), and business spending reached 2.453 trillion rubles (accounting for 2.2 % of GDP, up 0.3 percentage points from the previous year)<sup>7</sup>.

Expenditures are mainly used to purchase mechanical equipment applying digital technology (44.4 %), related software and installation (24.5 %), and electronic communication services (accounting for 18.7 %)<sup>8</sup> (fig. 2).

In terms of the social coverage of the digital economy, in 2022, the Internet penetration rate



**Fig. 1. Total investment in the development of the digital economy, Trillion rubles**

**Рис. 1. Суммарные инвестиции в развитие цифровой экономики**

<sup>3</sup> Kvint VL, Bodrunov SD. Strategizing societal transformation: Knowledge, techniques, and noonomy. Palm Bay, USA, Burlington, Canada, Abingdon, UK: Apple Academic Press; 2023. 206 p.

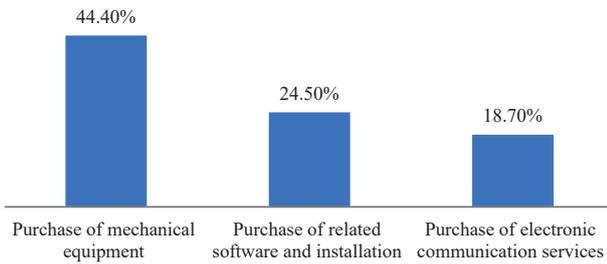
<sup>4</sup> Baller S, Soumitra D, Lanvin B. The Global Information Technology Report 2016: Innovating in the Digital Economy. Geneva: World Economic Forum. 2016. <https://doi.org/10.13140/RG.2.2.26157.90088>

<sup>5</sup> Kvint V. Strategy for the global market: Theory and practical applications. New York, London: Routledge; 2016. 519 p.

<sup>6</sup> Novikova IV. The Concept of Employment Strategy...

<sup>7</sup> Ma YY. Cost estimation of service trade policy: tariff equivalence based on STRI. International Economic and Trade Exploration. 2021;37(3):16–30.

<sup>8</sup> Ma YY. Cost estimation...

**Fig. 2. Expenditures****Рис. 2. Расходы**

of Russian households reached 76.9 %, an increase of 0.3 percentage points from the previous year, and the broadband penetration rate reached 73 %<sup>9</sup>.

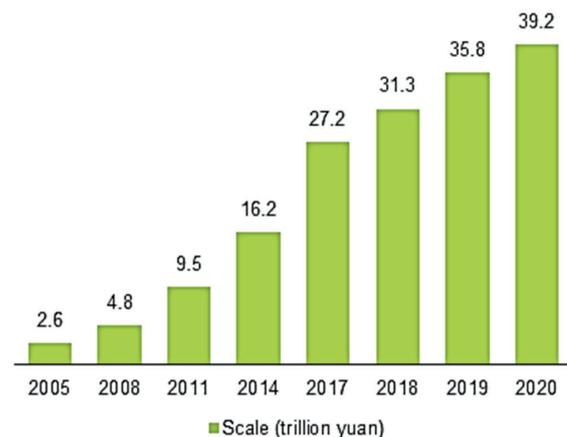
It is necessary to regulate the ways for organizations to obtain personal data of individuals; to protect data imported into Russia; to implement a system of certification and licensing for goods and services, including goods or services provided through the Internet; within the framework of the Eurasian Economic Union, to determine the rules of access for goods and services of the foreign companies to the domestic markets of member states, and to protect the Russian and Eurasian economies. Special attention should be given to the following issues: integration of the digital economic space of the Economic Union; measures to restrict the use of the Internet for the provision of software, goods and services by foreign companies located in Russia and violating Russian law; the equal conditions for foreign companies providing services in Russia to establish representative offices or joint ventures; measures to protect the rights of Russian consumers using the Internet to purchase goods and remote services; receipt of complaints from Russian citizens and meeting the requirements of state authorities when foreign companies establish representative offices in Russia. Guarantees should be provided for establishing and operating them.

Companies that use servers or databases located in Russia to perform activities or process data must store relevant information; e-commerce transactions should use the Russian payment system.

**3.2 China's digital economy**

Since the 18<sup>th</sup> National Congress of the Communist Party of China, China has been implementing the strategy of strengthening the country through the Internet and the national big data strategy. Industrial digitization promotes the vigorous development of the digital economy. Over the past decade, China's digital economy has made world-renowned development achievements. The overall scale has ranked second in the world for many years, and its leading and supporting role in economic and social development has become increasingly prominent.

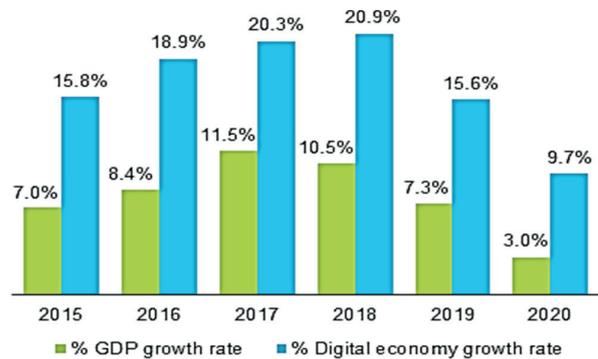
Digital infrastructure has achieved leapfrog development. The new infrastructure construction is planned and coordinated, and the construction of the intelligent comprehensive digital infrastructure is accelerated. The digital infrastructure is high-speed ubiquitous, space-ground integrated, cloud-network integrated, intelligent and agile, green and low-carbon, safe and controllable. First, the construction of information and communication networks is a global leader in terms of scope. The "Broadband China" strategy has been implemented thoroughly. The country has built the world's largest fiber optic and mobile broadband network. The length of optical cable lines increased 2.7 times from 14.79 million km in 2012 to 54.81 million km in 2021<sup>10</sup> (fig. 3).

**Fig. 3. Scale of digital economy in China, 2005–2020****Рис. 3. Масштабы цифровой экономики Китая, 2005–2020**<sup>9</sup> Ma YY. Cost estimation...<sup>10</sup> Gao JX. Innovation and development of Russia's digital economy. Eurasian economy. Management World. 2020;4:130–148.

As of July 2022, the country's licensed 5G mid-band and low-band spectrum resources total 770 MHz. The total amount of licensed mid-band and low-band spectrum resources ranks among the top in the world. A total of 1.968 million 5G base stations have been built and deployed. The network infrastructure has been fully upgraded to IPv6, and the number of active IPv6 users has reached 697 million. The industrial Internet innovation and development strategy have been thoroughly implemented; the network, platform, security system, and industrial Internet logo analysis system have been basically established. Second, the capabilities of information and communication services have been greatly improved. My Country's mobile communication has made a leap from "3G breakthrough" to "4G synchronization" to "5G leadership", and the research on vision requirements, key technology research and development, and international exchanges and cooperation in the 6G field have been accelerated<sup>11</sup>.

The Internet penetration rate will increase from 42.1 % in 2012 to 73 % in 2021. The number of Internet users will reach 1.032 billion, and the total number of mobile phone users will reach 1.643 billion, of which 5G mobile phone users will reach 355 million, accounting for about a quarter of the world. For four consecutive years, the reduction of broadband and private line fees has been promoted for small and medium-sized enterprises, with a benefit of more than 700 billion yuan. Compared with 2012, the average download rate of broadband networks has increased nearly 40 times, and the average tariff per unit of mobile network traffic has decreased by more than 95 %. Third, the computing power infrastructure has reached the world's leading level<sup>12</sup>.

The national integrated big-data center system was basically established, and the implementation of the "East Data and Western Computation" project was accelerated (fig. 4).



**Fig. 4. Growth rates of GDP and digital economy in China, 2015–2020**

**Рис. 4. Темпы роста ВВП и цифровая экономика Китая, 2015–2020**

By June 2022, the total size of data center racks in My Country will exceed 5.9 million standard racks, and 153 national green data centers will be built. The power consumption efficiency of advanced green centers in the industry will drop to about 1.1, reaching the world's leading level<sup>13</sup>. Many new-generation national AI platforms have been created and made available to the public. The development of small and medium-sized enterprises with low-cost computing power services are supported.

The innovation capability of the digital industry is increasingly improving. The innovation-driven development strategy and advanced research of the key core technology are implemented thoroughly, speeding up forging of long boards, making up for short boards, and building an independent and controllable industrial ecology<sup>14</sup>. First, there have been breakthroughs in key core technologies. Investment in digital technology research and development is increasing year by year. Original breakthroughs are occurring in fundamental frontier areas such as quantum computing prototypes, brain-inspired computing chips, and carbon-based integrated circuits. Emerging areas such as artificial intelligence, blockchain, and the Internet of Things

<sup>11</sup> GSMA. (2023, February). Spectrum Policy Trends 2023. URL: <https://www.gsma.com/spectrum/wp-content/uploads/2023/02/Spectrum-Policy-Trends-2023.pdf>

<sup>12</sup> Fan X. Digital Economy Development, International Trade Efficiency and Trade Uncertainty. *China Finance and Economic Review*. 2021;10(3): 89–110. <https://doi.org/10.1515/cfer-2021-0018>

<sup>13</sup> Xu XC, Zhang MH. Research on the measurement and calculation of the scale of China's digital economy – Based on the perspective of international comparison. *China Industrial Economy*, 2020;5:23–41.

<sup>14</sup> Carlisle K, Gruby RL. Polycentric Systems of Governance: A Theoretical Model for the Commons. *Policy Studies Journal*. 2017;47(4):927–952. <https://doi.org/10.1111/psj.12212>

have formed a number of independent underlying software and hardware platforms. The technological innovation ability of key products has been greatly improved, and the effect of large-scale application has begun to form. Second, the vitality of industrial innovation has been continuously improved. Industrial innovation capabilities have made breakthroughs<sup>15</sup>.

In 2021, the number of invention patents granted in the country's core digital economy industries will reach 276,000, accounting for 39.6 % of the number of invention patents granted by the whole society in the same period. Among the key digital technologies, the number of invention patents granted in the fields of artificial intelligence, Internet of Things, and quantum information ranks first in the world<sup>16</sup>. Finances continue to play a role in promoting the digital economy and reforming the share issuance registration system.

From 2021 to June 2022, nearly 150 digital economy companies will complete their IPOs on the Main Board, the Science and Technology Innovation Board, and the Growth Enterprise Market, raising nearly 300 billion yuan<sup>17</sup>. There is further expansion of medium and long-term lending to the digital economy industry. By the end of June 2022, the balance of medium and long-term loans for the computer, communication and other electronic equipment manufacturing industry will be 1.48 trillion yuan. Third, the digital industry is growing rapidly.

The digital transformation of the industry is accelerated. The "cloud use of data to empower intelligence" in enterprises are deeply promoted; industrial Internet, digital commerce, and smart agriculture are increasingly developed; and the transformation and upgrading of traditional industries

are supported in an all-round and full-chain manner. First, the digital transformation of the manufacturing industry continues to progress. Digital integration and industrialization are well under way and becoming more practical, and the application of digital technology in enterprises has been significantly improved<sup>18</sup>.

Xu & Liang noted that the intelligent manufacturing project has been implemented in depth<sup>19</sup>. Through intelligent transformation, the production efficiency of 110 intelligent manufacturing demonstration factories has increased by an average of 32 %, the comprehensive utilization rate of resources has increased by an average of 22 %, the product development cycle has been shortened by an average of 28 %, and the operating costs have been reduced by an average of 19 %. The non-performing rate fell by an average of 24 %<sup>20</sup>.

Second, the digitalization level of the service industry has improved significantly. The size of the national online retail market has ranked first in the world for nine consecutive years, growing from 1.31 trillion yuan in 2012 to 13.1 trillion yuan in 2021, with an average annual growth rate of 29.15 %. In recent years, the country's e-commerce transaction volume has maintained rapid growth, from 8 trillion yuan in 2012 to 42.3 trillion yuan in 2021, with an average annual growth rate of 20.3 %<sup>21</sup>. The scale of e-commerce and mobile payments leads the world, and the market sector of online car-hailing, online food delivery, digital culture, and smart tourism continues to expand.

Third, the digital transformation of agriculture is making steady progress. In 2021, the comprehensive mechanization rate of crop farming and harvesting will

<sup>15</sup> Nie Yongyou. Becoming a leader – the integral logic of China's economic strategy. Saint Petersburg: NWIM RANEP; 2022. 238 p. <https://doi.org/10.22394/978-5-89781-739-9-1-236>

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<sup>17</sup> Lu Y, Gu W, Bao Q. Artificial intelligence and Chinese enterprises' participation in the global value chain division of labor. *China Industrial Economy*. 2020;5:80–98.

<sup>18</sup> Zhan XN, Ouyang YF. New trends in global investment under the digital economy and China's new strategy for utilizing foreign capital. *Managing the World*. 2018;3:78–86.

<sup>19</sup> Xu TS, Liang X. Measuring aggregate trade costs and its empirical effects on manufacturing export composition in China. *China Finance and Economic Review*. 2017;5(6):1–18. <https://doi.org/10.1186/s40589-017-0049-z>

<sup>20</sup> Liu B, Pan T. Research on the Influence Effect of Artificial Intelligence on the Division of Labor in the Manufacturing Value Chain. *Quantitative Economics and Technical Economics Research*. 2020;10:24–44.

<sup>21</sup> Liu B, Gu C. Does the Internet drives the relationship between bilateral value chains. *China Industrial Economics*. 2019;11:98–116.

exceed 72 %, and more than 600,000 sets of Beidou terminals will be used in agricultural machinery<sup>22</sup>. New smart agricultural models such as product traceability, smart irrigation, smart greenhouses, and precision fertilization will be widely promoted, greatly improving agricultural production efficiency.

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