

Innovation Parks as the Key Elements of China's Sharing Economy Infrastructure

Alexander Baranov^{1,a}, Xu Ben^{1,b}

¹Belarusian State University, 4 Nezavisimosti Avenue, Minsk, Belarus
^aaxmbaranov@inbox.ru, ^bxubenchinese@gmail.com

Keywords: Economy of joint consumption, Sharing, Clusters, Information and information economy, Information technologies, China

Abstract: The article presents the dynamics and features of the formation of the sharing economy in China, the ranking of countries according to the Sharing Economy Index in 2022, authors determines the place of China in the global market of the sharing economy. The article considers innovation parks as an infrastructure element of digital transformation and development of the sharing economy in the connection with the Chinese model of the information infrastructure environment; authors considers the enclave economy of sharing on the example of individual provinces of China – Ankang, Shaanxi and Dongzhouyao-Madotou, gives the current statistics and the main recommendations of the development of the National High Technology Zone of the PRC for 2022.

1. Introduction

The new economic model of consumption – the sharing economy – arises at the intersection of network social technologies, the capabilities of mobile communications and public mechanisms responding to modern economic crises that lead to a reduction in people's purchasing power. The main idea of the economy of joint consumption is the desire to more rationally and efficiently use of the available resources and access various goods and services that cannot be individually obtained on property rights, or very expensive. It is no coincidence that the co-consumption economy peaked during the coronavirus pandemic in China in 2019-2022. The lack of funds of the population contributed to the dissemination of ideas about collective property, about joint consumption.

2. Sharing economy: infrastructure and trends of development in China

In the modern economic system, it is empirically difficult to determine the share of sharing in the country's economy as a whole due to gaps in the methodology of its research. The most common is the assessment of the volume of the sharing economy industries and their contribution to the country's GDP, which allows assessing the level of development of the sharing economy in individual countries. Nevertheless, a number of research agencies are working in this direction. For example, The Consumer Choice Center offers its own methods for assessing the level of development of sharing based on an analysis of the infrastructure of the sharing environment in major cities around the world (Table 1)

Table 1: Ranking of countries according to the Sharing Economy Index 2022

Place in the Index 2022	Place in the Index 2021	A country	City	Rating 2022	Rating 2021
1	1	Estonia	Tallinn	110	100
1	1	Georgia	Tbilisi	110	100
1	2	Brazil	Sao Paulo	110	95
1	-	Argentina	Buenos Aires	110	-
2	2	Poland	Warsaw	105	95
2	2	Ukraine	Kyiv	105	95
2	3	Mexico	Mexico city	105	90
3	4	Germany	Munich	100	85
3	4	Portugal	Lisbon	100	85
4	5	Germany	Hamburg	96	83
5	6	Italy	Rome	95	80
5	6	Spain	Madrid	95	80
5	6	Italy	Milan	95	80
5	6	Spain	Barcelona	95	80
6	7	Germany	Berlin	93	78
7	2	Latvia	Riga	90	95
7	2	Lithuania	Vilnius	90	95
7	8	Great Britain	London	90	75
7	8	Australia	Sydney	90	75
7	8	Denmark	Copenhagen	90	75
7	8	France	Paris	90	75
7	8	USA	San Francisco	90	75
8	10	Czech	Prague	85	70
12	8	China	Shanghai	75	75
15	12	Belarus	Minsk	60	65

Table 1 shows the ranking of countries calculated according to The Consumer Choice Center. The leader in it for two years in 2021 and 2022 was Estonia and its capital, Tallinn, with a maximum score of 110. The compilers of this rating argue that this is the result of the rapid growth of tourism, which contributed to the development of the institutional environment and sharing infrastructure. Following the leader are Georgia, Brazil, Argentina, Poland. For the period 2021-2022, the development rating of such countries as Germany (Munich, Hamburg, Berlin), Portugal decreased by one order of magnitude. A significant drop was demonstrated by the rating of the development of the sharing economy of Latvia and Lithuania (from 2nd to 7th place).

According to the results of the Sharing Economy Index 2022, the top countries include developing countries and countries of Eastern Europe, which have the best sharing infrastructure compared to the leaders of the global economy. Shanghai is the most developed joint consumption city in China (12th in 2022, 8th in 2021). Among the CIS, the Republic of Belarus (Minsk) became the leader in 2022 with a result of 15th place, 60 points. However, both in China and Belarus there was a slight decrease in the index of development of the sharing economy [1].

The domestic and international situation associated with the Coronavirus pandemic, broke the supply chains and has led to significant changes in foreign economic relations at the micro and macro levels, an urgent need for cooperation between representatives of various countries. Economic parks have become the main driving force behind joint economic transformation and effective development in the regional aspect, as well as an important means of promoting the formation of a new system of

regionalization of the economy.

3. Sharing economy and development of innovation parks in China

In modern conditions, the economic park should actively participate in the technological innovation system focused on enterprises, market, industry, university and scientific research, implement the innovation development strategy, promote scientific, technical and institutional innovation, attract and collect innovative resources, improve the level of innovative services and facilitate the transition from factor management to innovation management.

A weak link in China's innovation policy is the disunity of technological cooperation institutions between different organizations, educational and research institutions and industrial enterprises. Such the disadvantage can be levelled through the active introduction of IT, which is a priority of the PRC policy in the field of science and technology parks for 2020-2025 [2]. The state shows particular interest in obtaining up-to-date scientific information, highly qualified specialists, advanced knowledge, and effective cooperation with foreign partners. According to the Chinese government, industrial parks and innovation clusters are the main tool for the transition to a new technological order, which distinguishes this policy from the clustering policy of the USA and the EU.

Based on the institutional features of the organization of clusters in various countries of the world, as well as on the basis of research analysis, we will develop the main model for the formation of clusters in the information economy. Model is the specific combination of seven key characteristics of the cluster: the degree of market ties and competition, the presence of leading firms, small business development, innovation, IT use, internationalization, the presence of direct foreign investment. According to the Chinese model, science and technology parks and innovation clusters are developed by attracting large international companies through foreign direct investment. A good investment climate is necessary for the development of advanced technologies and access to world markets. At the same time, the volumes of innovation production are insignificant, mainly there is a transfer of technologies from developed countries, in contrast to the volume of IT use, the significant scale of which characterizes production within clusters as high-tech [3] (Figure 1)

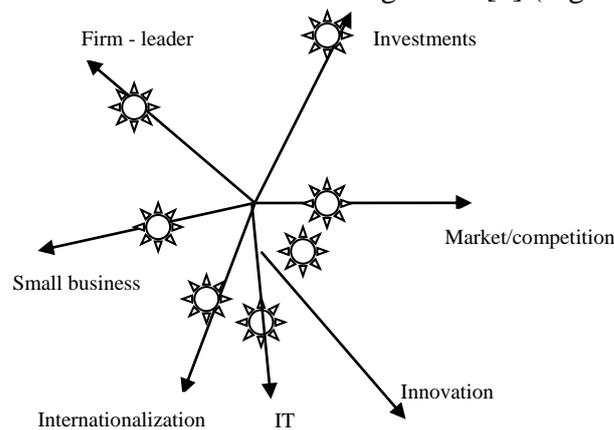


Figure 1: The Chinese model of clustering in the information environment

In the 14th Five-Year Plan (2021-2025), China intends to focus on developing advanced industrial clusters and stimulating key industries, which include aerospace, integrated circuits, marine engineering equipment, robots, advanced railway equipment, and energy, medicine [2].

Of particular importance in terms of infrastructure is the use of technology parks in the development of the sharing economy in China. Joint consumption is closely related to the development of a modern peer-to-peer economy, within which horizontal networks of production and

exchange of economic products arise, and economic participants interact directly with each other without intermediaries. This sharing model maximizes the efficiency of resource use and is the form of social cooperation.

The enclave sharing economy is a new economic phenomenon in the context of economic globalization and regional integration, and is gradually becoming a new way of regional cooperation to achieve complementary benefits between regions with differences in economic development. The enclave economic park is the most common platform for cooperation under this model, as well as the new form of joint development actively promoted by the governments of various regions of China. The enclave economic park has overcome the limitations and limits in terms of territorial jurisdiction and funding policy, requires managerial cooperation between two or more regions without subordination, which put forward new requirements for the park management regime. The example of the development of the enclave economy is the sharing science and technology parks in Ankang, where the development of the enclave economy began earlier than in Shaanxi Province. Ancang's enclave economy management model is based on the theory of flexible management, with consistent authority and responsibility, reasonable division of labor, smooth implementation, and strong state support for the development of the park [4]. Tashan Industrial Park is the example of an environmentally friendly park that implements a closed cycle "resources-products-waste-recycled resources". In the co-production economy, it has become the model for the formation of a number of parks of the enclave economy of the Dongzhouyao-Madotou area.

The National High-Tech Zone of the People's Republic of China for the period 2012-2022 continues to form a modern industrial system with innovative leadership and joint development, deploying innovative chains around industrial sectors and building industrial chains around innovative ones to form a number of internationally competitive innovation clusters. [5]

At the same time, industries of the digital economy such as artificial intelligence, big data and blockchain are actively developing and expanding, strategic emerging industries such as intelligent manufacturing, next-generation information technology and biomedicine are being promoted. By 2022, five of the six major categories of high-tech manufacturing industries accounted for more than 30% of the share of the country's GDP, and the scale of application of new generation information technology in Zhongguancong, Wuhan East Lake Optoelectronics, Zhangjiang Integrated Circuit and Tianjin wind power industry accounted for 17%, 50%, 35 % and 30% of the country's share, respectively. TNCs such as Huawei, Tencent and Ningde Times have innovated and built world-class enterprises; technology leaders such as DJI, KDDI and Hikvision have strengthened their strengths and significantly increased their technological competitiveness. More than half of the "Top 100 Biomedical Enterprises in China" were established in the high-tech zone. 90% of "China Internet Top 100" companies and 67% of companies listed on the Exchange Board of Science and Technology Venture Funds have grown and merged 35.9% of the country's technology SMEs and 36.2% of high-tech companies [6].

At present, economic parks have become an important element of China's economic and industrial development and play a priority role in the country's economic development. The economic park is a single cluster of all existing industries, which will then work together to fully realize the functions of existing industries and stimulate the emergence of new ones [7]. In China, economic parks are widespread in various regions, with the largest number of parks located in the coastal zone and the Central East region, which indicates that the formation of economic parks has become the main trend in China's economic development.

4. Conclusion

In today's competitive market, it is important not only to prevent the pressure of international

competition, but also to turn this pressure into motivation. The main recommendations for the development of technology parks in China are as follows:

- strengthen state supervision, management and support of economic parks from the position of institutional mechanisms;
- comprehensively address the issue of land and industrial upgrading;
- to strengthen the creation of the innovative potential of the companies included in the cluster;
- give importance to the role of capital flow, information flow and anthropogenic capital.

The recommendations given are mainly related to research and analysis from different points of view, covering various aspects such as government mechanisms, optimization of the modernization configuration, and innovative concepts.

The development of China's sharing economy still faces some issues that need attention. The new Chinese sharing economy and the renewal of its infrastructure in the form of science and technology parks and clusters will open up new development opportunities, and the sharing economy will have a wider penetration into high-tech services and manufacturing. From the standpoint of the direction of state policy, the development of the sharing economy will become an important element in increasing the efficiency of the digital transformation of the real sector of the economy.

References

- [1] *Sharing Economy Index 2022*. The Consumer Choice Center (2022-12-12). [2022-12-12]. [https:// consumer choicecenter.org/sharing-economy-index-2022/](https://consumerchoicecenter.org/sharing-economy-index-2022/)
- [2] National Information Centre, *China Sharing Economy Development Report* (2022-12-12). [2022-12-12]. [http:// www.sic.gov.cn/News/568/11277.htm](http://www.sic.gov.cn/News/568/11277.htm)
- [3] Baranov A.M. (2023). *Methods of Assessing the Institutional Environment for the Development of In-formation Logistics // Digital Transformation in Industry (DTI 2022)*. In *Lecture Notes in Information Systems and Organisation* (Springer, Cham). 61: 219-238. <https://doi.org/10.1007/978-3-031-30351-718>
- [4] Lee Lin (2018). *A study on optimizing the management regime of the Enclave Economic Park in the Ankang High-Tech Zone*. Northwestern University. 15:1-3.
- [5] Li Jie (2021). *Industrial chain construction of Tashan circular economy park and its enlightenment*. *China Coal*, 47(2): 83-88. <https://doi.org/10.19880/j.cnki.ccm.2021.02.014>
- [6] *Major Economic Indicators of State-level Economic and Technological Development Zones*. Department of Foreign Investment, Ministry of Commerce, (2023-2-2). [2023-2-2]. <https://www.cadz.org.cn/index.php/news/info/id/50927.html>
- [7] Krivenok D.A., Chernyshova L.I. (2023). *Introduction of organizational and methodological innovations to increase the competitiveness of the organization*. *Financial business*. 5: 134-138. EDN: IWEYYZ