

# Public Space of City University Science Park under the Concept of Sharing Economy Planning and Utilization

## -----Taking the National University Science and Technology Park in Z City, Jiangsu Province as an Example

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**ABSTRACT.** *This article is based on 93 valid resident questionnaires and 203 valid enterprise questionnaires. At the same time, through interviews with multiple companies, we learned that there are still few commercial buildings in the Z City University Science Park in Jiangsu Province. The facilities system is imperfect, and the living and entertainment needs of residents and enterprise staff cannot be fully met. Through analysis, this article believes that the above problems occur because the positioning of the science and technology park is limited to manufacturing, the geographical location is remote, and Jiangsu Province Z city's economic development still has more room for improvement. To this end, by introducing the concept of sharing economy and based on an in-depth investigation and analysis of the public space planning and utilization status of the park, this paper proposes that the Z City Science Park in Jiangsu Province should develop and construct commercial land and increase buses in the future planning. Suggestions such as transportation schedules and additional routes to the science and technology park, cultural facilities or areas such as entertainment or public services, etc., to increase the space utilization and economic benefits of the science and technology park.*

**KEYWORDS:** *sharing economy; public space; university science and Technology Park; planning and utilization*

### 1. Introduction

Li Qin<sup>[1]</sup>(2018) pointed out that the imbalance of the spatial structure has caused a huge waste of public space resources. "Space embarrassment" has become the crux of the public space of the University Science and Technology Park <sup>[2]</sup>. Various organizations of different nature have widely participated in governance in. With the

development of the economy, the concept of "sharing economy" is constantly emerging<sup>[3]</sup>. The concept of sharing economy arises from the background of "Internet +" and the deep integration of various fields<sup>[4]</sup>. In the early years, Lisa Gansky<sup>[5]</sup> believed that the future of "sharing" can be divided into two modes: the first mode is the time-sharing leasing mode, that is, the B2C mode; the second mode is the "own-share" mode. Now, these two sharing modes are everywhere in life.

The main research object of this paper is the external public space of the City University Science Park. According to the survey, the external public space of the University Science and Technology Park in Z City, Jiangsu Province currently has problems such as the idleness of the external public space and the unreasonable spatial planning structure. If the above problems are not solved, it will bring about the loss of talent and capital, resources and other consequences.

## 2. Literature review

With the proposal of the state to "improve the quality and efficiency of science and technology parks, and make it a source of power to improve China's independent innovation capabilities, and promote regional economic development and industrial technological progress," cities across the country have joined the upsurge of building science and technology parks. Zhu Huichao<sup>[6]</sup> (2015) believes that the industrial park<sup>1</sup> is a part of the city, and it is necessary to make a rational prediction of the type and scale of its future functional business; and the change in the positioning of the city's function also puts forward industrial transfer requirements for the park, so Hou Kebin<sup>[7]</sup> et al. (2016) proposed that the city The planning ideas are integrated into the park planning; in addition, Yao Qiang<sup>[8]</sup> (2016) believes that the design of the characteristic style of the industrial park should be based on the material composition and material culture of the urban style; however, Hao Jingxin<sup>[9]</sup> (2017) believes that the science and technology park The planning and construction of the project must also follow the principle of "sustainable development", and should not be rushed; at the same time, Ding Yingli<sup>[10]</sup> (2014) proposed to meet the functional layout of the modern park.

In summary, domestic and foreign experts and scholars have mainly conducted fruitful research on the management mode of science and technology parks, government policies and roles, etc., which has laid a good foundation for the research in this article, but few have targeted the public space of science and technology parks. The analysis of the reasonable planning and utilization problems of science and technology has led to some vacancies at the theoretical level of the public planning of science and technology parks, resulting in inadequate practice; and according to the "National Medium and Long-term Scientific and Technical Development Planning Outline (2006-2020)" The "Thirteenth Five-Year Plan for Development of Science and Technology Park" and other relevant policy documents

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<sup>1</sup>Li Ping<sup>[12]</sup> (1999) proposed the University Science and Technology Park, which can also be called the University Science and Technology Industrial Park, University High-tech Park, University Technology Park, etc., that is, the high-tech achievement incubation base.

require that the government also vigorously support and publicize the planning and use of the University Science and Technology Park, which has become an inevitable trend and requirement. Therefore, this article will introduce the concept of a shared economy and combine it with public spaces to enhance the city's innovative capacity, build a harmonious city, and promote economic development <sup>[11]</sup>.

### 3. The current situation of the University Science and Technology Park in Z City, Jiangsu Province

In order to encourage and support innovation and entrepreneurship in the science and technology park, improve the financial security system, and attract talents, the Party Committee of the New District of Z City, Jiangsu Province issued some policy documents, as shown in Table 1.

*Table 1: Some policy documents issued by the Party Committee of the New District of Z City, Jiangsu Province*

Policy documents	release time	Expected effect
"Implementation Rules for Encouraging and Supporting Entrepreneurship and Enriching People in the New District of Z City, Jiangsu Province"	2017.6	Support the construction of industrial parks in Z City, Jiangsu Province, and increase the guarantee for entrepreneurial land
"Five Measures for Financial Support for Technological Innovation in the New District of Z City, Jiangsu Province"	2017.12	Promote the improvement of the financial support system of science and technology parks
"Four Measures for Optimizing Supporting Services for Talents' Life in the New District of Z City, Jiangsu Province"	2018.4	Complement the city functions, provide customized public services for talents, upgrade the files and upgrade the supporting services for talents' life

#### 3.1 Existing facility foundation

(1) Housing: There is a place to provide one-stop bags for high-level talents who come to entrepreneurship and employment. They are divided into first-phase elite apartments, second-phase Rubik's cube apartments, and there are about 1799 boutique apartment rooms. In addition, the University Park takes Smart Avenue as the main axis and is divided into a living supporting area and a technological innovation area. Living supporting areas, with supporting high-end residential areas such as Yinhu and Pioneer, can meet the housing needs of different people.

(2) Medical: The elite apartments in the Science and Technology Park are to the east. It is the first Sino-US joint venture Ruikang Hospital in Jiangsu Province

jointly invested and constructed by the US CHC collective and the New District Government. It was officially opened in February 2017 and currently has Grade 2 Class A Medical qualifications.

(3) Education: The Z City Science and Technology Park in Jiangsu Province gathers the best quality educational resources in the city. It has the most high-end private kindergartens and primary schools in Z City, Jiangsu Province-Nanshi Attached Children, Nanshi Attached Primary School, and the best private junior high school-No. 1 A foreign language school.

### 3.2 Deficiencies

According to the enterprise questionnaire, 95 people (accounting for 46.8% of the effective sample) believe that the park foundation and supporting facilities are relatively weak, and 131 people (accounting for the effective sample of 64.53%) believe that there are still problems in the park management regulations, and these management standards have problems To a large extent, there are still shortcomings in the spatial planning of the science and technology park. In addition, the facilities in the park are very inconvenient from travel to entertainment to related fitness and other aspects, as shown in Figure 1.

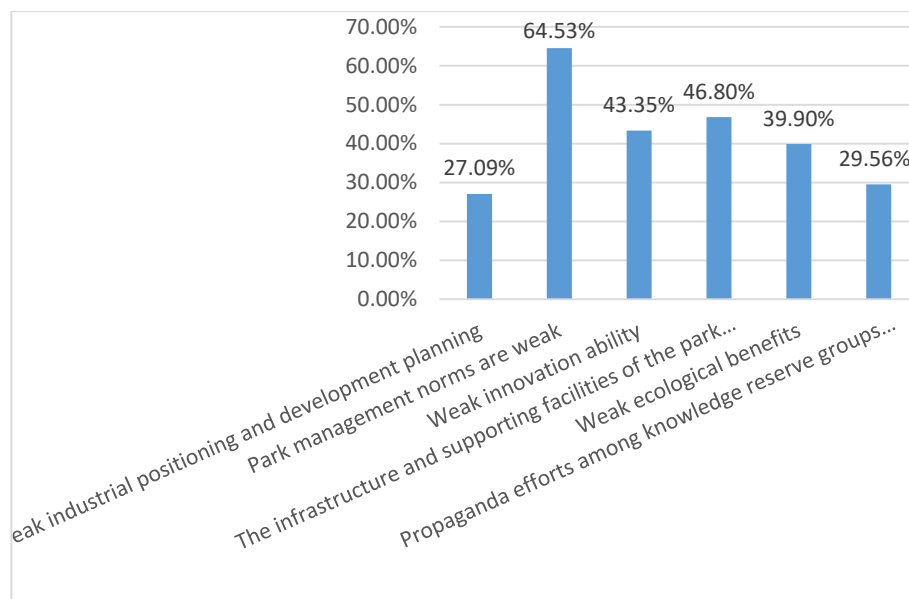


Figure 1: The weak link in the Science Park

According to the research object and purpose of this article, relevant investigations and studies were conducted on the National University Science Park

in Z City, Jiangsu Province, and two different questionnaires were prepared for residents and scientific and technical personnel in enterprises. Among them, Yinhu Garden, A total of 100 questionnaires were issued by Elite Apartments, Rubik's Cube Apartments and Dongjun Huating, and 96 were actually recovered, with a recovery rate of 96%, of which 93 were valid questionnaires and the effective rate was 93%; The Environmental Protection Center Company, Z City Zhongda Tongguang New Energy Technology Co., Ltd., Jiangsu Internet Business Company, Audi Automobile Company, and Fulian Automobile Company issued a total of 210 questionnaires<sup>2</sup>, 210 were recovered, the recovery rate was 100%, of which 203 valid questionnaires, the effective rate was 96.7%. In addition, we also conducted interviews and selected residents who lived or worked in large vacant areas: a male employee working in the investment promotion department of Yidu Home Furnishing Building Materials City and a Swiss living in the Science and Technology Park of Z City, Jiangsu Province. A lady near Kang Hospital; also interviewed some companies: Secretary of the Z City Environmental Protection Center Company of Jiangsu Province, General Manager Xing of Zhongda Tongguang New Energy Technology Co., Ltd., and Minister of Runjiang International Administrative Department; at the same time, also interviewed Mr. Feng from the Management Office of Science and Technology Park of Z City, Jiangsu Province.

#### **4. The current problems of science and technology parks in the planning and utilization of public space**

##### ***4.1 The commercial buildings in the park are few and scattered***

Through the author's field observation, it is found that the space layout of the science and technology park is not reasonable. Most of the buildings in the park are manufacturing or technology-based enterprises, such as Z City Zhongda Tongguang New Energy Technology Co., Ltd., Audi Motor Company, Fulian Automobile in Jiangsu Province. Companies, etc. There are few commercial buildings and scattered in the science and technology park, the agglomeration effect is not obvious, and the economic benefits are difficult to improve. In addition, according to the interviews between residents and internal personnel of the enterprise, they also believe that there is a lack of a certain number of commercial buildings in the science and technology park. The exchange and circulation of commodities are not very frequent, and the demand for such types is still very strong.

##### ***4.2 Imperfect transportation facilities system***

The parking lot under the Gemini R & D Technology Building is full of cars. According to interviews with personnel inside the company, many employees choose to travel by car because they live far away from the company, but this often

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<sup>2</sup> Because the main body of the science and technology park is staff related to the enterprise, so More questionnaires for enterprises will be distributed.

results in insufficient parking spaces. It is hoped that the route and frequency of the bus can be increased; at the same time, in the residents questionnaire, 50 people (53.76% of the effective sample) of the supporting facilities that are expected to improve or increase want to increase public transportation facilities, and the proportion of the effective sample is the highest, Far higher than the need for other facilities, as shown in Figure 2.

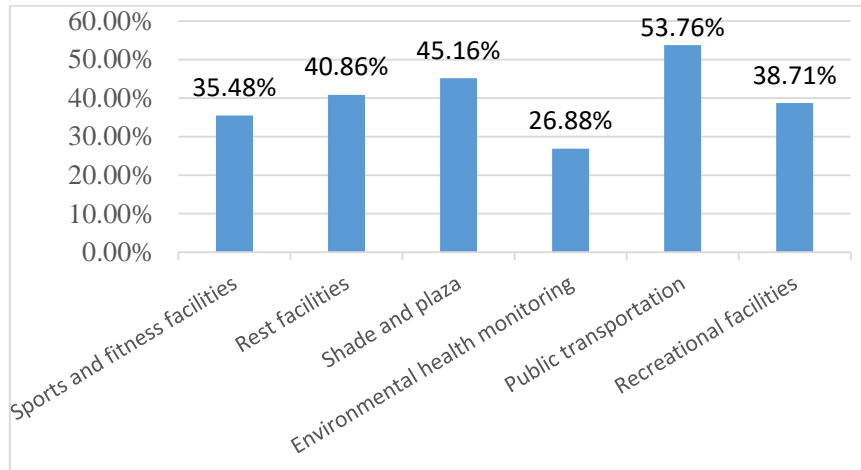


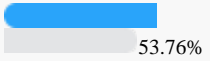
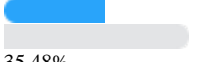
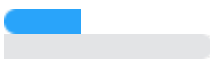
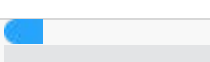
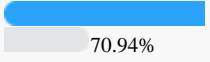
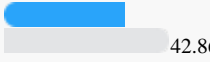
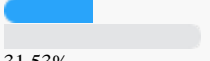
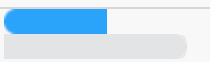
Figure 2: Ancillary facilities that need improvement or addition in the public space of the Science Park

As can be seen from Figure 2, the coverage of the bus routes within the Science Park is not enough, and the people urgently need to solve the traffic problem. On the other hand, through our field observations, the number of shared bicycles in the Science Park is relatively small. This will bring some negative effects, for example, for young people who start a business in the science and technology park, daily life is very inconvenient; it also causes high transportation costs in the science and technology park.

#### ***4.3 The living and entertainment needs of residents and corporate staff cannot be fully met***

In the questionnaires of residents and enterprises, residents and enterprise workers still have great demands for entertainment life and public facilities, as shown in Table 2.

Table 2: Residents and corporate staff wish to increase the area of entertainment, public facilities or activities

Classify	Options (multiple choices)	subtotal	The number of effective fill in this question	scale
inhabitant	Green areas, parks, plazas and other leisure areas	50	93	 53.76%
	Sports activity area	33		 35.48%
	Shared public service areas such as public toilets, sanitation lounges, newsstands, charging stations, and libraries	25		 26.88%
	Local cultural promotion areas such as cultural corridors	13		 13.98%
enterprise	Green areas, parks, plazas and other leisure areas	144	203	 70.94%
	Sports activity area	87		 42.86%
	Shared public service areas such as public toilets, sanitation lounges, newsstands, charging stations, and libraries	64		 31.53%
	Local cultural promotion areas such as cultural corridors	74		 36.45%

It can be seen from Table 2 that residents and business workers have especially many choices for leisure areas such as green spaces, parks, and squares, accounting for more than 50%, followed by sports activities. According to the interview with the secretary of the Z City Environmental Protection Center Company of Jiangsu Province and the director of the Runjiang International Administrative Department, they all said that not only they, but also the employees in the company, hoped to have a fitness and entertainment during lunch break. Places can not only promote the exchange of interpersonal relationships, but also improve work efficiency.

**5. Analysis of the causes of problems in the planning and utilization of public space in the science and technology park**

**5.1 The positioning of the science and technology park is limited to manufacturing**

Nowadays, people generally think that science and technology parks are only

places for manufacturing, so the construction of science and technology parks in the Z city of Jiangsu Province has neglected the construction of commercial buildings. In fact, the development of the park is related to the development of the city to a certain extent. According to the interviews with Mr. Xing of Zhongda Tongguang New Energy Technology Co., Ltd. and Mr. Feng of Science and Technology Park Management Office, compared with the surrounding cities, the economic development of Z City in Jiangsu Province is not prosperous enough. Therefore, the attraction of science and technology parks to enterprises and investors is also greatly reduced. At the same time, the enterprises currently located in the park cannot fill up the existing buildings in the park, so the park management agency must consider whether the new buildings will cause waste of resources when planning and constructing the park. One of the most critical factors for the development of business is the flow of people. The amount of people determines whether the service industry can prosper. However, there is not enough people in the park, and business cannot be prosperous. Therefore, many investors will have greater concerns when investing in the construction of commercial buildings and facilities in science and technology parks, such as profit, cost, and taxation after the construction.

### ***5.2 The remoteness of geographic location***

According to the interview with Mr. Xing of Zhongdatongguang New Energy Technology Co., Ltd., due to the remote location of the science and technology park, it is far away from the city center, outside people rarely visit here, resulting in sparse traffic, and the bus routes that once passed the science and technology park have also been changed, making the science and technology park isolated from the bustling route.

### ***5.3 The slowness of economic development and poor benefits of Z City in Jiangsu Province***

A total of 19 residents who were dissatisfied with the current planning of the Science and Technology Park, 13 of them (68.42% of the effective sample) believed that the economic benefit of the Z city in Jiangsu Province was not good. At the same time, in the enterprise questionnaire, 132 people believed that one of the reasons for the lack of planning of the science and technology park was that the economy of Z City in Jiangsu Province could not develop steadily or develop slowly (65.02% of the effective sample). According to the interviews with the secretary of the Environmental Protection Center Company of Z City, Jiangsu Province, and the head of the Runjiang International Administration Department, we learned that Z City, Jiangsu Province has also been struggling to develop its economy in the past two years. The government has also formulated a series of policies. The choices of the enterprises is shown in Table 3.



*Table 3: Supportive policies generated by the government to support economic development*

Options (multiple choices)	total	proportion
Tax incentives	46	22.66%
land	117	57.64%
Funding support	104	51.23%
Introduction of talent	57	28.08%
The number of effective filling in this question	203	

It can be seen from Table 3 that the government has made Z City economic development progress through a series of policies, financial support, and the introduction of talents. However, the interview mentioned that although Z City is actively using the above measures to develop its economy, the overall progress is still slow compared with surrounding cities.

## **6. The science and technology park to improve the public space planning and utilization of countermeasures and suggestions**

In response to the above three issues, this paper proposes related design solutions from the aspects of developing and constructing commercial land, increasing the number of bus transportation, adding routes to the science and technology park, and adding cultural facilities or areas such as entertainment or public services.

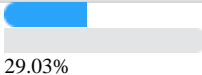
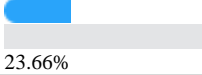
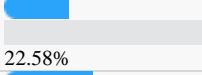
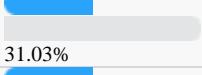
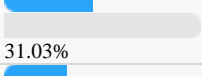
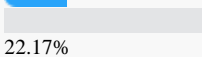
### **6.1 Development and construction of commercial land**

In the resident questionnaire and the enterprise questionnaire, 39 residents (41.94% of the effective sample) believed that buildings and facilities for commercial activities were urgently needed in the science and technology park. Regarding the needs of residents and enterprises in commercial areas, lease areas and economic shared areas, as shown in Table 4.

According to Table 4, the following suggestions can be drawn: When planning and constructing commercial land, you can fully excavate the cultural characteristics and historical heritage of Z City, Jiangsu Province, and integrate it with modern human life to build a distinctive commercial activity area. To organize economic exchange activities, such as flea trading markets, unmanned supermarkets, and other economically shared areas; at the same time, we can develop some themed commercial areas or commercial buildings in combination with the cultural characteristics of Z City in Jiangsu Province, attracting residents in the park, scientific and technological staff and even other Residents of the region entered the park to conduct economic and other aspects of communication; in addition, we also

learned from the visit to the science and technology park management institutions that financial institutions can also be built in the park to increase building density. Internal energy construction financial institutions provide financial services such as loans to enterprises.

*Table 4: Commercial land or activities that residents and enterprises expect to develop and construct*

classification	Options (multiple choices)	Subtotal	This question is filled in	ratio
Residents	Supermarkets, shopping malls, wholesale markets and other commercial areas	27	93	 29.03%
	Individual industrial and commercial studios and other leased areas	22		 23.66%
	Flea second-hand trading market, unmanned supermarket and other economically shared areas	21		 22.58%
enterprise	Supermarkets, shopping malls, wholesale markets and other commercial areas	63	203	 31.03%
	Individual industrial and commercial studios and other leased areas	63		 31.03%
	Flea second-hand trading market, unmanned supermarket and other economically shared areas	45		 22.17%

**6.2 Increase the frequency of bus transportation and increase the route to the Science and Technology Park**

In the residents questionnaire and the enterprise questionnaire, 43 residents (46.24% of the effective sample) and 112 enterprise workers (55.17% of the effective sample) hope to increase the number of bus stops and roadways. Therefore, in order to make the transportation facilities of the science and technology park better and more convenient to travel, it is recommended that the internal management personnel of the science and technology park apply to add more bus routes covering the science and technology park. In addition, bike-sharing companies can be encouraged to put a certain number of bikes in the Science Park, and the managers of bike-sharing companies are responsible for vehicle placement, maintenance management, and enacting a civilized convention. In this way, whether it is for the convenience of transportation, or to encourage green and low-carbon travel, it has a positive significance.

**6.3 Add cultural facilities or areas such as entertainment or public services**

Combined with the background of this article, after the introduction of the concept of sharing economy, residents and corporate staff have agreed that facing different groups of people, there are the following different results, as shown in Table 5 (residents) and Table 6 (enterprise). Show.

*Table 5: Relevant shared economic facilities or activities that residents expect to build in entertainment or public services*

Options (multiple choices)	Subtotal	ratio
Shared library	19	45.24%
Provide free legal, human, administrative and other professional service support to each other	16	38.1%
Regular salons and other places or gatherings where there are no restrictions on age, gender or occupation	13	30.95%
This question is filled in	42	

It can be seen from Table 5 that among the 42 residents who want to increase the sharing economy facilities, more people prefer to share libraries. Since General Secretary Xi Jinping put forward "Cultural prosperity, national prosperity, and culture strong nationality." Since then, the emphasis on culture is getting stronger and stronger. In the process of distributing questionnaires, we also learned that residents are building a shared library and forming cultural exchange The atmosphere is also very supportive. In addition, whether it is to provide professional service support or carry out exchanges and gatherings between each other, it can promote the formation of a harmonious community and improve the civic quality of the community, while indirectly promoting economic exchanges.

*Table 6: Relevant sharing economy areas or activities that enterprises expect to build in entertainment or public services*

Options (multiple choices)	Subtotal	ratio
Sports activity area	84	62.69%
Public service areas such as shared newsstands, shared charging stations, and shared libraries	65	48.51%
Local cultural promotion areas such as cultural corridors	66	49.25%
This question is filled in	134	

It can be seen from Table 6 that among the 134 corporate employees who want to increase the sharing economy facilities, they are more focused on sports activities. Due to frequent office work, the decline in the staff's physical fitness often leads to mental fatigue, which leads to a decline in work efficiency. Therefore, they will choose to have fitness facilities to enhance physical fitness and increase cultural

areas to enhance mental strength.

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