

Research on Enterprises' Motivation of Entering CUST Science Park

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Abstract

CUST Science Park was approved to become a national science park on January 5, 2013 by the Ministry of Science and Technology and the Ministry of Education of PRC, which is both an opportunity and challenge for it. The paper introduces the development of CUST Science Park and its organization structure, analyzes the enterprises entering the park, and puts forward suggestions for it to improve the quality of the entering enterprises according to our investigation on entering motivations.

Key words: CUST Science Park; Entering motivation; Accumulative effect

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1. INTRODUCTION OF CUST SCIENCE PARK

1.1 The Development Process of CUST Science Park

Changchun University of Science and Technology (hereinafter as "CUST") and the government of Changchun High-tech Industrial Development Zone prepared to establish the science park of CUST (hereinafter as "CUST Science Park") in Jan. 2004. In April 2007,

The Science & Technology Department of Jilin Province approved CUST to construct CUST Science Park, which was authorized as a provincial science park by the Science & Technology Department and Education Department of Jilin Province in June 2011. CUST and the government of Changchun High-tech Industrial Development Zone cooperate to construct the science park that consists of Weixing Park and Jinhu Park. CUST Science Park engages in technological innovation, business incubation and talent training, and hence to promote high-tech industry, accelerate regional economy and technology progress, and reduce employment pressure. CUST Science Park makes full use of the comprehensive resources of CUST such as talents, technologies, information, experimental equipments and cultural environment.

After more than five years operation, CUST Science Park has established provincial and municipal business incubator, provincial practice base for undergraduates to start a business. There are 61 incubated enterprises in the park, many of which focus on optical, mechanical and electronic industries. In order to strengthen its functions of aggregating science and technical results, incubating high-tech enterprises and training innovative talents, it applied to the Ministry of Science and Technology of PRC (MOST) for promoting to a national science park in Nov. 2012. It ranked first and was approved on January 5, 2013 by MOST and the Ministry of Education of PRC (2013).

1.2 The Organization Structure of CUST Science Park

In order to make the science park operate smoothly, CUST established corresponding organization to lead and manage the construction of CUST Science Park in reference to that of mature science parks as shown in Figure 1.

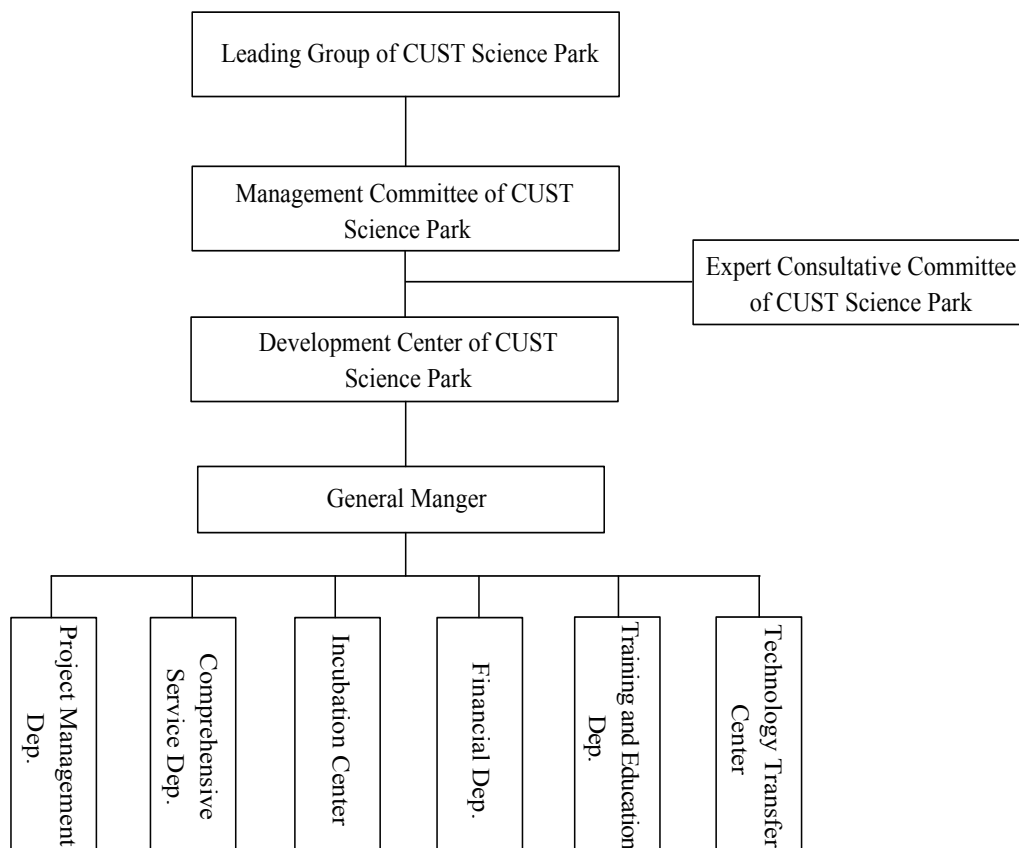


Figure 1
Organization Structure of CUST Science Park

2. OVERVIEW OF THE ENTERPRISES ENTER CUST SCIENCE PARK

2.1 The Incubation Place and Area of CUST Science Park

The floor area of CUST Science Park that can be used on its own master is 16500 m², which located in Weixing Park and Jinhua Park. Among which 12000 m² is used for incubated enterprises, 300 m² is used for undergraduates to start a business, 3300 m² is used as R&D base and public technology service platform and 900 m² is used for other enterprises (see Table 1 for details). The management office and Development Center of CUST Science Park locate in Weixing Park.

Table 1
The Function Zone Distribution and Area Sheet of CUST Science Park

Park name	Function zone	Area (m ²)
Weixing Park	The incubator of CUST Science Park	5500
	Practice base for undergraduates to start a business	300
	R&D base and public technology service platform	3300
	Place for other enterprises	900
Jinhua Park	The incubator of CUST Science Park	6500
Total: 16500		

2.2 Description of the Enterprises Entering CUST Science Park

There are 61 enterprises in CUST Science Park. We categorized the data by years of entering, registered capital, income of fiscal year 2011, number of employees and the business field that an enterprise belongs to in order to provide basic data for further analysis.

Table 2
Survey of the Enterprises Entering CUST Science Park

Years of entering (unit: year)	≤1	1-3	>3
Registered capital (unit: RMB ten thousand Yuan)	14	22	25
Income of 2011 (unit: ten thousand Yuan)	3-5	5-50	>50
	20	32	9
	≤50	50-200	>200
	19	33	9
Number of employees	≤20	20-30	>30
	31	27	3
The nature of the biggest shareholder	Teachers of CUST	Students of CUST	other
	18	19	24
Business field	Photoelectric field	Mechanical field	Electronics
	16	6	4
		Computer & software related	Material related
		24	1
			Others
			10

Note:

(1) According to “the Company Law of the People’s Republic of China”, legal minimum registered capital is RMB 30 thousand Yuan.

(2) Especially, there are 16 enterprises whose income in 2011 was zero.

(3) For the nature of the biggest shareholder, there are 19 student shareholder including 4 alumni who have graduated from CUST for more than ten years.

(4) The classification of business field is in accordance with the preponderant disciplines of CUST.

Information resource: the information in table 2 is categorized based on the data provided by the management committee of CUST Science Park.

3. ANALYSIS ON THE ENTERPRISES’ MOTIVATIONS OF ENTERING CUST SCIENCE PARK

CUST Science Park must improve the quality of the enterprises since it already became a national science park. We investigate the enterprises’ motivation of entering the science park so as to propose suggestions for it to satisfy the requirements of a national science park.

3.1 Literature Review of Entering Motivation

Associate Professor at Tohoku University Nobuya Fukugawa (2006) believes that the main motivations of enterprises to enter science park including: (1) for the purpose of obtaining market opportunity so as to keep existence and development; (2) for the purpose of conveniently contacting with universities and research institution so as to improve an enterprise’s R&D technology environment; (3) for the purpose of enlarging its popularity and influential power with the help of the science part it enters in; (4) for the purpose of obtaining more innovative opportunity and channel by taking use of

the geographic position of a science park. Quintass (1992) considers the critical motivation of enterprises enter science park is to obtain the technical resources from the park so that to promote it innovation behaviors. Rource and Keely (1989) believes that the main motivation is to obtain market opportunity including (1) entering potential market and the neighboring market around the science park; (2) obtaining purchasing contract and R&D bidding projects from government.

According to the literatures, the motivations of entering science parks those scholars generally pay attention to are to obtain technology, market opportunity, goodwill, advantage geographical position, innovation opportunity, and so on.

3.2 The Determination of Enterprises’ Motivations of Entering CUST Science Park

We interview with the staff of the management committee of CUST Science Park and the managers of entering enterprises in order to determine their motivations of entering the park. According to the results of interview, we classify the motivations into three groups as shown in Table 3.

Table 3
The Motivations of Enterprises’ Entering CUST Science Park

The motivations of enterprises’ entering the park	Primary motivations	Secondary motivations
	Resource motivations (M ₁)	The technological advantages of CUST (M ₁₁)
		The rich human resources of CUST (M ₁₂)
		The good infrastructure of CUST and the park (M ₁₃)
		The advanced experimental platform of CUST (M ₁₄)
		The geographic position advantage (M ₁₅)
		The rent advantage (M ₁₆)
	Policy motivation (M ₂)	Comprehensive industry supporting policies (M ₂₁)
		Preferential tax policies (M ₂₂)
		Preferential policy for venture investment (M ₂₃)
	Service motivation (M ₃)	The perfect services provided by the management team of CUST Science Park

3.3 The Steps of the Investigation

We design a questionnaire to investigate the main motivations of the enterprises' motivations of entering CUST Science Park with a five-point scale. Our survey includes three steps: first, we require the enterprises to determine the priority of three motivations by giving each of them a value (1, 3, 5, 7, 9); secondly, we ask them to give each sub-item a value of the same scale; thirdly, we rank the order of primary motivations and its secondary motivations.

3.4 Results Analysis

We give out 61 questionnaires to the top managers of the enterprises for filling in on site and acquire 61 effective questionnaires; the effective return ratio is 100%. According to the data of questionnaires, the order of the motivations is shown in Table 4.

Table 4
The Order of Motivations of Enterprises' Entering CUST Science Park

	Order of primary motivations	Points	Order of secondary motivations	Points
The motivations of enterprises' entering the park	M ₁	519	M ₁₅	513
			M ₁₆	502
			M ₁₁	368
			M ₁₃	345
			M ₁₂	324
	M ₃	163	M ₁₄	102
			M ₂₂	379
			M ₂₁	109
	M ₂	61	M ₂₃	69

(1) The overall order of primary motivations

Resource motivation is the first choice for all enterprises entering CUST Science Park, which indicates it is the most important motivation. The second is service motivation, but its points is obviously lower than that of the first motivation. The third is policy motivation, all enterprises give the lowest point, and so total point is only 61. According to the interview with the director of the management office of the park Professor Li Zhenhui, we know that at present the enterprises enter do not enjoy any preferential policies. However, almost each enterprise asks the management group for it when entering. So we can explain why the service motivation rows in the second.

(2) The order of sub-items of M₁

As shown in Table 4, the first is M₁₅ (geographic position advantage) and the second is M₁₆ (rent advantage). Their points are much higher than that of other sub-items, which indicates the position and rent of CUST Science Park are the most attractive factors for the enterprises. In fact, position advantage mean higher rent, but on the contrary, the rent in CUST Science Park is 14-20 per square meter per moth, which is relatively lower compared to the office building of the same kind.

(3) The order of sub-items of M₂

Although M₂ rows in the last among three motivations since they have not enjoy any preferential policy, we can conclude from the points of its sub-items that the enterprises still expect to enjoy some preferential policies in the future especially some tax preference, which is the most affordable and best for small and middle-sized enterprises.

(4) The explanation on why the service motivation rows in the second

According to the interview with the management committee and the management team of CUST Science Park, at present they only provide some basic service for the enterprise such as public service, infrastructure service and legal service, they will provide more services such as financing and assurance in the future. So we conclude that the services CUST Science Park provides for the enterprise is almost the same as that of other office building. It rows in the second but because the enterprises have not enjoyed any preference policy. So there is great space for the science park to improve its services.

4. SUGGESTIONS FOR CUST SCIENCE PARK TO IMPROVE THE QUALITY OF ENTERING ENTERPRISES

According to the analysis on the enterprises entering CUST Science Park and their entering motivation, we propose it to think further about the purpose of establishing the science park because for mature and successful university science parks, enterprises pay more attention to their good technical R&D environment and supporting policies. So the management committee should attach importance to regulate the entering motivations of enterprises by taking use of related resources and policies to attract more potential enterprises to enter.

4.1 CUST Science Park Should Highlight Its Unique Features to Produce Accumulative Effect

As a national science park, CUST Science Park should be an important channel for the transformation of scientific and technological achievements and industrialization of CUST, its main function is to take full use of the advantages of CUST in talents, disciplines and technologies in optical, mechanical, electronic, computer and material science to incubate small and medium-sized S&T enterprises. Most of existing enterprises in CUST Science Park (51 of 61) are related to the preponderant disciplines of CUST, however, we find out that they are established by the owners themselves and have no direct relation with CUST and the latter has not give them related support, which results the enterprises grow up slowly, the zero income of 16 enterprises in 2011 is enough for explaining this point. So we propose it to highlight its unique features in the advantageous disciplines

and regional economic characteristics to improve the technological innovation ability of entering enterprises, promote the transformation of scientific research achievement of CUST, thereby establish a professional industrial park with the features of optical, machinery, electronic and IT industries, and the accumulative effect of a science park will appear spontaneously.

4.2 CUST Science Park Should Improve Its Service

Although the enterprises satisfy with the services provided by CUST Science Park, its fundamental function is to incubate high-tech enterprises, so it is necessary to perfect the infrastructure in the park and establish complete service system including technology support platform for industrialization so as to provide comprehensive and high quality services, especially financing service since more than 70% enterprises in the park are in shortage of circulating funds and many of them borrowed money from small-loan companies with higher interest rate comparing to that of bank loans to reduce their financing difficulties. Up till now, CUST Science Park has not provided financing service and powerful capital support, which is essential for the SMES in high-speed growth. So it is urgent for CUST Science Park to provide financing service.

4.3 CUST Science Park Should Study Related Supporting Policies for a National Science Park

When CUST Science Park was a provincial science park, according to the fiscal and taxation policies in existence, the entering enterprises have not right to enjoy preference policies. Since it becomes a national science park, it can enjoy preference policies of the nation for national science park, so studying related supporting policies is a new task for the managers of the park. According to the information by interviews and questionnaires we performed, all entering enterprises expect to enjoy some preference policies in industry and taxation. So we propose it to study related supporting policies for a national science park as soon as possible so as to make them benefit for the enterprises.

4.4 CUST Science Park Should Open Its Laboratories Conditionally

The founders of some entering enterprises are teachers or students of CUST, generally they have obtained some original results from scientific research and established companies in order to turn them into productive forces

in reality. However, scientific research changes quickly, even their results are advanced at present, it is necessary to perform further research to keep up with the latest development, so we propose CUST to open its laboratories with some conditions such as compensated usage and in accordance to non-disclosure agreement, which can improve the utilization rate of its laboratories and promote scientific research at the same time.

CONCLUSION

It is inspiring for CUST Science Park to become a national science park, but it still faces many challenges. We put forward some suggestions for it to regulate and manage the entering motivations of enterprise so that to improve the quality of entering enterprises based on the interview and questionnaire survey we performed. Three years later, it will accept the examination of the Ministry of Science and Technology of PRC, we hope it will pass it smoothly in spite that it still has a long way to go.

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