

The Operational Mechanism Research About “Four-Wheel Drive” Government-Business-University-Research on Enterprise Graduate Workstation: A Case Study of Zhangjiagang City, Jiangsu Province

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Abstract

Cooperation of Government-Business-University-Research is a new form which is developed in the past cooperation model. Its application is more extensive, and its effect is more obvious and its link is more closely. This paper combining with the current situation of the joint station enterprises in Zhangjiagang city, constructs a “four wheel drive” Government-Business-University-Research Alliance’s running mode of enterprise graduate workstations, and do the operational guarantee mechanism research about “Four-wheel drive” Government-Business-University-Research on enterprise graduate workstation, explores the successful experience , to lay the theoretical foundation for the smooth development of school enterprise cooperation in the future.

Key words: Government-business-university-research; “Four-wheel drive” structure; Mechanism

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INTRODUCTION

At present, the traditional mode of graduate student work has achieved relatively good results in the concrete

practice process, many of which are successful examples. But the workstation mode of cooperation is either “two-wheel push” that cooperation between companies and universities (research institutes), or “3 drive carriage” mode: cooperation between enterprises, universities (research institutes) and the Industrial Technology Research Institute. These two modes of cooperation lack of government intervention and guidance, which are difficult to reach a consensus on the operation of the protection and credit mechanism. Government-Business-University-Research “four wheel drive” mainly refers to the government, colleges and universities (research institutes), enterprises, Industrial Technology Research Institute. Through the close cooperation between the four institutions, we can achieve the development of science and technology independent innovation alliance, so as to promote the transformation of scientific and technological innovation results to the smooth conversion of physical products.

Zhangjiagang is a new port industrial city in the Yangtze River Delta, which is one of the most potential and suitable for innovation and entrepreneurship in China. Through access to relevant information, we know the transformation of scientific and technological achievements to the Zhangjiagang GDP growth is not high. Therefore, Zhangjiagang needs to further strengthen the dominance of the Government, and promote the innovation and development of industry university research cooperation, and realize the “Science City” strategy.

1. DEVELOPMENT STATUS OF ZHANGJIAGANG GOVERNMENT-BUSINESS-UNIVERSITY-RESEARCH COOPERATION

In the beginning of 2009, Zhangjiagang was identified as the only pilot city in the province to establish business

graduate student workstations. Many work was carried out effectively: From May 5, 2009, Zhangjiagang City held 32 first graduate workstation's establishing station companies awarding ceremony which includes Jiangsu Shagang Group Co. Ltd. And then to the second batch of 128 companies graduate workstation was approved to establish, which marks to business graduate student workstation in the form of a collaborative graduate training mode has begun. And then in July 2014, Zhangjiagang city cooperative association was founded, becoming the country's second one, the first to set up a cooperative association of county-level city in Jiangsu Province. Up to now, Zhangjiagang city has more than 236 companies and 600 colleges to establish a cooperative relationship in the country, and the cumulative implementation of cooperative projects has more than 1400 items. Zhangjiagang City Government corporate with national key universities to build 28 research offices. Industry university research cooperation has achieved remarkable results, improving the innovation ability of enterprises, and accelerating the process of transformation and upgrading.

At present, the Government of Zhangjiagang has invested 10 million Yuan a year from 2014 on Jiangsu University of science and technology (Zhangjiagang) Industrial Technology Research Institute, a total investment of 3 years, which provide sufficient material guarantee for the school production-study-research cooperation; Zhangjiagang City Government imposed incentive policies on the construction of fruitful enterprise workstation, deciding to give 100,000 yuan reward for every graduate student workstations. These policies highlight the strong commitment of the Zhangjiagang city to run business graduate student workstations. Today, the enterprise research workstation is becoming an important platform for enterprises to gather quality innovation resources, and improve the ability of independent innovation and enhance the market competitiveness of enterprises in Zhangjiagang city.

2. THE OPERATIONAL MECHANISM OF 'FOUR-WHEEL DRIVE' GOVERNMENT-BUSINESS-UNIVERSITY-RESEARCH COOPERATION IN ZHANGJIAGANG CITY

In the "Government-Business-University-Research" strategic alliance system, governments, enterprises, universities and research institutes play a different role, providing innovative services for enterprise technology at different levels, so as to create greater than obtained by the respective operating efficiency, and have the effect of $1+1>2$.

Through field survey we found that: At present, Zhangjiagang city forms a business-centered and market-

oriented new mechanisms for Government-Business-University-Research cooperation. As shown in the following figure: The government mainly provides policy and funding support for the construction of the entire enterprise research workstation. For example, the implementation of tax incentives, giving successful graduate student workstation funding incentives, etc.; Enterprise, colleges and universities and research institutes have a very complex network relationship: Colleges and universities provide personnel and technical support for enterprises, enterprises can promote the transformation of scientific and technological achievements in Colleges and universities, and can provide the opportunity for teachers and students to enter the actual work environment; Scientific research institutes have a large number of experts and scholars, can provide adequate technical support and expert advisory services to institutions of higher learning, institutions of higher learning can fully grasp the opportunity, and carry out joint training with scientific research institutes, thereby reducing the cost of personnel training, improving the efficiency of the use of personnel; As the main body of the market economy, enterprises always grasp the most advanced consumer demand information. So it can provide the market demand information for scientific research institutes for the first time, and based on available information, scientific research institutes can provide technology development and consulting services, and help solve the problems of the scientific and technological investment funds which result in the low efficiency of scientific and technological achievements, and the lack of adequate capacity to develop the market needs.

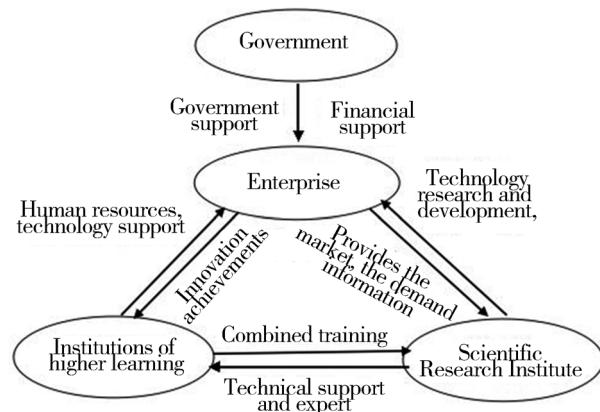


Figure 1
The Operating Mechanism Model of a Business Enterprise Under the "Four Wheel Drive"

From this model can be seen, ensuring that the work of the enterprise research station is the result of joint action of the Government-Business-University-Research. Among them, the Government funding and policy support are the foundation of graduate workstation running. Enterprises,

institutions of higher learning and scientific research institutes of collaborative innovation and accelerating transformation mechanism of enterprises are the core of graduate workstation running.

At present, the concrete operation mechanism of the business graduate student workstations of Zhangjiagang city is mainly reflected in the following aspects.

2.1 Government Promoting Building Cooperation Government-Business-University-Research Platform

At present, as the core competitiveness of regional and enterprise, scientific and technological innovation ability has become an important factor to promote regional and enterprise development. However, relying solely on the power of enterprise to carry on the technical innovation like canoe sailing. To be the Ever-victorious general, the industry must rely on the power of the government. Government as chief organizer of the cooperative, it can coordinate, standardize and guide universities, research institutes and enterprises of the measures, and really play the role of political cooperation and effectiveness. It is conducive to really play a political role and effectiveness of Government-Business-University-Research cooperation. The government should do a good job of guide and organizer, and strengthen public awareness, develop good Government-Business-University-Research cooperation in the development of the target; The government should do a good promoters and support, and formulate and implement the relevant preferential policies to ensure the smooth progress of the Government-Business-University-Research cooperation; the government should complete the coordinator and the service provider, coordinate all parties in the Government-Business-University-Research cooperation , and explores the solution positively.

To promote regional economic development, Zhangjiagang has introduced a number of policies and measures to encourage scientific and technological innovation to guide and support the Government-Business-University-Research cooperation, and builds Government-Business-University-Research cooperation platform positively, speeds up the step of high and new technology achievement which transforms to the productive forces.

2.2 Corporate Initiative to Speed Up the Pace of Independent Innovation

In the era of scientific and technological innovation as the core competitiveness of enterprises, the demand for Government-Business-University-Research cooperation is increasingly strong. The original intention of the government to carry out Government-Business-University-Research cooperation is also to help enterprises solve the problems in production, so the enterprise is the starting point for the Government-Business-University-Research cooperation. As the

main product commercialization of knowledge, in the foundation of establishing and improving the long-term cooperation relationship with the institutions of higher learning and scientific research institutes, and explore the reason resources benefit-sharing mechanisms. Enterprises should take the initiative to accelerate the pace of independent innovation, and improve their own scientific and technological competitiveness.

In recent years, Zhangjiagang Science and Technology Department take the enterprise as the main body, take the market as the guide, and actively promote cooperation by enterprises in our city with institutions of higher learning and scientific research institutes. At present, the Zhangjiagang city has established a close Government-Business-University-Research cooperation with many colleges and universities, research institutes, including Tsinghua University, Institute of Chemistry. Through the extensive Government-Business-University-Research cooperation wider introduction of various levels of scientific and technological innovations, the innovation atmosphere of Zhangjiagang city is growing, so that enterprises truly become the main research and development, investment main body and the realization of the main body of the industry.

2.3 Thinking Innovation Collaborative Innovation Between University and Scientific Research Institutes

When the enterprise has developed to a certain scale, with the power of colleges and universities to establish institutes, workstation is an inevitable trend. Universities and research institutes are a major training base for cooperative talents, strengthen bilateral cooperation and exchanges, can reduce the cost of talent culture, also can promote the scientific and technological achievements more systematic and more comprehensive to commercialization of achievements. At present, Sha Steel and other large enterprises have established a research institute, and some small and medium enterprises have set up the engineering technology research center. These scientific research institutions have carried out a forward-looking, strategic research with enterprises for the development of the domestic and foreign industry trends.

Under the guidance of the cooperation mechanism of Government-Business-University-Research, Zhangjiagang enterprise research and graduate workstation has a fruitful results.

In August, 2009, Jiangsu Haishi group and Jiangsu University of science and technology of mechanical engineering, Dean of the College of Wen Xian Tang led the team cooperation, and has established the graduate student workstation. The first introduced 6 graduate students and 5 instructors, followed by the introduction of two batches of 9 graduate students and a number of instructors. They set up the project development team,

including the former graduate tutor, and aim at the international advanced technology, then develop the first independent intellectual property rights automatic CBW wash Dragon in our country. The final “Twelve-Five” State support program “tunnel-type continuous large washing units” (also called “laundry Dragon”) passed the State-level technical appraisal. Identification Committee believes that the main performance indicators of the laundry has reached the international advanced level, so agreed to pass the identification, and proposed to accelerate the development of enterprises to develop a series of products, put into mass production, in order to meet the needs of the domestic and foreign markets, and started the Made in China” national brands. The company also successfully declared the national torch plan, Zhangjiagang science and technology achievements transformation and cultivation plan”, and won the “high-tech products in Jiangsu province” honor.

According to statistics, at present, Jiangsu sea lion group has 116 patents, including 13 invention patents, declared 22 pending patent, the amount of the patented technology is the first place in the same industry, and the invention patents occupy the first place in the same trade. In addition, in 2013, Zhangjiagang City Long Jing Auto Parts Co., Ltd. cooperate with the Southeast University in the field of modern manufacturing, and realize the economic benefits of up to 20 million Yuan; In 2011, Jiangnan Automobile Manufacturing Co., Ltd. in Zhangjiagang city cooperate with the Jiangsu University in the manufacturing industry, it obtains 13 patents, and realize the economic benefit of 7 million yuan.

3. SUMMARY OF THE SUCCESSFUL EXPERIENCE OF ZHANGJIAGANG GOVERNMENT-BUSINESS-UNIVERSITY-RESEARCH COOPERATION

Based on the 118 workstation building statistical analysis which establishes with the major colleges and universities in the current Zhangjiagang city, we believe the reason that the construction of Zhangjiagang enterprise workstation received such a good result, mainly due to the following aspects.

3.1 Strengthen Government Leading Position

As the main leaders of the Government-Business-University-Research cooperation, Zhangjiagang municipal government cooperates with the Municipal Science and Technology Bureau of cooperation, and always maintains a strong support for the construction of the enterprise research student workstation. At present, Zhangjiagang has established 8 Industrial Technology Research Institute, and make full use of its geographical position and economic development advantages, devoting totally to the human, material, financial and other aspects. And

has become a business graduate student workstation pilot sites in Jiangsu Province.

3.2 Improving the Management System and Operation Mechanism

The spirit of “enterprise led by principals, mentors, and mutually beneficial cooperation” principles, universities cooperate with enterprises actively and set up a business graduate student workstation management committee. Enterprises set up the Office under the management committees, which is equipped with specialized staff for unified management and establish a more perfect management mechanism. Colleges select teachers who rich in technology research and development experience into the R&D team of the Jiangsu Modern Power Capacitor Co., Ltd., Nantong Hengli Heavy Machinery Co., Ltd., Jiangsu violet Home Textile Co., Ltd. to carry out guidance. From the long-term cooperation and protection of intellectual property rights, enterprises should strengthen mutual benefit and win-win cooperation mechanism, and constantly improve the long-term mechanism for project management. From the graduate entering into the enterprise work, both sides will sign a legally binding contract between school and enterprise. The two sides implement the quantitative sharing mechanism, and clarify the ownership of research results to promote the sustainable development of cooperation.

3.3 Strong Enterprise Site Awareness

Since 2009, Zhangjiagang was established as the first batch of enterprises pilot station in Jiangsu province, under the positive propaganda of the Zhangjiagang municipal government, all medium and large enterprises are actively applying for the establishment of the enterprise's research station, and increased funding for graduate student workstations. The enterprise provides the teacher and the graduate student with the powerful scientific research and the living condition safeguard, giving every incoming graduate students necessary life subsidies, providing a dedicated office space for tutors and graduate students, and equipped with advanced facilities, which ensures the efficient operation of business graduate student work.

4. ON THE PERTINENCE SUGGESTION FOR THE DEVELOPMENT OF THE GOVERNMENT-BUSINESS-UNIVERSITY-RESEARCH COOPERATION

Of course, in the course of the actual operation of the enterprise graduate workstation, there are also some problems in the coordination of various links, the overall effectiveness of the play:

- (a) Funding imbalance. Some enterprises were sufficient to the graduate student workstation investment

funds, so it obtained many invention patent and enhanced the competitiveness of enterprises. Due to the lack of funding some enterprises is difficult to implement the graduate student and teacher outside proposal.

(b) The actual work of the graduate student is not balanced. At present the graduate student work is generally limited in project development, the earlier period proof and the advanced research and so on. The correlation training work basically which is proposed by the education department has not been developed, and it is difficult to find the combination point of training.

(c) Enterprises lack of guidance of graduate student's experience. Mainly displays in the enterprise who cannot put forward systematically research task. The enterprise often considers the matter in and of itself frequently, depends on the experience to solve the problem. Due to the habit of thinking, working methods, theories and other reasons, business mentor is often not good at communication with graduate students, guidance is not in place and other phenomena occur.

In order to further standardize the construction of graduate workstation, and enable business graduate student workstations to health and sustainable development, we believe that companies can actively build a platform for graduate employment. For outstanding performance during the station's graduate students, we can consider increasing the benefits associated in order to retain talent, so as to realize for their own use; tutors in colleges and universities should strengthen contacts with enterprises, and recommend the graduate to their own businesses. This not only provides sufficient talents for the enterprise, also can let students gain valuable experience. In addition, we can also catch a demonstration project, summarize model workstation success stories. Let still be in the exploration the graduate student workstation to be able to learn from and apply to the construction of the enterprise.

CONCLUSION

In general, the construction of four wheel drive” Government-Business-University-Research under the

enterprise workstation outweighs the disadvantages. Construction to enterprise workstations is of great significance for promoting the sustainable development of regional economy. So, the government should adhere to play a leading role, focus more on energy, aerospace, new materials and other large projects support. Through the project-driven research and production in the Major League development, to promote the sustained and healthy development of the cooperation of government, so as to realize the development of economy and society in Zhangjiagang city.

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