

The Present Situation and Countermeasures of Public Service Platform Construction for Collaborative Innovation

A Case Study in the Pearl River Delta Industrial Clusters

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Abstract: The Pearl River Delta industrial clusters has established a relatively complete system of public service platform for collaborative innovation during the over three decades development. Public service platform has become an important support for collaborative innovation, which provided a shared and interactive base for kinds of innovation resources and elements from the inside and outside of the clusters, and explored a variety of effective operational mechanism model. Regarding the existing issues of the subject diversification, the service function omission and recurrence construction, this dissertation provides major strategies and proposals: overall planning and management, promotion of functional integration and efficiency, developing important role of the cluster core enterprises, improving the innovation subject motivation by policy making and innovating a long-acting operation mechanism to strengthen the platform construction.

1 INTRODUCTION

The Industrial clusters with characteristic of industrial relatedness, behavior interaction, and spatial proximity, achieves technological innovation and joint development through labor division and cooperation, complementary advantage, resource sharing, and risk-taking. It stimulates the growth and enhances the competitiveness of the regional economy. The Pearl River Delta has become over two hundred different characteristic of industrial clusters since more than 30 years developing. Its remarkable features are large clusters but with small-sized enterprises, big quantity enterprises but with not many above-scales ones, collaborative innovation is the main path of technological innovation, and public service platform plays an important support for collaborative innovation, such as Shunde household appliances, Foshan Chancheng ceramics, Shunde Longjiang furniture, Huadu Guangzhou leather items, Luohu Shenzhen gold jewelry, Guzhen Zhongshan lighting, Xiaolan Zhongshan hardware, Sanzao biomedicine, Humen Dongguan clothing, Changping Dongguan optoelectronics and so on.

2 ESTABLISHING A RELATIVELY PERFECT SYSTEM OF PUBLIC SERVICE PLATFORM

2.1 The Technological Innovation Research and Development System

The technological innovation and R & D services system have been participated by government, enterprises, universities, research institutes and technology intermediaries, through the complementary advantages to find out the collaborative solution by launching the public, the key and the difficult technologies; through providing technical support and guidance to promote the rapid transformation of scientific research for small and medium-sized enterprises. The Southern China Appliance Research Institute is jointly built by the Shunde District People's Government and the Guangdong Science and Technology Department, it takes improving competitiveness and innovation capacities for household appliances industry as the goal, and builds IUR cooperative innovation mechanisms using a "internal improvement &

external introduction " approach, integrating and gathering industry and university resources, carrying out the innovation and R & D services for appliances core technology, resolving the industry community and key technology; Through conducting industry research, drawing industry technology diagram, establishing the sharing platform of information, facilities and talents gathered, providing services for SMEs, and improving regional innovation capability.

2.2 The Quality Inspection and Testing System

The local government in PRD industrial clusters attaches great importance to establish a number of China internal and external influential quality testing and inspection institutes, promoting technological progress and enhancing the quality of enterprises. The Integrated Test Service Center of Shunde, South China Institute of Appliances has four service platforms, which are the international- class home appliances testing laboratory and energy efficiency products testing Laboratory, electromagnetic compatibility testing laboratories, and physical and chemical testing laboratories, provides enterprises the service of the safety and efficacy of appliances detection, EMC testing, physical and chemical analysis, training, and measurement for inside and outside of the clusters.

2.3 The Intellectual Property Rights System

There is too much time, money and intellectual creative work needed for technological innovation, successful innovators should have property rights for innovations, and earn a reasonable return. The industry clusters of PRD have been not only actively promoted the construction of intellectual property protection, but also paid more attention to the continuous innovation for the forms of intellectual property rights. The Zhongshan, China (lighting) high-speed Intellectual Property Rights protection Center is the first national center for single business , which is a public service organization of fast authorization, rights defined and protection, actively explores the new mechanisms of "fast authorization, quick rights protection " and achieves one-stop service of intellectual property application, protection and management, patent information using, patent market trading, innovative design and expert advice through the network.

2.4 The Transaction Platforms System

"Professional market, professional website, professional exhibition", which constitutes three plates of industrial clusters marketing and exhibition service system. The professional market and professional website provide enterprises a shared, centralized, large-scale, convenient transaction platform and distribution network through the combination of ATL and TTL channels. Exhibition economy, which has a strong sales promotion, industry linkage, economic radiation, regional marketing and other functions, has been gradually and widely preferred. There are many exhibitions have been developed a certain brand awareness and influence in China, and even in the world, relying on the Pearl River Delta industrial clusters. Shenzhen International Jewelry Fair, which has been known as the largest, highest grade, the largest group of buyers, the most influential, and the highest internationalization process of the professional jewelry trade exhibition in mainland. (Humen) China International Garment Fair is the most influential fashion event in China's garment industry, and has become one of the main sale channels for clothing enterprises in Humen and its surrounding areas.

2.5 The Information Exchange System

The technological innovation and diffusion theory shows that the process of technological innovation has been conducted under the complex interactions of different subjects since technological innovation is the continual process of feedback loops and intensive exchange of enterprises internal and external sources of knowledge. The industry associations have provided the services of information processing, dissemination, exchange, and consulting for cluster member of government, enterprise, research institution, and intermediary. Meanwhile, industry associations, higher or vocational academies, various skills training centers play an important function in human resources introduction and development, human resource bank building, talents information provision, special skills training. Shunde Polytechnic is well known as its nationwide majors of home appliances, refrigeration, furniture design and manufacturing.

2.6 The Financial Guarantee System

As the aspect of financial guarantee service system construction, there are kinds of investment companies have been gradually established for the

SMEs , expanding the scope of SME financing guarantee, broadening financing channels, supporting enterprises to update workmanship, equipment, technical innovation, enlarging the scale and improving market competition. Xiaolan, Zhongshan innovation and development of SME Credit Guarantee Co., Ltd. is specially authorized by Guangdong Provincial People's Government, and the first professional credit guarantee institution established by the town government, which provide loans guarantee with its intermediary service and a green channel of solving the financing difficulty for qualified SMEs in accordance with the China's industrial policies, laws and regulations.

3 EXPLORING A VARIETY OF EFFECTIVE OPERATING MODES

The government has played a leading and crucial role in promoting the construction process of collaborative innovation public service platform in the Pearl River Delta industrial clusters, enterprises, trade associations, universities, research institutes, intermediary institutions all have been involved actively, there are five kinds of typical operating modes have been formed.

3.1 "Local Government-Oriented" Mode

The government of Humen town and China textile Information Center have jointly created a national public service platform -- "Humen clothing Innovation Service Center", which is gathered ten public innovative service platforms : Humen Garment Technology Innovation Center, Humen Fumin Clothing Business Center, National Textile Humen Museum, the China Textile industry Association Testing Center Humen laboratory, Humen clothing design center, Humen garment Technology training Center, Humen e-commerce demonstration bases, new Silk Road fashion publishing center, Yishion Group Garment Exhibition Center, Humen clothing brand promotion center. It is a new model of innovation integration for China's textile industry administrative resources and textile and garment industry clusters, not only playing an important role for its healthy, orderly and sustainable development of Humen garment industry, but also enhancing the overall competitiveness of China's textile and garment industry, accelerating the

transformation and upgrading of the textile and garment industry to find a new way.

3.2 "The Government Led, Enterprise Undertaking " Mode

Government led protects the directionality and service of platform construction, and market-oriented operation is helpful for long-term running of the platform. The town government of Dachong, Zhongshan has founded the rosewood dry machining center which spun off the drying process of rosewood raw material that affects the products quality from the enterprise, introduced the advanced drying equipments to gather processing capacity rapidly, provided services for more than 200 enterprises in the industrial cluster. This operation mode calls "government provides land, enterprises invest and build factories, and cluster members participate in promotion". With the gradual expansion of the cluster scope, the processing capacity of mahogany dry machining center cannot meet the needs of the enterprises; there are some of the enterprises which have introduced continuously new sets of dry processing equipment. The Government has provided those companies free technology, and promoted the mature drying workmanship and manufacturing process in larger scales of enterprises to become a basic standard of industrial clusters.

3.3 "Science and Technology Management Department Led" Mode

Relying on technological progress to promote overall economic and social development is the primary responsibility of science and technology management department. From the Pearl River Delta industrial clusters, the province, city, district, town and other technology management departments all have actively promoted the construction of collaborative innovation public service platform. Guangdong Provincial Science and Technology Department being as a leader has organized twenty-two leading enterprises and research institutions, built a new R & D institution - "Guangdong Province semiconductor lighting industry joint innovation center." With the help of industry sophisticated team, "Guangdong LED Industry Technology Diagram" has been drawn to conduct joint research by finding the core and common technology points. In view of the problems for different industry standards and quality, the

"LED lighting industry standard system planning and route map" has been published to establish the construction planning and implementation for industry standard system, which has greatly promoted the development of Guangdong optoelectronics and other industrial clusters.

3.4 "Joint Construction of Industry-University-Research Collaboration" Mode

A party led, Industry-University-Research Collaboration, creates a strong R & D and innovation platform by promoting the effective combination of various production factors. Sun Yat-sen University (Guzhen) semiconductor lighting technology Research Centre has drawn professional town industrial development plans, made industrial common technology breakthroughs, and created a professional innovation platform by Industry-University-Research Collaboration. This research center has established academician and commissioner workstation, and has brought innovative elements to the professional town to enhance the professional town overall capability of independent innovation.

3.5 "Association Intermediary, Multi-Stakeholder" Mode

Industry Association is a non-governmental organization, which is the bridge and link for government and enterprises, plays an important and intermediary role in the construction of collaborative innovation platform. Houjie, Dongguan footwear industry clusters has created "Dongguan shoe brand alliance" by government, associations and enterprises' joint efforts, and promoted the cluster alliance standards for product quality, business services, environmental evaluation, which has effectively enhanced the production and service level within the union, and strengthened the social influence of industrial clusters. The Association has promoted its industrial service center, testing center, e-commerce center, innovative service platform to operate synchronously by directing more high-tech shoe enterprises, research institutions and universities to join the "Guangdong footwear (Dongguan) Industrial Technology Innovation Alliance".

4 THE MAIN PROBLEMS EXISTING

From the view of Pearl River Delta industrial clusters, the system of collaborative innovation public service platform has been gradually improved, a variety of basic services have been had, and the operating mechanism model has been constantly innovated. The main problems are: the construction subject diversification, the deficiency of communication and coordination among agencies; the coexisting of service function shortage and duplications; the service agencies above designated size are mainly built by the local government who is under enormous financial pressure; the inadequate funding for some services innovation and technology promotion has affected the scientific and technological achievements, which is not conducive to the sustainable development of innovative platform; Some of the services platforms are only focus on the development of service function which brings direct economic benefits, but less invest in the public services of common technology development, technology introduction and spread.

5 SUGGESTIONS FOR ENHANCING THE CAPABILITY OF PUBLIC SERVICE PLATFORM

5.1 Strengthen the Overall Planning and Management

The local government should responsible for a dominant subject in planning and management. Currently, a variety of public service organizations which have different operating modes have been established by different departments and units that belong to different government departments, universities, research institutions or enterprises, they have neither functional orientation of the overall planning and design, nor unified organization management and collaboration exchange, which restricts the Industrial polymerization and synergistic effect. It is necessary to strengthen the leader's construction and overall planning for local government to improve the ability of public service platform industry cluster collaborative innovation. Guangdong vice governor as a sponsor have established the "promoting for Guangdong industrial clusters development joint conference "

with the provincial Economic and Trade Commission, the National Development and Reform Commission, the Science and Technology Department, Department of Ministry, the Department of Land and Resources, Department of Information Industry, Foreign Trade Department, the Local Taxation Bureau, the Environmental Protection Bureau, Administration For Industry & Commerce, Bureau of Quality and Technology Supervision, Office, SAT, and Entry-Exit Inspection and Quarantine and other relevant departments, meanwhile, the "Member duties of the promoting for Guangdong industrial clusters development joint conference" and "Working management system of the promoting for Guangdong industrial clusters development joint conference" have been made to take responsibility of directing and coordinating the promotion of the province's major problems encountered in the industrial clusters development. The above practice should be a reference for local government at all levels. Be based on their specific situation, the local governments led and coordinate overall planning, function orientation, diversity development, and establish the mechanisms of consultation and coordination on major issues to ensure the service platform sustainable development.

5.2 Promote Functional Integration and Efficiency Improvement

Innovation platform is an important support for regional innovation system framework. "Zone economy" with the feature of industrial cluster is major carrier and promoter for "regional economy". Platform service agency plays important and adhesion roles in collaborative innovation, innovation network formation and development for industrial cluster, it also provides compensation in the weaknesses process or "empty" of innovation system. Public service platform has promoted the interaction among the various innovation bodies, accelerated the innovation knowledge flowing and the transformation of technological achievement into practical productivity that speed up the knowledge recombination and regeneration, shorten the cycle of knowledge and technology innovation. The information system has been realized the resource-sharing and the agencies have been realized the functional division and coordination by promoting the functional integration of different technology innovation service platform, technology research & development and achievement conversion platform, financial service platform, personal training service platform, e-commerce and

exhibition services platform, incubation service platform, quality testing service platform, intellectual property protection service platform, which reduce the waste of repeated investment, overcome the absence of the service function and the phenomenon of coexistence, and show fully their respective functional advantages to provide one-stop service for enterprises and improve the service platform quality and efficiency.

5.3 Give Play to the Important Role of Core Enterprise

From the objective point of view, service ability and level should be improved for the majority of collaborative innovation public service institutions, especially R&D institutions. Some R&D platforms which are established by the cluster core large-scale enterprise, famous universities and research institutes have high ability of research and development. But, the cluster core large-scale enterprise lack enthusiasm, which mainly due to the unwillingness to share the technical achievements with actual or potential competitors. The government needs to adopt a variety of incentives to mobilize the positivity of core large-scale enterprise investing in public service platform, such as giving preferential treatment in terms of R&D investment, technological innovation loan, technology promotion subsidies, innovation products tax, intellectual property protection, etc, to promote the innovation idea, management method, manufacturing technology and market information of leading enterprises penetrating into the collaborative supporting enterprises, and drive the small and medium-sized enterprise collaborative innovation.

5.4 Improve the Enthusiasm for the Main Innovation Bodies by Making Policies

The government has improved the enthusiasm of all kinds of innovation bodies participating in collaborative innovation by policy guidance, jointly established high-level research institute, R & D centers, engineering and technology center with innovation bodies by using taxation, financial and other preferential policies to promote the combination of Industry-Academia-Research, or launched cooperation and research for significant and key projects to explore the diversity among funds, technology and personnel exchange. The government has also taken some measures which are joint management, investment, equity participation

for promoting collaborative innovation to achieve resource sharing and complementary advantages by attracting high quality resources, and to improve innovation efficiency by reduce the innovation cost. The high level universities, research institutes and high-class talents have been introduced to strengthen international exchanges and cooperation, especially to promote the reform of the market operation mechanism mode. The technology intermediary agency has obtained tax preferential for the income by engaging in technology transfer, technology development business and related technical consulting, technology services.

5.5 Innovate the Long-term Operating Mechanism

There must be a long-term investment guarantee to achieve long-lasting operation for public service platform. With the construction process of collaborative innovation public service platform, the government should actively promote the market-oriented operation while strengthening the policy and investing the funds. The self-construction of platform should be paid more attention when sticking to the combination of government-oriented and market mechanisms to improve its service ability, which not only provides an inexhaustible power for the normal operation of the platform, but also avoids the inhibitory effect of excessive intervention in the development of the platform from government, and also promotes the platform service evolution from low-end to high-end. The long-term operation of public service platform has been realized by changing "construction only" to "construction and management equal", combining government subsidies with charge, distributing knowledge and technology, full using of the innovation achievements evaluated objectively by market mechanism and specialized agency and the value of research and development accomplishment to protect benefits of technology innovators. Different demands among the government, schools, enterprises and team are well solve by marketing operation. Government invests initial construction funds to get technical support from local industry; School invests talents and intangible assets to get the academic development and social impact; Enterprises invests R&D and incubator funds to get the economic benefits and industrial return; Team invests technological achievements to get multiple repay from academic development and individual value realization.

6 CONCLUSIONS

This dissertation provides major strategies and proposals to strengthen the platform construction for collaborative innovation. We hope you find the information useful.

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