

Resources Sharing Mechanism of University Clusters under the Policy of Beijing-Tianjin-Hebei Collaborative Development

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Abstract—The collaborative development of Beijing, Tianjin and Hebei Province has been implemented in an all-round way. With the coordinated development of university clusters, infrastructure construction and interconnection have been accelerated. This paper aims to explore the current layout of the Beijing-Tianjin-Hebei university clusters in resources sharing through quantitative and analytic approaches. Positive contributions to the new collaborative development of university clusters have been made in aspects of interregional government cooperation, intercollegiate cluster development and interscholastic opening-up policy.

Keywords—Resources sharing mechanism; University clusters; Beijing-Tianjin-Hebei

I. INTRODUCTION

The cluster development of cities is a powerful way to boost comprehensive national strength. Beijing, Tianjin and Hebei locate in the heartland of Bohai-rim, making up the most powerful and dynamic region in North China. The GDP of this region accounted for 10 percent of the whole country in 2015 according to the data from State Statistic Bureau. In 2014, the Chinese Premier Li Keqiang proposed the scheme of Beijing-Tianjin-Hebei Integration. A year later in 2015, the Outline of Collaborative Development of Beijing, Tianjin and Hebei Province has been issued and implemented as a national plan, aiming to relieve the “non-capital” function of Beijing and promote the coordinated and integrated development of Beijing, Tianjin and Hebei. Higher education, which provides human resources support and intellectual support, is one of the greatest driving forces for the implementation of the national policy. Regional higher education cooperation is an important measure for regional economic development and social stability [1]. By building an effective sharing mechanism, it will take a leading role in the new developing mode of Beijing-Tianjin-Hebei integration which is dominated by the government and driven by science and education [2].

II. HINDERING FACTORS FOR EFFECTIVE RESOURCE SHARING

First, Beijing, Tianjin and Hebei have different development levels in terms of higher education due to geographical, historical, economic and cultural reasons. Beijing, as the capital city of China, has the highest level of higher education. Tianjin, being the economic center of Bohai-rim as well as the most important port city of North China, also has a relatively high level of higher education. Compared with these two cities, Hebei is clearly at a disadvantage with the largest total population and the fewest key universities. Followed is a table that shows the distribution of higher education institutions in Beijing, Tianjin and Hebei.

A. Maintaining the Integrity of the Specifications

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TABLE I DISTRIBUTION OF HIGHER EDUCATION INSTITUTIONS IN BEIJING, TIANJIN AND HEBEI (2017) (INDEPENDENT COLLEGE AND JUNIOR COLLEGE INCLUDED)

Location	Total Quantity	211 Institutions	985 Institutions	Institutions under Ministry of Education
Beijing	91	26	9	25
Tianjin	57	3	2	2
Hebei	122	1	0	0

(Source of data: Ministry of Education website)

Second, there are huge gaps between ordinary universities and core universities, public universities and private universities. Core universities have better human resource, material resources and intangible resources. Human resources refer to teaching and research personnel. Material resources refer to material possessions including libraries, laboratories, university-run enterprises, public service facilities and so on.

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Intangible resources refer to patents, trademarks, copyrights as well as school reputation, recruitment channel, employment channel and so on[3]. Take human resources, one of the key indicators of a university's comprehensive power, for example, great differences can be seen between key universities and

ordinary universities. Followed are tables that show the distribution of academician of Chinese Academy of Science, academician of Chinese Academy of Engineering, and Chanjiang Scholar in higher education institutions in Beijing, Tianjin and Hebei.

TABLE II DISTRIBUTION OF ACADEMICIAN OF CHINESE ACADEMY OF SCIENCE (2015)

Name	Number of Academician	985 /211	Location
Beijing University	34	985	Beijing
Tsinghua University	25	985	Beijing
Nankai University	8	985	Tianjin
China University of Geosciences	6	211	Beijing
Beijing Normal University	5	985	Beijing
Tianjin University	4	985	Tianjin
China Agricultural University	4	985	Beijing
Peking Union Medical College	4	/	Beijing
Beihang University	2	985	Beijing
China University of Petroleum	2	211	Beijing
University of Science and Technology Beijing	2	211	Beijing
Beijing Jiaotong University	2	211	Beijing
Capital Medical University	2	/	Beijing
Beijing University of Technology	2	211	Beijing
Hebei University	2	/	Hebei
Beijing Institute of Technology	1	985	Beijing
China University of Mining and Technology	1	211	Beijing
Hebei Normal University	1	/	Hebei

(Source of data: Ministry of Education website)

TABLE III DISTRIBUTION OF ACADEMICIAN OF CHINESE ACADEMY OF ENGINEERING (2015)

Name	Number of Academician	985 /211	Location
Tsinghua University	34	985	Beijing
Peking Union Medical College	21	/	Beijing
Beijing University	10	985	Beijing
Beihang University	10	985	Beijing
China Agricultural University	9	985	Beijing
Tianjin University	8	985	Tianjin
Beijing Institute of Technology	5	985	Beijing
Beijing Forestry University	5	211	Beijing
University of Science and Technology Beijing	4	211	Beijing
Capital Medical University	4	/	Beijing
Beijing University of Posts and Telecommunications	3	211	Beijing
China University of Petroleum	2	211	Beijing
Beijing Jiaotong University	2	211	Beijing
Beijing University of Chemical Technology	2	211	Beijing
Beijing University of Technology	2	211	Beijing
Tianjin Medical University	2	211	Tianjin
Tianjin University of Traditional Chinese Medicine	2	/	Tianjin
Hebei Medical University	2	/	Hebei
Nankai University	1	985	Tianjin
Beijing Normal University	1	985	Beijing
China University of Mining and Technology	1	211	Beijing
Beijing University of Chinese Medicine	1	211	Beijing
Beijing Technology and Business University	1	/	Beijing

(Source of data: Ministry of Education website)

TABLE IV DISTRIBUTION OF CHANG JIANG SCHOLARS (2015)

Name	Number of Academician	985 /211	Location
Tsinghua University	140	985	Beijing
Beijing University	138	985	Beijing
Beihang University	41	985	Beijing
Nankai University	37	985	Tianjin
Beijing Normal University	35	985	Beijing
Remin University of China	32	985	Beijing
Tianjin University	28	985	Tianjin
China Agricultural University	23	985	Beijing
Beijing Institute of Technology	21	985	Beijing
Peking Union Medical College	18	/	Beijing
University of Science and Technology Beijing	12	211	Beijing
Beijing University of Chemical University	11	211	Beijing
Beijing University of Petroleum	10	211	Beijing
Beijing Jiaotong University	10	211	Beijing
Beijing University of Technology	9	211	Beijing
Yanshan University	6	/	Hebei
Capital Medical University	5	/	Beijing
China University of Mining and Technology	5	211	Beijing
Beijing University of Posts and Telecommunications	4	211	Beijing
Hebei University of Technology	1	211	Hebei
Minzu University of China	1	985	Beijing
University of International Business and Economics	1	211	Beijing
Beijing University of Civil Engineering and Architecture	1	/	Beijing

(Source of data: Ministry of Education website)

Table II, III and IV show that high-quality teacher resources mainly exist in 211 and 985 universities while ordinary universities have far less excellent human resources. Besides human resources, ordinary and private universities are also confronted with the problem of inadequate funds, incomplete infrastructures and disadvantaged channels of enrollment and employment. Based on the great discrepancy, advantaged universities are not always likely to share their advanced resources with ordinary universities on accounts that ordinary universities do not have much to offer.

III. STRATEGIES FOR EFFECTIVE SHARING MECHANISM

A. *Interregional government cooperation*

Government is the main body to provide resources for higher education. Local governments have been trapped in the mindset of “minding its own business” and this has become one of the hindering factors for resource sharing [4]. The traditional development mode of Beijing, Tianjin and Hebei focuses more on competitive rather than cooperation. It is not uncommon for local governments to try to maintain their competitive edges in terms of higher education. However, with the implementation of Beijing-Tianjin-Hebei integration as a national policy, coordinated and reciprocal development has become a must. To promote resource sharing in regional higher education institutions, administrative bulwark should be broken

down and the concept of administrative division should be downplayed. Governments of Beijing, Tianjin and Hebei should strengthen their cooperation and try work out a long term mechanism to promote resource sharing among institutions in these areas. A Certain number of favorable policies due to intergovernmental cooperation have already been made to promote deeper sharing and cooperation.

In November, 2009, the paper Six Cooperation intention reached by Education Commission of Beijing, Tianjin and Hebei on Higher Education Development put forward a coordination mechanism of regular discussion on cooperation and work focus. In April of 2011, Governments of Beijing, Tianjin and Hebei signed the Talent Cooperation Framework Protocol in Beijing-Tianjin-Hebei region, aiming to realize the free flow of talent and the optimization of layout through policy coordination, coherent government system and connective services [5]. In February of 2017, Work Plan for Higher Education Coordination of Beijing-Tianjin-Hebei Integration in “13th Five-Year has been issued. To secure and supervise the implementation of all these favorable policies, local governments should work beyond the restriction of administrative division and set up a standing organization to deal with issues related to higher education coordination and resource sharing among institutions.

B. Intercollegiate cluster development

Define Intercollegiate cluster development is a higher level of resource sharing. Cluster development of universities can benefit regional integrated development by realizing complementary advantages, promoting work-study combination and stimulating regional economy. By building university towns and education-research-production parks, not only the flow and sharing of resources but also accumulative effect can be achieved. Beijing, Tianjin and Hebei adjoin geographically, which provides advantageous pre-condition for cluster development. The cluster development of universities and the cluster development of Beijing, Tianjin and Hebei complement each other. One the one hand, city agglomeration has the power to attract high-quality education resources from home and abroad. One the other hand, cluster of universities and cluster of cities drive each other and promote each other [6]. Because of development level of higher education in Beijing, Tianjin and Hebei, key universities in Beijing could remove some of its resources into Tianjin and Hebei by building chain universities. In recent years, quite a few university towns were built in Tianjin. Haihe Education Park and Health Care Industry Park were built to supplement the traditional university towns in Tianjin. Hebei has also built oriental college town. So these two areas are fully capable of undertaking the spillover of talents and resources from Beijing. In these big university towns, research centers and enterprises training bases should also be built to promote the combination and integration of education, research and production.

C. Interscholastic opening-up policy

National Program for Medium-Long Term Educational Reform and Development, 2010-2020 has put forward the requirement on educational reform and proposed the idea of building open education system [7]. In 2016, the Ministry of Education in China proposed the idea of "building opening-up university system with Chinese characteristics in this new era" in the government paper named Opinions on Running Open Universities [8]. Opening-up policy of university clusters refers to a new mode of higher education which is assessable to all learners by integrating educational resources with the help of modern technology [9]. It is an effective and economical way to achieve resource sharing. At present, Beijing has already set up Beijing Opening-up Universities. Tianjin and Hebei are also positively preparing for the groundwork of opening-up universities. With the perfection of Central Radio and TV University System, regional opening-up policy of Beijing-Tianjin-Hebei region is gradually taking shape. By applying advanced modern technology to build up on-line and off line to further education in universities, sharing resource in Beijing-Tianjin-Hebei region is expected to extend to a larger scale.

IV. CONCLUSION

With the coordinated develops of university clusters, a platform for exchange and cooperation of regional universities to facilitate sharing resources and project cooperation has been built. A collaborative innovation community will help Beijing-Tianjin-Hebei universities go further in future. The new collaborative development of university clusters will display the regional resources transfer collaboration to provide a comprehensive and open innovation service platform, covering the resources that drive regional development, thus helping Beijing-Tianjin-Hebei universities to build a resource sharing center with regional influence.

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