

# The Research on Regional Effect and Development Solution of University Cluster

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## Abstract

University cluster as a common form of distribution for modern higher education, has great effect on the pace of regional economic development and regional competitiveness. University cluster helps improve regional innovation ability by gathering talents, increasing innovation effect, developing high technology and accelerating regional economy development through the effect of regional brand radiation. Therefore, we should improve the environment of university cluster, and promote competition and cooperation among regional universities so as to promote the contribution to regional economy.

**Keywords:** University cluster, Agglomeration effect, Economic effect

As university cluster is the growing into a trend of higher education in the world, and it has great effect on accelerating regional economic development and enhancing regional competitiveness, e.g. Boston area in the United States, Daejeon Technology Park in South Korea, Hsinchu city in Taiwan. These areas converge different types of university and form a regional university community, which promote economic development through radiation effect of knowledge, innovation effect of science and technology. University

cluster can also spin-off industrial zone, and thus enhance regional competitiveness. It is of theoretical and practical value to investigate the economic effect of university cluster on regional development, and further surveying the developing law of university cluster, thus promoting the development of the university cluster and regional coordination.

## 1. Interpretation of the concept of University Cluster

As a concept of ecology, cluster means different populations in the same habitat that keep agglomeration form and symbiotic relationship. With the generalization of cluster concepts, its meaning also gradually penetrates into other fields, such as computer cluster system, enterprise cluster and industrial cluster. Especially in the economic field, the cluster theory focuses on industrial cluster involving regional innovation, regional competitiveness, and mode of the regional economic development.

Similar to the economic field, there also exists cluster in higher education. Spatial distribution of higher education usually forms cluster effect, e.g. many universities gather together and form a regional cluster. University cluster centralizes intellectual resources, educational elements and facilities, promoting mutual cooperation, and attaining the scale effect. In the era of knowledge economy, university

intellectual capital becomes more and more important. In many developed areas, university cluster becomes an indispensable driving force for regional development and regional competitiveness with its agglomeration and scale effect, e.g. Boston in the United States, where 52 universities are concentrated including Boston College, Boston University, Harvard University, MIT, Northeastern University, Tufts University and other world famous university. <sup>[1]</sup>By creating the research centers and consulting companies, participating in the construction of major projects and spin-off companies, university cluster promote the development of Boston economy.

It has been proved that university cluster is an important driving force by effectively enhancing innovation and regional competitiveness. Therefore, it is necessary to study the function of university cluster, developmental pattern of regional higher education, the mechanism for mutual competition and cooperation, thus to improve the function of university cluster, optimize the structure of regional higher education, and promote the regional innovation performance.

## **2. Analysis of regional effects of University Cluster**

University Cluster focuses internal governance and external benefits from the beginning. In a sense, research on the internal governance of university cluster is to maximize its function. Based on the output of human resource and knowledge capital, regional economic effect of the university cluster is multi-dimension. Specifically, the regional effect of university cluster is mainly reflected in three aspects.

### **2.1. The effect of talent aggregation**

University cluster as a collective body that does not only converges different

universities, but also aggregate multi-functions like personnel training and science innovation. University cluster has irreplaceable advantages in radiation of new ideas, delivering of new knowledge, dissemination of culture, and cultivating specialized talents. University cluster reflects an optimized regional higher education system. Universities cluster creates cooperative opportunities of talent training, so as to meet the diverse needs of regional economy for talents, e.g. Bangalore area in India, has abundant resources of higher education including comprehensive universities, occupation training, continuing education, certification training and so on. University cluster provides abundant human resources, satisfying regional industries' demand for talents, and promoting industrial agglomeration and competitiveness. Higher learning institutions in developed countries represented by the United States, converges large numbers of scientists, engineers and researchers from all over the world, which may promote the rapid development of economic and technology, and lower innovation cost for enterprises through the agglomeration of high level talents in the university cluster.

### **2.2. The effect of regional brand**

Area is the foundation of university cluster, and university clusters also shape the regional brand. The construction of regional brand is a comprehensive concept, decided by many factors. University as an important part of elements, has a profound effect on regional culture. It is of practical significance to expand the regional cultural influence, improve the regional brand image and brand value by exploring and utilizing university cluster resource.

Many economic circles and industrial zones come into being around the university cluster, creating a favorable environment for industrial development, forming industry value chain, and form-

ing growth pole of regional economic relying on industrial agglomeration, university city, science park and other carriers. In a sense, university cluster of geographic concentration is the support condition and foundation to create regional brand.

### **2.3. The effect of regional innovation**

University Cluster reflects the level of regional higher education development, and determines the innovation ability of the area and science & technology competitiveness. It plays a vital role for university cluster to construct regional innovation system, cultivate the ability of regional innovation persistently.

As an organization of university cluster, cluster can effectively resolve the problems such as the weak of university R & D institute individually, lack of correlation and synergy mechanism between innovation organizations. Providing convenient conditions for the information exchanging and knowledge sharing, university cluster can accelerate the process of knowledge innovation, produce more innovative achievements, improve knowledge spillover effect, and enhance regional competitiveness in science and technology. Therefore, the effect of innovation is the most direct manifestation of the University cluster. University cluster aggregates innovative elements, and strengthens regional innovation network, which is an effective way to build the regional innovation system. University cluster as an important carrier, helps the science and technology resources and talent resources effectively interact, rationally allocate and effectively utilize.

### **3. Development solution of university cluster**

Because of the main problem existing in the current university clusters, the following guidelines should be followed to

regulate and promote the development of the university cluster.

#### **3.1. Focus on the connotation construction, and promote the university cluster development orderly**

Dependence is an important feature of cluster. Therefore, we should regulate the development of university cluster, strengthen the connotation construction, and the kernel of university cluster, build knowledge community, and enhance the cluster's competitive advantage.

We should regard university cluster as a system, structure adjustment the driving force, and allocate educational resources reasonably and effectively. We should regard discipline-cluster as a carrier, highlight characteristic discipline construction, and strengthen the training function, and form a more powerful human capital production group. To achieve major theoretical innovation and more independent intellectual property rights, we should make good use of resources, make efforts to produce a number of original scientific achievements, and make breakthrough on a number of scientific research project in characteristic industries on the regional key technologies and key projects.<sup>[2]</sup> Cultivating a number of technological leading talents and high skilled talents that are both innovative and practical ability, to satisfy the urgent need of regional economy and social development.

#### **3.2. Promote the integrated development between university cluster and the regional society**

University expansion coincided with spectacular rise of innovation activity in industrialized world.<sup>[3]</sup> The university cluster will have responsibilities much more diverse and difficult than a single university. The integration of university cluster and regional society indicates that the university cluster is becoming insepa-

rable intrinsic connection body of regional economic and social development. The Silicon Valley model shows that, creation of universities increases innovation activity. How to maintain this competitiveness and get more innovation out of university cluster has become a hotly debated issue. It is often suggested that close interactions and symbiotic relationship between university cluster, industry and government are necessary to promote knowledge flows and innovation. Whether different subjects can produce cooperative innovation effect, mainly depends on the synergistic approach between each innovation body, and so is university cluster. The innovation performance of regional economy is determined in part by the supply of university cluster. The innovation system also demands to promote integrated development between university cluster and the regional society. The development of university cluster should accord with the overall planning of the regional economic and social development. The university cluster should participate in the overall development strategy of the region, give full play to its innovative advantages, and provide important support for regional economic and social development.

### **3.3. Optimize the operating mechanism, and promote technological innovation of university cluster**

Innovation has become an important way for the development of university cluster. We innovate environment, construct of innovative platform, and build up the technology innovation system, to improve the university cluster by constructing the knowledge-innovation platform, and promoting the regional innova-

tion system upgrade-development and optimization. The university cluster should provide personnel and intellectual support for regional economic and social development. Besides, the cooperative innovation mechanism should be built to strengthen the cooperation between university cluster and enterprises, effective integrate interactive resources between different innovations. Last but not least, the scientific and technological achievements transformation system should be established. Cultivate technology incubation center with the quality and brand, business service center, science and technology information center, and technical market service center, to promote the industry transformation of advanced scientific research. University Cluster and regional economic should be guided by sustainable development, so that a solid foundation can be laid for the development of the university cluster.

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