

# Effective Path of the Value Chain's Upgrading of Industry Clusters: Industry Convergence

Wen Wang

*School of Economics and Management, ZhengZhou University of Light Industry, ZhengZhou, P. R. China*

*Email: wangwenmail@163.com*

**Abstract:** Accompanied by the rapid development of new scientific and technological revolution and the acquisitions activity which cross enterprise or cross regional, the industrial boundary gradually tends to blur. A new-type industrial convergence system formed. Based on the analysis that industry convergence improves the innovation system of industrial clusters and enhances the innovation capability of industrial clusters, this paper explores the issues that the industry convergence can rise to high value-added industries and promote the industrial structure optimization. Furthermore, the conclusion is reached that industry convergence is in favour of enhancing industrial competitiveness and realizing the value chain upgrading of industrial clusters.

**Keywords:** industry convergence; industrial clusters; upgrading of value chain

## 1. Introduction

Accompanied by the rapid pace of new scientific and technological revolution and the acquisitions activity which cross enterprise or cross regional, the industrial boundary gradually tends to blur. A new-type industrial convergence system forms. From frozen food to the fast food industry, its essence is the convergence of manufacturing and service; agricultural industrialization that realized by the implementation of agricultural products is the convergence of agricultural and industrial in essence, and so on. Through introducing new technology or management model, innovating and integrating the original industry, a new value chain shapes. This shows that the industry convergence provide an effective way to the value chain upgrading of industrial clusters. It can be expressed as: industry convergence→the elevation of the innovation capacity of industrial cluster, structure transition and upgrading capacity and competition capacity→value chain upgrading of the industrial cluster.

## 2. Industry Convergence improves cluster innovation system to be perfect and enhances the clusters' industrial innovation capacity

Industry convergence is not a "one-dimensional space" concept, but includes several dimensions of convergence: basic technological convergence, corporation governance convergence, marketing convergence and the innovation of government's system [1]. Convergence means innovation. Industrial convergence perfects innovation system of the industry cluster. That is a cluster's innovation system which is sharing of resources, enhancing the effect of knowledge spillovers.

### 2.1. Technological Convergence Encourages the Industrial Border to Tend to Be Blur and Speeds up the Value Chain Upgrading of Industry

Now, the three telecommunications giants - Mobile, Unicom, Telecom, have become a scene of the full three feet. The convergence of Mobile and Tie tong, Unicom and Netcom, Unicom CDMA and Telecom, is benefit from the innovation and development of information technology. Of course, it doesn't necessarily form the convergence industry as long as the technological innovation. Technological innovation is also a process of convergence, namely, the revolution of technological advances - the proliferation of technological advances - the convergence of technological progress. Only in this way, step by step to eliminate the existence technical barriers of different industries, it can make industry convergence more effective.

### 2.2. Management Convergence Generates an Innovative Environment and Stimulates Cluster's Innovation Cells

Management convergence includes human resources convergence, organizational convergence, financial convergence, services convergence and so on. The convergence of different industries is a complex but orderly engineering which requires complex professionals to manage, organizations to be changing and upgrading, the financial derivative products continues to diversify, service to be multi-polarization and so on. Moreover, for corporation management and organization, the establishment of a new type relation of competition and co-operative between enterprises and the re-convergence of strategic alliances and virtual organizations bring challenges to the stability of enterprises, but at the same time it can also promote the innovation of business management and organization.

### 2.3. Market Convergence Expands the Market Space of the Industry Clusters and Promotes the Realization of Industrial Innovation

There are two performances of the market convergence in the industrial convergence. First, the market share is expanded in existing market boundaries through improving marketing and services means. For example, the electronic commerce resulted from the convergence of information industries and business links enterprises of various industries. So the efficiency of the entire system is improved; more convenient access are opened for the products marketing; the product's market share is increased. Second, a completely new market is opened up. Industrial convergence achieves part or all convergence of the separated value chain of the industry. New value chain integrates two or more value of industry. Compared with the original industry, convergence-based industries not only have greater value-added and higher profits space, but also achieve the convergence of product features and raise the level of products [2]. As the result, traditional products are become more colourful and consumer choice space is expanded. In short, the market convergence builds a better platform for product innovation, adds a new demand and market and promotes the realization of industrial innovation clusters.

### 2.4. Government System Innovation Gives a Guarantee for Industry Innovation

In the different systems, institutions and policy, because of the different structure of growth mechanism, the operation efficiency which science and technology boost economics development is not the same, but the experience of foreign countries shows that institutional innovation is the necessary conditions and guarantee for scientific and technological progress and innovation. Industry convergence occurs in industry border and cross, so blurred boundary will be a trend. System innovation is imperative. If you still use the "discrete industrial control", it would be undoubtedly not meet or conducive to the building and development of the convergence industry system. Government and policy makers should be fully aware that deregulation is the power to promote the convergence. They should establish appropriate regulatory frameworks to promote the development of convergence industry system. In this respect, government not only should deregulate some industries to reduce barriers of convergence between the different industries, but also should formulate new policy to regulate inter-industry convergence [3].

The process of convergence can be shown in the following three levels of the chart. Presume that industries A and B create a new industrial property through the convergence, then there will be different contents and forms of convergence at different levels (Figure 1).

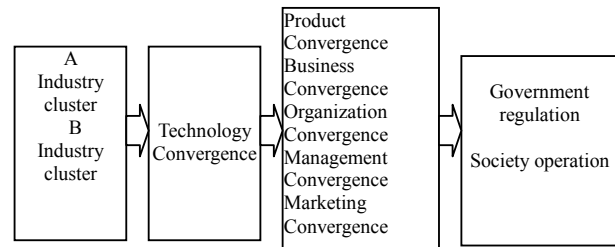


Figure 1. The process of convergence

## 3. Industrial Convergence derives high value-added industries and enhances clusters' industrial competitiveness

### 3.1. Convergence Causes Industrial Nuclear Fusion and Improves the Competitiveness of Industry-level Table

As the chain reaction of nuclear fission, the energy that's released by the industrial convergence would be growth into a series. Face to the tremendous business opportunities and economic potential which released, enterprises maybe subject to enormous impact, or absorb the energy to be up. Darwin's famous theory of evolution may give some inspiration to enterprises: the survival of the species is not the strongest or the most witty, but most able to adapt to change. The enormous economic potential released by nuclear industry provides the opportunity to the enterprises which can rapidly adapt to industrial environment through continuous innovation. That makes these industries rise quickly with the advantage of new industries value chain and occupy market with a strong competitiveness.

### 3.2. Convergence forms an Effective Competitive Market Structure and Enhances the Competitiveness Strength of Industrial Clusters

Industrial competitiveness strength is a result of a variety of factors. Among the factors, the market structure is a key competitive factor and the formation of effective competitive market structure is an important way to cultivate and enhance the competitiveness strength of an industry cluster. Consider the traditional theory of market structure, the combination of limited market capacity and the enterprises' pursuit movement of economies of scale, will result in the concentration of production and reduce the number of enterprises. After the industrial convergence, the market structure will produce more profound changes. With the disappearance of the industrial market border and the relax of government control, it would make the market structures produce two kinds of convertible effects: on the one hand, the convergence of a particular industry and other industries will make the number of enterprises of this industry rapidly increase. Moreover, there will be new entrants to participate into the competition. That greatly reduce the market

concentration of integrated industries; On the other hand, consumer demand tends to be personality, it will make the enterprises transit from large-scale, standardized to the low-volume and multi-species. In corporate strategy, economies of scale have been replaced by economies of scope. Although industrial convergence make the market structure have different appearances, but its essence is the same, namely, form an effective competitive market structure and enhance the competitiveness of the industry. So the industry can leap forward high value-added value chain.

### 3.3. Convergence Expands Clusters' Outgoing Degree and Enhances the International Competitiveness of the Industrial Cluster

International competition is the important external power to promote industrial convergence and enhance the industrial competitiveness. The best way to guide and encourage enterprises to increase R & D efforts is expanding enterprises' export-oriented and introducing the international competition.

Accelerating mergers and acquisitions among the companies, will make the companies take the initiative for technological innovation and management reform in the international competition and give birth to the new industry. The convergence of industry clusters is more conducive to the expansion of the overall outgoing degree. It will make the clusters keep a more positive attitude to face international competition, participate in the international competition, and enhance the international competitiveness of their own. Through exchanges and cooperation, clusters value chain's upgrading will be realized faster.

## 4. Industrial Convergence optimizes the industrial structure and realizes the value industrial cluster value chain's upgrading

Two American scholars, Greenstein and Khanna, once said, from the perspective of the changes of industry, industrial convergence is the contraction or disappearance of the border in order to adapt to industrial growth [4]. In different areas of industry, industrial convergence is under way in different ways. Through a series of reaction, it eventually will lead to the industrial structure continuously rationalizing and frame a convergence industrial system to speed up the upgrading of industrial clusters. This process is shown in the figure 2.

### 4.1. Industry Convergence Makes the Industrial Structure Highly Dynamic

Industrial convergence makes the boundaries between industries blurred. Two or more industries form a common foundation of technology and market, which makes an industry change its structure easily and transfer from one industry to another industry promptly, so industrial

innovation is realized and the industrial structure is in a highly dynamic changes. The direction of industrial innovation changes is decided by the proliferation-related effects through the contact between the technology departments and input-output relations [5]. If there is no innovation and the proliferation of innovative, high-growth departments' change just is a low level of recycling of industrial structure changes. Highly dynamic provides power and source to innovation and the spread of innovation: dynamic→development, innovation→upgrade.

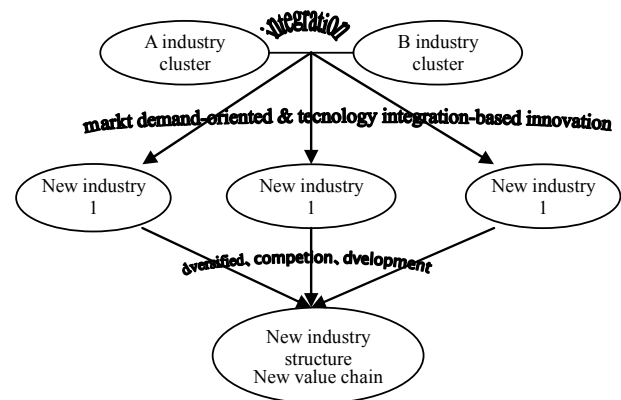


Figure2. The process of value chain's upgrading

### 4.2. Industry Convergence Promotes Diversified Development of Industrial Department

Professor Joseph • Xiong Bite put forward the technological innovation theory, saying that "people can determine the industry's relative status in the macro-structure by the distance from this industry to the technological innovation cluster in a country or region". So we can say, high-growth department, near the innovation origin, and at a relatively more advantageous position. But with the passage of time, when the high-growth industry slowdowns the speed because of innovation slowdown[6], it will be a new alternative to original high-growth industries, therefore, changes in industrial structure show a linear relationship of replacement. But industrial convergence will change the traditional alternative rules. It makes the distance from different industries to innovation origin basically same and the pace of technological progress cycle basically in step. The future economic growth will be reflected in the emerging multi-sector parallel development and the characteristics of each other[7]. So, diverse development formed by industrial convergence is more easily to realize different value chain upgrade.

### 4.3. Industry Convergence Promotes Industrial Structure Upgrading by Leaps and Bounds

In the process of industrial convergence, a variety of high-tech such as bio-engineering, information technol-

ogy and superconducting technology spread to traditional industries. That leads to the border between the high-tech industries and traditional industries vague or even disappearing and induces traditional industries to be differentiation, dissolution and reorganization. As a result, a series of new industries are formed. The industrial convergence based upon technological innovation has high innovative capacity and infiltration capacity. That enables the upgrading of industrial structure no longer by a gradual order, but by leaps and bounds directly[8]. So the effect of knowledge spillover among industrial clusters participating convergence is strengthened; the life cycle of industrial clusters is innovated and the running processes of industry clusters is innovated and the structure layout of each industry cluster is adjusted. Such an integrated approach prompts a lower level of the industrial structure to abandon the general evolution process and change to the knowledge-intensive industries and high-quality services industries. Consequently, the optimization and upgrading of total industrial clusters by leaps and bounds is achieved.

## 5. Conclusion

At present, many scholars have recognized that the value chain upgrading of industrial clusters is an important upgrading model, but how the value chain upgrades from the original value chain to higher value-added value chain is not studied in detail. From the perspective of industry convergence, this paper analyzes that industry convergence introduces a new technology or business model through innovation to transform and integrate the original industry. As a result, a new value chain

is created; high value-added industries are derived from and the industrial structure is optimized. That shows that the industry convergence provide an effective way to the value chain upgrading of industrial clusters. In the new economic situation, the point of this paper can be used as a reference to upgrade the value chain both to high-tech industrial cluster or traditional industries.

## References

- [1] Kaplinsky, R: Spreading the Gains from Globalization :What Can Be Learned from Value Chain Analysis [J]. *Journal of Development Studies*, 2000, 37(2):117- 146.
- [2] Zhou Zhenhua. Industry Convergence: New Power of Industrial Development and Economic Growth [J]. *China Industrial Economy*, 2003(4):46-52 (in Chinese)
- [3] Gao Feng. Interaction between Manufacturing and Service with the Viewpoint of Global Value Chains [J]. *Modern Management Science*, 2007(7):43-45 (in Chinese)
- [4] Du Longzheng. Industry Upgrade and Clustering Innovation with the Viewpoint of Global Value Chain [J]. *International Economics and Trade Research*, 2007(12):66-70 (in Chinese)
- [5] Li lin. Industrial Convergence: Base and Practice of the Convergence of Information and Industrialization [J]. *Shanghai Economic Review*, 2008(6): 90-95.
- [6] Asheim B. Industrial Districts: The Contribution of Marshall and Beyond. Ch21 in Clark G. L., \ Feldman M., Getler M. (Eds.) *The Oxford Handbook of Economic Geography*. Oxford: Oxford University Press, 2000: 413-431
- [7] Asheim B. T., Isaksen A. Regional Innovation Systems: The Integration of Local "Sticky" and Global "Ubiquitous" Knowledge, *Journal of Technology Transfer*, 2002, 27: 77-86.
- [8] Cooke P. Regional Innovation Systems: General Finding and Some New Evidence from Biotechnology Clusters, *Journal of Technology Transfer*, 2002, 27: 133-145.