The Factors and Strategies of Cluster's Enterprises Upgrading: from the Perspective of Global Value Chain

Yong Dai*, Guilong Zhu, Yue He
School of business administration
South China University of technology, Guangzhou, P.R.China
***EMAIL: daiyong@scut.edu.cn**

Abstract: The factors that affect upgrading of cluster' enterprises include several aspect, such as the global value chain governance model , the feature of industrial cluster , the driving mechanism of value chain, enterprise competitiveness and its status in the cluster. Based on the three-dimensional framework, this paper presents the main upgrading strategy selections of cluster enterprise: the implementation of dynamic combination of OEM, ODM and OBM; transformation from simple assembly to modularization; upgrading from outsourcing manufacturing to outsourcing service.

Keywords: industry cluster; enterprises' upgrading; driving mechanism of value chain; governance model of global value chain

I. Introduction

Cluster economy had ever brought a powerful force for rapid development of southeast coast area of China. But the consequences of this kind economic growth pattern is obvious: 1) Most of the export products of cluster's firms are low value-added ,which have not their own brands, and profits are quite low; 2) At the expense of resources, energy, environment costs, cheap labor and poor working conditions, this kind of economic growth pattern has widen the gap between the rich and the poor; 3) Many cluster's enterprises lack critical intellectual property and independent innovation capability .Therefore, scholars and businessmen suggest that if industrial clusters want to obtain long-term development , they have to transform and upgrade. And this raises questions as follows: Which factors will affect the success of the cluster enterprise to upgrade? How should cluster's enterprises embedded in global value chain in developing countries choose appropriate methods and strategies to achieve the goal of upgrading and transformation?

II. Literature Review and Theoretical Hypothesis

The concept of upgrading defined by foreign scholars can be attributed to two main perspectives:One view from the competitiveness perspectives suggest that upgrading has three forms: products, efficiency and production; The other view from the perspective of value chain suggest that upgrading has four steps, though the four steps proposed by different scholars are not the same. Kaplinsky & Morris (2001) considered upgrading has four main ways: process upgrading, production upgrading, functional upgrading, chain upgrading; Humphrey & Schmitz[2] (2002) replaced chain upgrading with inter-sectoral upgrading, as showed in table I.

Table I Four type of Cluster Enterprises Upgrading from the perspective of value chain

Upgrading Type	Concept	Function
Process Upgrading	Improving process efficiency by restructuring production system	Reducing costs, improving product quality
Production/Service Upgrading	Developing new products/services or improving the existing	Increasing market share and product price
Functional Upgrading	Paying attention to high-value segment of value chains	Enhancing the value chain position
Chain / Inter-sectoral Upgrading	Transferring to new and high-value chain	Getting high profits from relative industries

Data Sources： Humphrey J, Schmitz H. How does insertion in global value chains affect upgrading in industrial clusters.[J] . Regional Studies, 2002, 36(9): 1017-1027

From the perspective of the global value chain, scholars have generally emphasized that the external links of cluster enterprises are important to enterprises' upgrading. Clusters by linking the outside markets with intermediary have more higher profits than those lacking link. Studies on clusters of Pakistan and Brazil have shown the close relationship between producers and buyers is important to product & process upgrading[3] (Nadvi & Schmitz, 1999). Zhang Hui (2005)[4] emphasized local industrial clusters occupying different value sectors have formed a strict hierarchy. Liu Zhibiao[5](2007) pointed out cluster'enterprises subject to OEM system are likely embedded in captured network, which is disadvantaged to enterprises upgrading in cluster. Shenghua Jia (2006) studied the structural characteristics of industry clusters in Zhejiang province and the degree of different industries, pointing out the path of upgrading in the value chain.

III. The Analysis of the Main Factors Affecting Upgrading of Cluster'S Enterprises

The governance model of global value chain which cluster's enterprises are embedded in

Governance means coordinating inter-enterprises' relations by non-market mechanisms. Governance model of global value chain is important because it relates with the access of enterprises in the value chain acquiring production capacity, understanding profit distribution, getting technical assistance from developed countries. Scholars distinguish different global value chain governance model, as shown below:

TableII:Different categories of the model of global value chain governance

Williamson	Jessop	Humphrey & Schmitz	Gereffi Humphrey & Sturgeon
market	anarchy of exchange	arm's-length market relations	market
network	self-organizing hierarchy	balanced	relational
		captured	quasi-hierarchy
			captive
vertical integration	organizati-onal hierarchy	hierarchy	hierarchy

Data Sources: Humphrey, J. and Schmitz, H. Chain Governance and Upgrading: Taking Stock[A]. in Schmitz, H(ed), Local Enterprises in the Global Economy Issues of Governance and Upgrading [C].Cheltenham: Elgar, 2004: 349-381

Generally, it is believed that captured network governance is beneficial to process upgrading and production upgrading, but it has negative effect on functional upgrading and chain upgrading. The balanced network type is another typical value chain governance model. Position of cluster' enterprises in this model is almost balanced, which makes manufacturers of the developed countries control other enterprises in value chain more difficult.

Industrial characteristics of cluster and driving mechanism of value chain

According to the various industries occupying different core value section , different driving mechanism show up in the value chain. Industrial clusters can be divided into producer-driven, buyer-driven[6] (Gereffi et al., 1994), and mixed-driven type. Characters of the three mechanism are shown as the following tableIII.

TableIII: Comparison among clusters of producer, buyer and mixed driving mechanism

ITEM	Producer-driven value chain	Buyer-driven value chain	Mixed type
Power source	Industrial capital	Commercial capital	Both
Strategic section	R&D/Production capacity	Industrial Design/ Logistics/Channel	Technique and brand
The form of section separated	FDI	Subcontracting networks	Both
Entry barrier	Industry scale	Scope economy	Both
manufacturing enterprise	Multinational enterprise in developed countries	Multinational enterprise in developing countries	Multinational enterprises and local enterprises
position of Core competencies on smile curve	Left(upriver)	Right(downriver)	Two sides of the curve
Typical industries	Aircraft/steel. etc.	Clothing/shoes/toys.	IT Industry
Typical leading firms	Boeing/Toyota,etc.	Wal-Mart /Nike, etc.	Intel/DELL,etc.
Upgrading strategy of non-leading enterprises	Strengthening R&D; modular development	Strengthening industrial design; developing the markets of local and developing country	Modularization; enhancing ability to control the logistics system

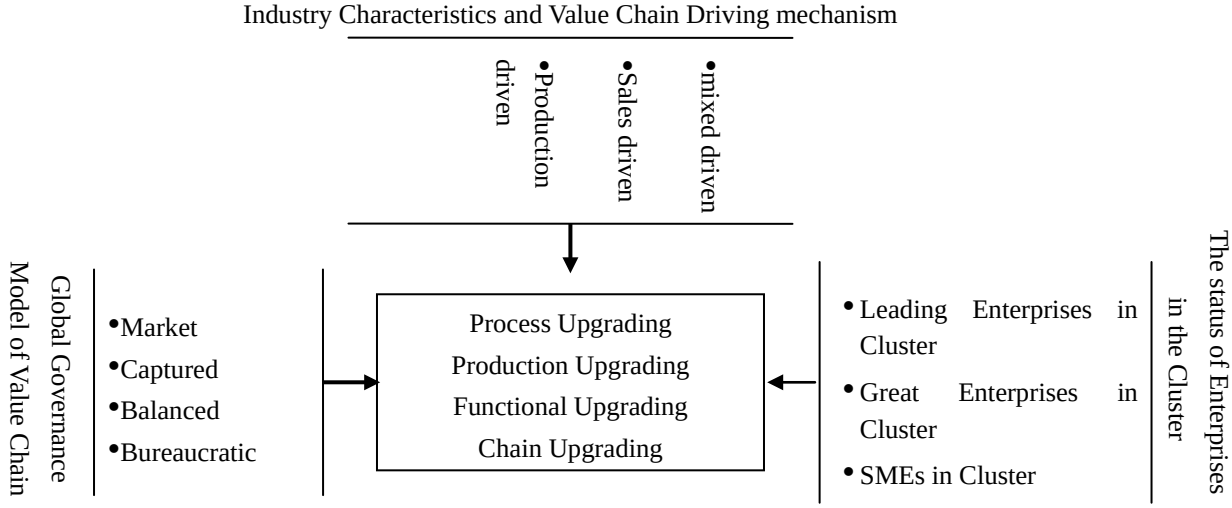
Date source: Based on Gelei Fei (Gereffi, 1999b) and Hui (2006)

If the cluster enterprises participate in the global value chain of producer-driven model, the right strategy is enhancing capacity of the core technology. By contrast, those enterprises involved the global value chain of buyer-driven model should pay more attention on sales channel development.

Enterprise competitiveness and its status in cluster

Enterprise competitiveness represented by technology, capacity, channel and brand will directly impact on the upgrading mode of enterprises in the cluster. Leading firms are a kind of special enterprises, which has lager scale, and have greater advantage in product design, process development, marketing and other aspects than SME. Leading firms usually outsource the production tasks to other enterprises in the cluster. They are only responsible for supply of raw materials, designing and marketing, thus forming a comprehensive business network around leading enterprises.

Based on the above analysis, the main factors affecting upgrading of cluster's enterprises can be summarized as a graph shown below:



FigureI: The framework of the main factors affecting upgrading of cluster's enterprises

IV. Upgrading strategies of cluster's enterprises in three-dimensional framework

Dynamic combination of the implementation of the OEM, ODM and OBM

While contract manufacturers manufacture original equipment and develop their own brand at the same time, they will compete with brand customers, and this will affect the development of their own original foundry business. So if contract manufacturers focus on their own product brands, they will have to face this dilemma. Therefore, If contract manufacturers want to develop their self-owned brands, they should consider the following problems: whether the brands will affect the partnership, and if the relationship changes, whether the enterprises still have the ability to gain lasting competitive position? If contract manufacturers go on choosing the cooperative model, how to deepen the cooperation? To solve these problems depend on the competitiveness of the enterprise (leading, large or small and medium enterprises), driving mechanism of value chain (production driven, sales driven or mixed driven model)and the global value chain governance model faced by the enterprise(balanced or captured type).

Manufacturers should take the models of dynamic combination of OEM, ODM and OBM, which can promote dynamics learning in organization and make use of industry scale and scope economy of the existing ability of resources. Solving these problems depends on the competitiveness of the enterprise,

From simple assembly to modularization: upgrading from captured network to balanced network

If the cluster's enterprises in balanced network belong to the production-driven industry, they can use the upgrading strategy from simple assembly to modularization. By this way, these enterprises change captured network to balanced network. As deepening the process of modularization along value chain, there emerge two types of typical enterprises: One is a number of leading manufacturers (or brand manufacturers), which is mainly responsible for the core values of industry sectors, such as R&D, conceptual design, functional design; The other is contract manufacturers, who is responsible for some non-core value chain. But if they have the systematic function like applied R&D, logistics, supply chain management and additional services etc, the enterprises are regarded as an advanced form of contract manufacturers, they are independent manufacturer of value

module, especially specializing in developing and manufacturing of various important components.

Undertaking Modern Productive Service Industries: upgrading from manufacturing outsourcing to service outsourcing

For those cluster's leading enterprises in captured network, they can realize upgrading by undertaking a higher level of productive services from the buyers. At the same time they may outsource part of the original manufacturing to enterprises in the cluster or even in other developing countries and regions.

The leading enterprises in this cluster provide modern productive services, which not only can make leading enterprises and SMEs upgrade, but also significantly reduce transaction costs in the cluster. Take textile and apparel clusters in the East Asian emerging economies (Hong Kong, China Taiwan, Korea, Singapore) as a example. Originally, they are OEM for the U.S. and European buyers. By establishing a close relationship with European and the U.S. retailers, they enhance their technology at the process, and then change their role: transforming and upgrading from OEM to productive services. Secondly, by creating a global sourcing network, the clusters become the medium between a European or American buyers with Asian or other developing regions. So cluster's leading enterprises in China can learn from this model, that is, they can outsource the production to other small and medium enterprises in cluster, and put their main energies to more high-lever modern service industry.

V. Conclusion

This paper focuses on the main factors that affect upgrading of cluster' enterprises, which include the global value chain governance model , the feature of industrial cluster and driving mechanism of the value chain, enterprises' competitiveness and its status in the cluster. Based on the three-dimensional framework, we can find out the main upgrading strategy selections of cluster enterprise: the implementation of dynamic combination of OEM, ODM and OBM; transformation from simple assembly to modularization; upgrading from outsourcing manufacturing to outsourcing service. But it must be pointed out that no matter what kind of value chain that cluster is embedded, and whether it could bring some opportunities to enterprises upgrading, the change will not occur spontaneously. It requires that enterprises in clusters make positive efforts and collective learning, as well as constantly investing and innovating in upgrading.

Acknowledgement

The authors are grateful to Doctoral Fund of Ministry of Education of China (project number 200805611036), Soft Science Research Projects in Guangdong Province (project number 2009B070300027), Guangdong philosophy & Social Science, "Eleventh Five-Year Planning" project (project number 08GE-02) and Guangdong Higher Education Institution Discipline Construction Special Fund (project number WYM08085) for providing financial support for this research project.

References

[1] Kedia B. L. & Lahiri S.. International Outsourcing of Services: A Partnership Model[J]. Journal of International Management, 2007(13):22-37.
[2] Humphrey, J. and Schmitz, H. Chain Governance and Upgrading: Taking Stock[A]. in Schmitz, H(ed), Local Enterprises in the Global Economy Issues of Governance and Upgrading [C].Cheltenham: Elgar, 2004: 349- 381.
[3] Nadvi, K. and H. Schmitz, eds. Industrial Clusters in Developing Countries. Special Issue of World Development,1999. 27(9):173-188.
[4] Zhang Hui, The Dynamics Model of Global Value Chain and Industry Development Strategy [J]. China Industrial Economy, 2006(1): 40-48
[5] Zhibiao Liu, Zhang Jie. Forming,Breakthrough and Strategies of Captive Network in Developing Countries at Global Outsourcing System:Based on a Comparative Survey of GVC and NVC[J]. China Industrial Economy, 2007,5：39-47

Acknowledgements

Fund Project: Doctoral Fund of Ministry of Education of China (200805611036); Soft Science Research Projects in Guangdong Province (2009B070300027); Guangdong philosophy & Social Science, "Eleventh Five-Year Planning" project (08GE-02) ; Guangdong Higher Education Institution Discipline Construction Special Fund (WYM08085)

Background of Authors

Yong Dai， received the doctoral degree from Sun Yat-Sen University of , now as a post-doctor in South China University of Technology. Research areas: Technology Innovation Management.

Guilong Zhu, Professor, dean of school of business administration of South China University of technology. Received the doctoral degree from Sun Yat-Sen University. Research areas: Technology Innovation Management.

Yue He，postgraduate of South China University of Technology. Research areas: Technology Innovation Management.