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# 基于供应链的 产业集群升级研究

曹丽莉 著

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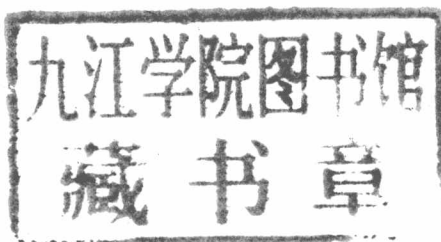
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## 总 序

一个没有思想活动和缺乏学术氛围的大学校园，哪怕它在物质上再美丽、再现代，在精神上也是荒凉和贫瘠的。欧洲历史上最早的大学就是源于学术。大学与学术的关联不仅体现在字面上，更重要的是，思想与学术，可谓大学的生命力与活力之源。

中南财经政法大学是一所学术气氛浓郁的财经政法高等学府。范文澜、嵇文甫、潘梓年、马哲民等一代学术宗师播撒的学术火种，五十多年来一代代薪火相传。在世纪之交，在合并组建新校而揭开学校发展新的历史篇章的时候，学校确立了“学术兴校，科研强校”的发展战略。这不仅是对学校五十多年学术文化与学术传统的历史性传承，而且是谱写新世纪学校发展新篇章的战略性手笔。

“学术兴校，科研强校”的“兴”与“强”，是奋斗目标，更是奋斗过程。我们是目的论与过程论的统一论者。我们将对宏伟目标的追求过程寓于脚踏实地的奋斗过程之中。由学校斥资资助出版《中南财经政法大学青年学术文库》，就是学校采取的具体举措之一。

本文库的指导思想或学术旨趣，首先在于推出学术精品。通过资助出版学术精品，形成精品学术成果的园地，培育精品意识和精品氛围，提高学术成果的质量和水平，为繁荣国家财经、政法、管理以及人文科学研究，解决党和国家面临的重大经济、社会问题，作出我校应有的贡献。其次，培养学术队伍，特别是通过对一批处在“成长期”的中青年学术骨干的成果予以资助推出，促进学术梯队的建设，提高学术队伍的实力与水平。再次，培育学术特色。通过资助在学术思想、学术方法以及学术见解等方面有独到和创新之处的成果，培育科研特色，力争通过努力，形成有我校特色的学术流派与学术思想体系。因此，本文库重点面向中青年，重

点面向精品，重点面向原创性学术专著。

春华秋实。让我们共同来精心耕种文库这块学术园地，让学术果实挂满枝头，让思想之花满园飘香。



2009 年 10 月

## Preface

A university campus, if it holds no intellectual activities or possesses no academic atmosphere, no matter how physically beautiful or modern it is, it would be spiritually desolate and barren. In fact, the earliest historical European universities started from academic learning. The relationship between a university and the academic learning cannot just be interpreted literally, but more importantly, it should be set on the ideas and academic learning which are the so-called sources of the energy and vitality of all universities.

Zhongnan University of Economics and Law is a high education institution which enjoys rich academic atmosphere. Having the academic germs seeded by such great masters as Fanwenlan, Jiwenfu, Panzinian and Mazhemin, generations of scholars and students in this university have been sharing the favorable academic atmosphere and making their own contributions to it, especially during the past fifty – five years. As a result, at the beginning of the new century when a new historical new page is turned over with the combination of Zhongnan University of Finance and Economics and Zhongnan University of Politics and Law, the newly established university has set its developing strategy as “Making the University Prosperous with academic learning; Strengthening the University with scientific research”, which is not only a historical inheritance of more than fifty years of academic culture and tradition, but also a strategic decision which is to lift our university onto a higher developing stage in the 21st century.

Our ultimate goal is to make the university prosperous and strong, even through our struggling process, in a greater sense. We tend to unify the destination and the process as to combine the pursuing process of our magnificent goal with the practical struggling process. The youth's Academic Library of Zhongnan University of Economics and Law, funded by the university, is one of our specific

measures.

The guideline or academic theme of this Library lies first at promoting the publishing of selected academic works. By funding them, an academic garden with high – quality fruits can come into being. We should also make great efforts to form the awareness and atmosphere of selected works and improve the quality and standard of our academic productions, so as to make our own contributions in developing such fields as finance, economics, politics, law and literate humanity, as well as in working out solutions for major economic and social problems facing our country and the Communist Party. Secondly, our aim is to form some academic teams, especially through funding the publishing of works of the middle – aged and young academic cadreman, to boost the construction of academic teams and enhance the strength and standard of our academic groups. Thirdly, we aim at making a specific academic field of our university. By funding those academic fruits which have some original or innovative points in their ideas, methods and views, we expect to engender our own characteristic in scientific research. Our final goal is to form an academic school and establish an academic idea system of our university through our efforts. Thus, this Library makes great emphases particularly on the middle – aged and young people, selected works, and original academic monographs.

Sowing seeds in the spring will lead to a prospective harvest in the autumn. Thus, Let us get together to cultivate this academic garden and make it be opulent with academic fruits and intellectual flowers.

Wu Handong



## 摘 要

20 世纪,产业集群呈风起云涌之势。伴随经济发展,产业集群在世界范围内也逐步开始“此起彼落”。尽管产业集群的竞争优势有目共睹,但一些早期的产业集群由盛及衰,走向没落却也是不争的事实。这些衰落的产业集群一个共同特征就是发展缓慢没有适时地实现产业升级。本书研究的内容是我国制造业产业集群的升级,研究的重点是产业集群升级的目标和具体的升级路径,研究的视角是基于全球价值链和集群内的供应链,力求构建一个集群升级的体系。

随着经济全球化的发展,任何产业集群都不再是一个封闭的系统,集群已融入全球产业链。在全球化背景下如何实现产业集群升级,全球价值链提供了一个有效分析途径。伴随产业分工的发展,产品的生产过程被分解为不同环节。当前,散布于全球的、处于全球价值链上的企业进行着设计、产品研发、生产制造、营销、售后服务、最后循环利用等各种增值活动。在 20 世纪末,许多跨国制造企业纷纷将生产基地从发达国家向发展中国家转移,这在劳动密集型产业尤其普遍,我国的产业集群也广泛地参与到全球价值链体系中。

当前我国制造业主要呈现出集群性的特征,劳动力资源丰富、成本低廉是我国制造业的比较优势,这使得我国大部分制造企业在全球价值链上处于中间附加值低的生产加工环节,大多数集群还处于产业集群发展的低端阶段。从价值创造活动看,制造业的利润主要来源于品牌、核心技术、销售、服务与物流等,我国制造企业普遍缺乏这些价值增值能力较强的资源,利润较低且市场风险较高。

基于全球价值链视角研究产业集群的升级,顺应了经济全球化的趋势,并将升级界定为“沿着价值链升级”,占领全球价值链的高端,获得整个链条上最有利润的环节。结合全球价值链的形状,本书提出我国产业集群升级的目标。首先,结合我国当前的比较优势,继续巩固其在全球价

价值链中的制造环节的优势,吸引全球供应链核心企业选择“中国制造”,在提高“中国制造”“量”的同时,通过质量、效率、成本、服务等多方面竞争要素的培育,提高“中国制造”的“质”,将劳动力低成本的单一竞争优势转变为基于多要素的全面竞争优势,使制造业集群的生产呈现出集约化、清洁化、高效化、快速响应的特征,以此抬升价值链曲线的最低点,实现集群的升级。其次,改变在全球价值链中的位置,在价值曲线中从中间的制造环节向两边高附加值环节升级。由劳动密集型的生产环节向资本、技术密集的关键零部件研发、产品设计、自主品牌塑造、产品服务等环节推移,进行技术创新和服务创新,实现集群的创新升级。再次,结合产业集群网络结构特性,在集群内延伸供应链,培养扶持核心企业,促进供应链的本地一体化,优化集群网络结构,为管理、技术、服务升级提供组织保证。

本书在研究过程中,将实证分析与规范分析相结合,运用 SNA(社会网络分析)方法对浙江平湖光机电产业集群内网络结构现状进行实证研究,采用基于 DEA(数据包络分析)方法的超效率模型对浙江、广东、江苏、福建、山东、上海、辽宁、北京这 8 个制造业密集的区域(集群)的创新效率进行比较,并对其集群升级效率进行评价。针对集群供应链上制造商与供应商之间的创新活动进行博弈分析,并确定了合作创新的影响因素。本书还对温州鞋业产业集群、浙江平湖光机电产业集群、宝供的物流服务供应链和深发展银行的金融服务供应链进行案例分析。借助 Ucinet6、SPSS15.0 和 Lindo6.1 等数学和统计软件完成数据处理和计量分析工作。

全书主要内容如下:

首先是导论,阐述了选题的意义,并对全书进行总体介绍和框架性说明。

第一章是文献综述,对国内外产业集群升级的研究视角进行归纳述评,提出全球化背景下,基于供应链视角的产业集群升级研究的创新性。

第二章在对价值链、供应链、产业集群三者关系分析的基础上,构建了我国制造业集群升级的体系。首先分析了我国制造业集群升级的必要性,然后结合全球价值链理论,联系我国当前集群在全球价值链上的位置,提出我国产业集群升级的目标。价值链分析更倾向于是一种价值判断和目标选择,而不是一种具体的实践方法,而供应链的结构和管理模式正是价值链的具体形式的反应。本章最后基于供应链视角提出了产业集群升

级的路径。

第三、四、五、六章是全书的重点，围绕产业集群内的供应链网络结构、管理方法、技术创新、服务模式创新，与第二章提出的基于价值链视角的产业集群升级目标相对应，从四个方面阐述了集群升级的路径。

1. 为实现“结构优化”，第三章从供应链网络结构视角来分析其对集群内的组织结构的优化。

产业集群是一个企业网络组织，各节点之间基于专业化分工产生着各种各样的网络关系，由此形成其特有的网络组织结构。产业集群的发展是一个网络结构逐步优化的过程，集群的网络结构优化对其升级会产生重要影响。在产业集群内构建多个供应链“子网络”，通过供应链网络自身更高的组织化程度，对集群内企业资源进行整合。对整个供应链的运作起主导作用的是链上核心企业。正是因为核心企业的存在及其核心竞争优势，保证了整个供应链的凝聚力和成员企业一体化协同化运作。

运用供应链组织模式对集群内的网络结构进行优化，产业集群内企业间的竞争转化为供应链与供应链的竞争。产业集群内供应链的确定要以核心企业为主，一个核心企业带动的应当是一条供应链，集群内存在诸多核心企业，相对应的也会有多条供应链。产业集群实质上是一条或数条供应链在一定地理区域的集中。通过供应链网络的整合，集群内产业组织得到了优化升级。改变了以往企业间单纯的竞争关系，同一条供应链上企业间合作，不同供应链之间展开竞争，抑制集群内恶性竞争，改变集群内无序竞争的状态。

基于社会网络结构分析方法，本章对浙江平湖光机电产业集群进行了实证研究，得出了其网络拓扑图和网络特征。日资企业在平湖光机电产业集群网络中处于核心地位，是集群中的龙头企业，而中国企业则明显处于从属、受支配的地位，两者不在一个层次。平湖产业集群具有较强的创新动力，正是缘于集群供应链上的这一批日资核心企业。大企业主导型的产业集群因其内部供应链上核心企业的竞争优势而利于升级，这样的集群网络关系紧密，结构中心性突出，有利于企业的创新，推动集群的升级。

2. 为实现“‘中国制造’升级”，第四章从供应链管理视角来分析集群内制造业竞争力的升级。

中国制造业的比较优势是劳动力成本低廉，从现实角度考虑，我国当前仍然不能放弃这一低价值环节的竞争优势。但值得注意的是，还有亚非

拉一大批发展中国家的劳动力同样具有低成本的竞争优势。一旦“中国制造”的比较优势与其他国家相比不够突出或逐步丧失,带来的必然是资本的抽逃,尤其是在以外资为主的产业集群地容易造成产业空心化。随着经济的发展,劳动力成本的提升是必然的规律,我国依靠低廉劳动力成本所维持的制造业比较优势将面临挑战,此时的问题是,如何进一步确立和强化中国在全球价值链上的位置,并不断提升我国生产制造过程中创造的价值,使制造本身实现升级。

制造业的竞争重点主要涉及成本、柔性、质量、交货和创新等方面。根据产业集群升级的目标,要提高“中国制造”的竞争力,就需要围绕这些竞争要素进行改善和调整,这些都可以通过供应链管理来实现。供应链管理是产业集群内的管理创新,有利于产业集群的集约型成长和可持续发展。供应链管理本身就是一个企业间的管理模式,它需要链上所有企业的共同参与,供应链管理方法的应用提升了供应链成员企业的竞争力,进而也增强了集群网络节点企业的能力,推进集群整体的升级。

供应链管理的不同特征与产业集群不同的发展阶段是相对应的,由此可以根据供应链的不同指标变化来发掘出产业集群升级的路径,本章最后从供应链结构、技术、战略、组织、物流、绿色6个方面来揭示集群的升级路径。

3. 为实现“技术升级”,第五章分析构建集群产品供应链内创新网络和机制,激发核心企业的创新动力,实现产业集群创新升级。

产业集群升级的本质是创新,本章主要围绕产品供应链技术创新来分析升级。当前在我国集群内本土企业创新行为普遍呈现出一种低端化、模仿化、同质化、个体化、偶然化共性特征,表现出“集体创新动力缺失”困境,其中根本原因在于单个企业创新的成本和收益之间的不对称,也就是“创新成果”在集群中的“外溢”问题。

集群内的供应链合作创新是企业内部创新的延伸,它是以客户需求为导向,结合信息技术的发展,有效协同供应链成员和外部网络而开展的创新活动。供应链网络内具备异质性和互补性资源的企业间形成基于供应链利益一体化的信任、合作关系,进而提高集群内创新网络的组织化程度,提高集体学习的效率,最终实现了创新能力的提升。

供应链核心企业在产业集群创新中居于主导地位。产业集群内不同的供应链创新动力是不同的,大企业主导的供应链比中小型企业主导的供应

链具有更强的创新动力。当前产业集群中存在的“技术溢出”导致企业创新动力不足的问题,在“第一梯队”大企业主导的供应链上得到了解决。

产业集群的创新动力主要源于其内部供应链上的核心企业,这就为产业集群的创新效率评价提供了一个分析视角——基于集群内核心企业的创新效率。一般而言,集群内核心企业都是具有一定实力的大中型企业。因此,本章运用基于 DEA(数据包络分析)的超效率模型,以浙江、广东、江苏、福建、山东、上海、辽宁、北京这八个制造业集聚地为研究对象,透过其区域内大中型企业的创新效率对集群创新升级效率进行了实证比较。

本章最后提出了产业集群内供应链网络创新的路径。在集群网络内要建立起清晰的供应链“板块”,通过供应链创新的主要活动和支持活动推进集群的创新升级。

4. 为实现“服务升级”,第六章通过构建技术供应链和服务供应链,整合集群内的创新资源,实现多元供应链的融合,推动产业集群升级。

产业集群内存在诸如高校、科研机构、金融机构、管理咨询机构、行业协会等组织,蕴含着大量的知识密集型、技术密集型企业。如何充分整合这些创新资源,密切供求双方之间的关系,供应链的组织模式是一条有效途径。供应链思想不仅体现在产品生产上,它的集成性、合作性、一体化,运用在所有具有“供给—需求”关系的主体之间,形成多元化的供应链模式,这种模式在创新了供应链内容之后也有力地推进了产业集群的升级。集群内可以构建技术供应链和服务供应链,通过核心企业的主导作用,与产品供应链进行耦合,在集成产品供应链各方资源的基础上,更充分的整合企业之外生产性服务业资源,以实现创新升级。

最后第七章提出了基于供应链视角的产业集群升级的政策建议,具体包括产业集群内供应链组织续衍、集群式供应链组织构建、集群内供应链物流管理和多元供应链构建融合四个方面。

**关键词:** 产业集群 供应链 升级 全球价值链 网络结构 供应链管理 创新

## Abstract

Industrial clusters came forth largely in the 20th century. With economy development, the level of industrial clusters varies gradually in the world. Although the competitive advantages of industrial clusters are well-known, some of the early industrial clusters are going to break up actually. These clusters have a common feature, which develop slowly without upgrading in good time. This book studies the upgrading of China's manufacturing industry clusters, focusing on what industrial clusters are upgraded for and how to upgrade. Based on the perspective of global value chain and supply chain in clusters, it aims to build a system for industrial clusters upgrading.

With the development of economic globalization, any industrial cluster is no longer a closed system but integrated into the global industrial chain. The Global Value Chain theory provides an effective way to upgrade industrial clusters in the context of globalization. With the development of the labor division, the production process is broken down into different segments. At present, enterprises dotted all over the world in one global value chain are engaged in value-added activities such as design, research and development, production, marketing, after-sales service and final recycling. At the end of the last century, many transnational corporations have transferred manufacturing production bases from developed countries to developing countries, generally in labor-intensive industries which also brings China industrial clusters' participation in the global value chain system widely.

Manufacturing clusters appear largely and currently in China. Low labor costs and abundant resources is the comparative advantages of China's manufacturing industry, so that most Chinese enterprises lie in the middle of the low value-added production and processing sectors on the global value chain. The major-

ity of clusters are also in the low-road. The profits in all value creation activities come mainly from brands, the core technology, sales, services, logistics and so on. China manufacturing enterprises generally lack these resources with higher added value, and have lower-profit in the higher-risk market.

Based on the view of global value chain, we study on the upgrading of industrial clusters in accordance with the economic globalization trend. Upgrading is defined as escalation along the value chain, dominating the high tache and obtaining the most profitable part of the whole chain. Combined with the shape of the global value chain and the position for China manufacturing industry on the chain, this book presents targets of our industrial clusters upgrading. Firstly, we must continue to consolidate the advantages of manufacturing sector on global value chain in light of Chinese current comparative advantage, and attract core businesses on global supply chain to choose "Made-in-China". Not only improving quantity of the "Made in China", we should also enhancing quality of the "Made-in-China" by nurturing elements of the competition such as efficiency, cost, time and service, transforming a single competitive advantage of low-cost labor force into comprehensive competitive advantages based on multi-element. So that the manufacturing clusters takes on the characteristics of intensive, clean, efficient, and rapid response to achieve the upgrading. Secondly, we should change the position on the global value chain, from the middle of the manufacturing sector to both sides of high-value-added sectors, from labor-intensive production process to the capital and technology-intensive parts such as the key components' research and development, product design, own brands build-up and services etc. We should carry out technology and service innovation to achieve the clusters upgrading. Thirdly, as for the networks structure of industrial clusters, we should extend the supply chain, bring core enterprises up, promote local supply chain to integrate, optimize cluster networks structure, and provide organizational basement for upgrading of management, technology and service.

The empirical analysis and normative analysis are combined together during the study process. This book uses SNA (Social Network Analysis) on networks of the optical-mechanical-electronic industrial cluster in Pinghu City of Zhejiang Province, and makes the Super-efficiency Model in Zhejiang, Jiangsu, Shan-

dong, Fujian, Shanghai, Beijing, Liaoning and Guangdong based on the DEA (Data Envelopment Analysis), compares the efficiency of innovation among these eight manufacturing-intensive regions (clusters), obtains evaluation on the efficiency of its cluster upgrading, and determines the impact factors of cooperation and innovation between manufacturers and suppliers on the cluster supply chain by Game analysis. This book also provides case study on Wenzhou shoes industrial cluster, Pinghu optical-mechanical-electronic industrial cluster, Baogong logistics service supply chain and the Shenzhen Development Bank's financial service supply chain. With mathematical and statistical softwares such as Ucinet6, SPSS15.0 and Lindo6.1, data processing and measurement analysis can be done.

The book is divided into eight chapters.

At first, the significance of the topics, presentations on the overall and framework of the whole book. are introduced.

The first chapter reviews the domestic and international researches of the industrial clusters upgrading, and provides innovation aspects for study industrial clusters upgrading under the background of globalization from the supply chain perspective.

The second chapter constructs China manufacturing industrial cluster upgrading system on the basis of relationship among value chain, supply chain, industrial clusters. Firstly we conclude the necessity of China manufacturing industrial upgrading, and then with the global value chain theories, propose targets of China industrial clusters upgrading in connection with Chinese cluster's current position on the global value chain. Analysis of the value chain is more inclined to target a valuation and choice, rather than a specific practice, and the supply chain's structure and management model is the concrete form of the value chain. This chapter last concludes the industrial cluster upgrading path from the supply chain perspective.

The third fourth fifth sixth chapters are the core of the full texts. These chapters provide detailed path for industrial clusters upgrading from four aspects, that is the supply chain networks structure, management, technology innovation, service model innovation, corresponding with the targets from the value chain up-



grading perspective demonstrated in the third chapter.

1. For the realization of “structural optimization”, the third chapter analyses the organizational structure optimization in the industrial clusters from the view of supply chain networks.

Industrial cluster is networks structured. It is consisted by a wide range of networks based on the specialized labor division, which form unique organizational structure of networks. Industrial clusters development is a process with networks structure gradually optimization, which makes great impact for industrial cluster upgrading. Constructing a number of “sub-net” in the industrial clusters, enterprise resources would be integrated through supply chain with higher degree of self-organized. On the whole supply chain its core enterprise plays the leading role in the operation. It is precisely because of the existence of the core enterprise and its core competitive advantage that ensure the cohesion of the entire supply chain and enterprise integration synergies.

With the network structure optimization in the clusters through supply chain organization, the competition between enterprises in industrial clusters becomes the competition between supply chain and supply chain. The supply chain in industrial cluster is determined by core enterprises, which drives the supply chain's competitive advantage, the number of which will be corresponding to the number of supply chain. Industrial cluster is essentially one or several of the supply chain's agglomeration in a certain geographic region. Through the integration of supply chain networks, industrial organization of clusters have been optimized and upgraded. Enterprises on the same supply chain cooperate together instead of past competition only, on different supply chain, competition becomes more tough and vital, which inhabits the malignant competition and changes the disorderly competition.

Based on the analysis method of social network structure, this chapter provides an empirical study on Pinghu optical-mechanical-electronic industrial clusters and concludes its networks topology maps and networks features. Japanese-funded enterprises in Pinghu networks are in core position and play the leading role, and China enterprises is obviously in a subordinate dominance. Their status is not on same level. This core group of Japanese enterprises on the supply chain