Establishing Policy Systems of Sustainable Development Based on the Life Circle of Industrial Clusters

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Abstract: Lengthening the life circle of industrial clusters, and endowing it the constant competitiveness constitute the critical matters for their development. Based on the analysis of their connotation and growing motivation, this paper explores the relationship between the two, makes a thorough research on their features on each phase and proposes feasible policies on their sustainable development.

Keywords: Industrial clusters’ life circle, Growing motivation, Policy proposal

1 Introduction

Constructing industrial clusters, as a new method of development, plays a very practical and important role in obtaining everlasting competitive advantages, improving local economy, and adjusting industrial layout and industrial structure. However, there are a lot of problems in the development of domestic industrial clusters some of which have very short life circles. For instance, some industrial clusters fall into decadence without experiencing the maturity phase. This phenomenon forces us to think about the ways to get everlasting competitive advantages and to melt away all kinds of risks in the growth of clusters, which means industrial clusters should adopt different policies and measures in each phase, so as to lengthening their life circle and promoting their constant competitiveness.

2 Connotation of Industrial Cluster Life Circle and Analysis of Growing Motivation

2.1 Connotation of industrial clusters’ life circle
Industrial cluster life circle refers to a time expansion from cradle to grave.¹ No matter this process is long or short, problems are filled with during the birth, growing, maturity and decadent phases. The birth phase of industrial clusters refers to the process of its burgeoning out and initial shaping; the growing phase refers to the process of growing up through concerted efforts based on the initial stereotype of industrial clusters; due to the emergency of many factors, such as land, prices of human resources arising, industrial clusters will reach a balance in sizes and thus not enlarge any more, which means at this period industrial clusters don’t boom in shape and transfer their focus on upgrading industrial structure, creating regional environment and perfecting network structure of industrial clusters. This is the maturity phase. Decadence phase refers to the process in which industrial clusters walk into death from maturity.

2.2 Analysis on growing motivation of industrial cluster
The formation and development of industrial cluster are achieved by the growing motivation of industrial clusters that refers to all good factors that can drive the formation and development of industrial clusters. In the life circle of industrial clusters, growing motivation is displayed by derivative motivation and development motivation.² Early scholars summarize the recognition and description of this derivative motivation as the essential motivations of enterprises accumulated in a certain space and it is the origin of various competitive advantages.
In the research of industrial cluster motivation, remarkable transformation lies in that of analysis from recognition of derivative motivation, its nature and impacts to the relationship among all kinds of
motivation forces for growing and its impacts and mechanisms. Compared with derivative motivation, development motivation of industrial cluster have higher level quality and more stable function form. Therefore, industrial cluster can develop and display powerful competitive advantages because of steady technological innovation, informal learning, corporative competition, knowledge sharing and outbriming, network cooperation, and consciousness of regional brands.

Liu Hengjiang and Chen Jixiang (2004) give a comprehensive description on motivation mechanism research of industrial clusters home and abroad, and propose the conception of industrial cluster motivation mechanism: i.e. innate motivation mechanism and inspiring motivation mechanism. Innate motivation mechanism is internal spontaneous force, including: complementary division of work, reducing trade fee, information sharing, outer economy, size economy, network innovation. Inspiring motivation mechanism mainly comes from outer environment and the government that offer feasible programs and adjustment to those clusters, displaying itself as outer competition and cluster policies. The two mechanisms are interdependent and melting into the whole as clusters’ driving forces.

When integrating enterprises based on the theories of all schools of thoughts, we can consider that outer economy, social capital and innovative advantages constitute three driving forces of industrial clusters. Life circle of industrial clusters and their growing motivation have the relationship as Figure 1 shows.

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**3 Features of Industrial Clusters Life Circle in Each Phase**

Throughout the development history of industrial clusters, we can summarize the features of industrial clusters life circle in each phase as follows:

**3.1 The birth phase**
In industrial clusters, few industries are in birth phase, and fewer are those supportive institutions, such as educational institutions, R & D institutions and industrial associations. In this phase, enterprises corporate little and don’t form complete innovative chains. In term of productive pattern, it features in that the outer industries penetrate less and local industries transform slowly.

3.2 The growing phase
Industries clusters in this period can expand into rising ones quickly. In these clusters, the final products or some series products have abundant demands and increasing influence on surrounding areas or markets home and abroad; all kinds of economic resources such as capital, technologies, and personnel talents are drawn into the clusters within a short period, which shows strong adoption power of these clusters and which promotes the information exchanges.

3.3 The maturity phase
The industrial clusters expand into the maximization when they enter the maturity phase, in which the prices of land and human resources have arisen greatly. In addition, lots of industrial clusters in other areas flow into, which brings abundant economic resources such as capital, technologies and personnel talents. However, in this phase, the attraction of industrial clusters to various economic resources decreases and industries within the clusters begin to move out.

3.4 The decadence phase
Industrial clusters in decadence phase begin to think with fierce competition and loosened industries cooperation. Therefore, industrial clusters in this phase are always sunset ones with lots of industries and R & D institutes starting moving out and hardly new outer investment being drawn. The life span of each phase depends on the growing motivation of industrial clusters, i.e. the bigger the growing motivation, the faster the growing speed and the longer their maturity life span. Therefore, local government should always focus on the growing motivation of industrial clusters as its manipulation objective.

4 Constructing the Policy Systems of Sustainable Development Based on Industrial Clusters’ Life Circle

In order to promote the sustainable competence of industrial clusters, we must give relative policy instruction according to different features of each phase.

4.1 Policies of initial phase
4.1.1 Foundation of correct knowledge of developing industrial clusters
Recently, though it is not a strange thing of constructing industrial clusters for many development strategies of local economy including such ideas, we must have a clear and correct thought on its development foundation while combining the features of local economies, so as to base the clusters construction on local economies that possess powerful growing potentials.

4.1.2 Completing infrastructure resources, guiding enterprises’ entrance
For each cluster in burgeoning phase, the government should give them an objective evaluation on their potential to become a mature industrial cluster. If it caters for these necessary conditions, local government should adopt series motivating policies such as completing local infrastructure resources; improve government functions, building fine living environment and offering incentives, to create competitive investment circumstance so as to attract foreign enterprises to enter this cluster.

4.2 Policies in growing phase
4.2.1 Doing well the resource allocation of productive elements
First, the supply of capitals. In initial phase, industrial clusters can hardly get bank loans, and thus public policies should try to melt financial institutions and industrial cluster into same pot; the government should loosen investment entrance limitation, and build up local financial system needed by
enterprises growth. Second, establishing local labor market. Local researchers, engineers and technicians play a very important role in creating and developing high-tech industries. Therefore, public policies should not only help those middle and small enterprises finish labor qualification education and training (that are so costly for those MSEs to complete alone), but also aid them to attract more technological talents through regional “polarization” effect, so as to satisfy the demand of local enterprises for the quantity and quality of labors and to establish local labor market.

4.2.2 Establishing technological innovation strategies
The government provides consultant service for enterprises through developing R & D institutions and higher institutes; offer direct financial aids or preferential tax measures to enterprises’ R&D and technological reform activities and to encourage enterprises to pursue technological development.

4.2.3 Establishing industrial associations
In order to promote the overall efficiency and labor division of industrial clusters, we can build up within each cluster the self-managed industrial association. Through self-adjust and self-management, such associations can melt away all kinds of contradictions among enterprises and promote their unification power. Moreover, such associations can improve clusters’ inner exchange through announcing all active information to the whole clusters, so as to form the awareness of inner harmony and unification.

4.3 Policies in maturity phase

4.3.1 Speeding up the amelioration of industrial construction
In the process of forming clusters, government at all level should improve industrial instruction and establish reasonable cluster size and avoid illegal or over fierce marketing competition; moreover, the government should continuously observe the developing trends of industries, actively guide enterprises to transform and speed up their upgrading and ameliorating.

4.3.2 Input of outer information
Clusters when entering maturity phase must acquire new information, techniques or products through outer personnel attraction R&D institutions. Of course, seeking and supporting new potential industrial clusters is the best choice.

4.4 Policies in decadent phase

4.4.1 Pushing the transfer of industrial areas
In order to revalorize the industrial clusters, we must reduce the network cost greatly, select the public policies that can push the transfer of industrial areas (transfer the productive activities in the clusters into cheaper rural areas), carve out new markets, such as remote or economically backward areas, draw new industries, such as multinational cooperation, sell out non-core businesses and reconstruct industrial structures.

4.4.2 Instructing the replacement and upgrading of industrial clusters
The main features of industrial clusters are: industrial transfer, overall transformation of industrial clusters; major features of industrial clusters upgrading are: economic growing patterns are changed into low cost, high efficiency and low energy consumption, and to improve the whole competition of industrial clusters. The government should show constant concern on the growing tends of industrial clusters and precisely know their life circle, so as to do well all preparing work such as making plans and ameliorating investment environment for the replacement and upgrading of industrial clusters.

4.4.3 Completing enterprise building environment
Government, finance, research and medium institutions try to establish infrastructure of clusters, information service, market resources, so as to facilitate enterprises’ establishment. Meanwhile, enterprises within the clusters can recede out the clusters through property rights exchange or enterprise acquisition.

5 Conclusion
At each phase of the industrial clusters, they all have the problems of life circle, that is, they must experience initial, growing, maturity and decadence phase, and each phase has its unique features. The forming and development of industrial cluster are completed under a certain power of force that is the motivation of clusters. The government should adopt relevant policies according to different features of each phase, so as to enhance the life circle and sustainable development of industrial clusters.

References