

Analysis on Sustainable Development of Tire Industry Cluster based on Life Cycle Theory

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Abstract: The research on the tire industry cluster based on life cycle theory can be carried out by a four stage periods, namely initial period, growth period, maturity period, and recession period. This paper analyzes on the possible risks taken in each life cycle period as well as proposes corresponding suggestions to strengthen the research by looking into the conditions and factors of the continuous sustainable development process in a tire industry.

Keywords: *life cycle theory; tire industry cluster; sustainable development*

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0 Introduction

The development of industrial clusters has become a key issue in the current industrial structure modernizing and reforming as well as an important segment due to the competitiveness among international economies. Moreover, the development of industrial clusters has also become an important form of world economic development as well as the key to enhance the competitions among countries and the regions. However, there are a huge gap and lack of research on the current development of industrial; therefore, it is mandatory to put a focus on this research. Finally, the research on the sustainable development of the tire industry cluster has also received extensive attention due to the development of societies, the increasing numbers in automobiles so as the production of tires.

1 Problems in the sustainable development of the tire industry cluster

1.1 Initial period

First, the location and environment of enterprises in some regions are inadequate due to the influences of geographical environment, and other aspects would cause a difficulty in attracting many enterprises convene^[1]. Second, the lack of experience in management entrepreneurs and entrepreneurial ability has also affected the viability of emerging companies. Moreover, some government departments even have responsibility issues as well as mismanagement in the management process as they have neglected the attribute of a tire industry cluster while blindly relying on the government's preferential policies to guide enterprises to convene, which is not conducive to a sustainable development^[2]. In other words, tire industry inevitably faces huge risks by relying solely on the preferential policies of the government and continues to development blindly while neglecting factors such as risk in developing in an undeveloped area as well as not considering the distance between transportation industry and rubber production area.

1.2 Growth period

In the growth period of social and economic transition, there could be a serious obstacle to the flow of the transition if the government does not carry out a rational division of labor according to the law of cluster development or the division of labor, the lack of scientific science, the low technological content of products, and the disorderly competition of low-level

industries, which will then lead to the allocation of production factors and products^[3]. First, when the defects of the intermediary service system, operating environment, and linkages of the cluster enterprises are not well built, there are difficulties to support each other, which will then cause an impact on innovation network development of the industrial clusters. Moreover, if the business is a group of entrepreneurs formed by geopolitics or kinship, it can affect the accumulation of external capital. In addition, the impact on cultural roots would affect the learning clusters to be lack of capacity and professionalism as well as technical personnel in managing and keeping up among the development of industrial clusters^[4]. Second, the international competition of enterprises has become increasingly fierce due to the international development of the economy. This has affected developed countries to rely on their own technology and management advantages, resulting in the export of China's labor-intensive cluster industry, and tire industry itself is to be a labor-intensive industry. Therefore, from the perspective of an international rubber production, it is no longer a dominant. Finally, under the dual pressure of resources and environment, the development of rubber industry clusters is certainly bounded by several restrictions^[5].

1.3 Maturity period

From the perspective of life cycle theory, maturity period is the peak of an industrial development as well as the riskiest period. When defects occur during this period, the industry will enter a recession period. The path-locking effect plays an important role in the development of the tire industry cluster. Therefore, when it cannot be effectively eliminated, it will lead to early decline of the tire industry^[6]. Furthermore, if there is extensive emphasis on external connections in the development of industrial clusters, it will lead to the demise of the cluster. In other words, when the external connection is well built, it will affect the growth period of an industrial cluster development. Besides, a well-built external connection would also affect local communications to supplementary, and therefore, information sharing among enterprises within the cluster will be reduced and weakened, resulting in a cluster of holes. Finally, the excessive clustering of enterprises has led to the continuous expansion of the influence of market constraints and, therefore, results

in a lack of land resources, which will then increase the production cost of products as well as reducing the advantages of agglomeration.

1.4 Recession period

The problems faced during a sustainable development of industrial clusters in maturity period eventually proceeds to the recession period, and if the level of impact is uncontrollable, it will ultimately lead to bankruptcy or migration. In addition, insufficient environmental capacity, lack in cluster culture construction, and shrinking market will prompt some tire companies to gradually move out, which therefore result in the decrease in a number of clusters. The retirement of enterprises with high technology content and new information acquisition capacity is the lead to structural instability of the cluster. Moreover, with the intensification of foreign competition, the development of China's tire enterprises has begun to gradually become saturated. When the cluster network innovation ability is reduced as well as the cluster's adaptability and learning ability are insufficient, it will result in untactful changes in the market^[7].

2 Factors affecting the sustainable development of the tire industry cluster

2.1 Initial period

In the initial period of the tire industry cluster, the acquisition of natural resources plays an important role in the development of the cluster, which also indicates the importance of regional advantages in the development of the tire industry cluster. Influenced by the market demand, the initial period will have a specific directional impact on the aggregation area of the enterprise. The development of industrial clusters requires many founders and laborers; therefore, it is compulsory to promote a effective development of industrial clusters through well-founded government planning and guidance to build a good regional culture.

2.2 Growth period

In the growth period of industrial clusters, cooperation among enterprises is conducive to the acquisition of external economic effects as well as vertical linkages between relevant industries and supporting institutions in the development of enterprises to ensure a clear

division of labor network for the development of cluster industries as well as to promote a coordinated development. Therefore, this could be a lead to maturity period^[8]. In this process, the construction of a trustful mechanism is compulsory, which is conducive in improving the clusters' trading opportunities and the hidden ability of the cluster organization, which, therefore, are able to prevent the cluster from falling into an undesirable development cycle due to the price war.

2.3 Maturity period

When a tire industry cluster enters the maturity period, the conditions occurred in the growth period play an important role. It is conducive to the formation of a stable strengthening mechanism^[9]. At maturity period, we must pay attention to the mining of resources in the region and strengthen the access to external resources as well as internal links to promote the enhancement of industrial clusters.

2.4 Recession period

Although a tire industry cluster has entered a recession period, it still has opportunities and potentials to remain a sustainable development. The most important matter to keep a sustainable process is to focus on the construction of virtual industry clusters by utilizing advanced network technology and communication to break the pattern of traditional industrial clusters and geographical restrictions. In other words, it is encouraged to form a more professional network organization to achieve a structural innovation and development within the clusters.

3 The strategy development in different life cycles of tire industry cluster

3.1 Initial period

The initial period of the tire industry refers to the process of gathering tires and related enterprises in an area. In order to effectively guide the development of tires and related companies in an area, the main factor is to enhance the competitive advantage of the region. Therefore, the government needs to consider a reasonable selection of the tire industry base based on various factors such as local production factors, income elasticity, and the extension of the industrial chain and pays attention to the improvement of regional advantages according to the industrial

environment of the tire industry^[10]. In addition to the statement by example, it is encouraged to increase the plantation of rubber trees and strengthen traffic construction near the rubber cluster production area, rationally formulate industrial organization, structure, and monetary policy as well as strengthening the cultivation of entrepreneurial quality, and reduce corporate transaction costs through the formulation of preferential policies.

3.2 Growth period

In the development process of a tire industry cluster, it is demanded to adhere a scientific concept of development and concentrate on the construction of infrastructure as well as constantly optimize the environment of the cluster. By intensifying policies, attract more similar or related companies to enter the region and upgrade the industrial chain. In addition, through exchanging and cooperating between enterprises, enterprises within the cluster will achieve orderly competition and could build a cluster brand. Finally, strengthening personnel training, improving the talent introduction policy, enhancing the construction of cluster culture through the combination of production, educating, researching, and strengthening product innovation, preventing homogenization, and establishing a sound trust mechanism are also part of the strategy development.

3.3 Maturity period

Through the introduction of global value chains, the characteristics of economic globalization are more prominent, which are conducive to the trade integration of tire industry clusters and the development of the non-integration of production. Under the theory of non-integration of production, the different value links in product production are not concentrated development but are dispersed in different countries and regions to carry out global value chain production. This theory points the direction for the development of industrial clusters. In addition, it focuses on the construction of clusters embedded in global value chains, strengthens the enhancement of professional technologies to establish a distinctive financial system, and improves facilities construction in transportation, processing, warehousing, and distribution as well as actively participates in the construction of international industrial systems and the economy. In final words,

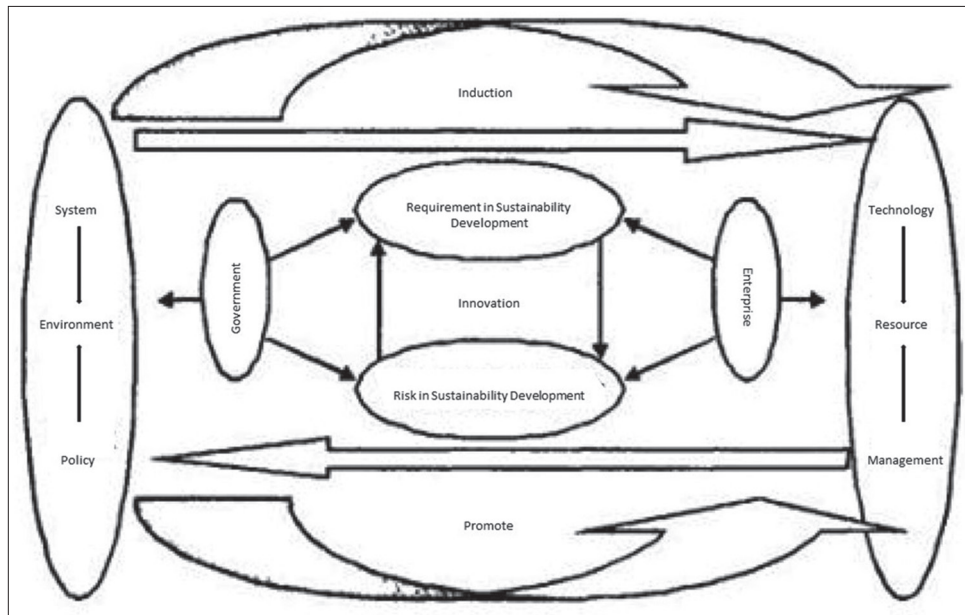


Figure 1. Sustainable development planning framework for the tire industry cluster during recession

this prompts to promote the development of the tire industry cluster in a new development order Figure 1.

3.4 Recession period

First, to promote the revitalization and development of industrial clusters during recession period, it is obligatory to the improvement the professional level and quality of enterprise management personnel as well as the development needs of the market through innovations in products and technologies. Through the construction of business management and management personnel, it is mandatory to cultivate talents in modern marketing and management systems and enhance the organizational capabilities of industrial cluster development by exploring in the whole of internal resources of industrial clusters, including human resources, nature, and other resources. Finally, the government has strengthened the construction system and the soft environment, introduced new technologies and new ideas, promoted the overall innovation and development of the centralized environment, maintained the vitality of each enterprise, and ensured the economic vitality of the region.

4 Conclusion

In summary, the concept of the sustainable development of tire industry clusters is mandatory to go through the entire lifecycle. In different lifecycles, each period

has different risks in the process of a sustainable development. Therefore, the government is demanded to work with the enterprises to tide over the difficulties. Finally, by analyzing into different life cycle periods of tire industry clusters, the corresponding solutions are proven to promote the development of tire industry clusters.

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