

## CLUSTER THEORY: AN APPROACH TO INNOVATE THE INDUSTRIAL ZONE MODEL

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### **Abstract:**

*All nations on the way of economic development have to go through the time of industrialization in which the basic approach for any different economies is forming geographical concentration of industries called industrial zones. Vietnam has been carrying out the flourishing stage of industrial zones. However, the establishment and development of industrial zones surely remain some weaknesses, for example, the industrial zone model which has expressed the lack of systematic connectivity, the low economic effectiveness, and difficulties in protecting the surrounding environment. Whether can a new model based on Cluster Theory be a solution to the issue of reforming industrial zones in Vietnam?*

**Keywords:** *Industrial zone model; Industrial clusters.*

### **1. Introduction**

Article 2 of the Decree No. 29/2008/ND-CP of the Government issuing the Regulation on industrial zones, export processing zones and economic zones defines “*An industrial zone is a zone where industrial zone enterprises specialize in the production of industrial goods and in the provision of services for industrial production, having delimited geography boundaries, established following conditions, sequence and procedure for industrial zones ruled in this Decree*”. An industrial zone demonstrates the geographical concentration of enterprises in areas where the Government reserved to support the development of certain industries in order to ensure the harmony and relative balance among objectives of economy, society, and environment.

Industrial zones spring up by virtue of the increase of agglomeration economies, favourable local infrastructure, available exchange system, suitable investment of governments, and reduce in communication and transaction cost. Due to the fact that the model of industrial zones is not an immutable body, it needs repairing and perfecting frequently to catch up with changes in society, science and technology. Nowadays, almost nations encourage the stronger convergence so as to have better competitive advantages in international market.

Cluster Theory has been noticed by economists and researchers in developed countries over the world in recent three decades. Industrial clusters may be a current trend in economic development planning. These policies represent a major shift from traditional economic development programs focusing on individual firm oriented policies to ones associating inter-related firms and industries in both direct and indirect ways. In the context of regional economic disparities, the support of appropriate regional clusters is seen as important engine for structural change and inter-regional convergence.

## 2. Overview of cluster theory

### 2.1. Definitions and characteristics of a cluster

According to the definition from the online encyclopedia Wikipedia<sup>1</sup>: *A cluster is a small group or bunch of something.*

This term cluster, also known as a business cluster, competitive cluster, or Porterian cluster, was first introduced and popularized by Michael Porter in *The Competitive Advantage of Nations* (1990). While Porter defined that an industrial cluster is a set of industries related through buyer-supplier and supplier-buyer relationships, or by common technologies, common buyers or distribution channels, or common labor pools, F. Sforzi, in *The quantitative importance of Marshallian industrial districts in the Italian economy*, gave us a very basic definition of an industrial cluster as concentrations of firms involved in interdependent production processes, often in the same industry or industry segment, that are embedded in the local community and delimited by daily travel to work distances. Besides. Other authors such as M.J Enright M.J Enright (*Why Local Clusters are the Way to Win the Game*), P. Doeringer và D. Terkla (*Why do Industries Clusters?*) suggested different definitions. But almost all opinions agreed that an industrial zone covers following contents:

*Firstly*, on the geographical scope of clusters and the importance of spatial proximity, it is a socioeconomic body lying in a geographical area in which a community of citizens and economic organizations connect together in aspect of industrial production. According to specific characteristics of type of industries in the clusters, each industrial cluster has different geographical requirements. Generally, a geographical location where an industrial cluster can be located must meet the following requirement: (1)having enough resources and competences amass and reaching a critical threshold; (2) giving it a key position in performing given economic activities; (3) having a decisive sustainable competitive advantage over others places, or even a world supremacy in that field.

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<sup>1</sup> <http://en.wikipedia.org/wiki/Cluster>

*Secondly*, interactive relationship and functional relationship between firms and industries form industrial clusters. They show the geographical concentrations of related industries in two ways: vertical relationship - distribution relationships between manufacturers, providers and services; and horizontal relationship - including industries which might share a common market for the end products, use a common technology or labor force skills, or require similar natural resources.

*Lastly*, the community and economic organizations direct all activities in the connection to reach competitive advantages with aim at higher economic productivity in business. Cluster development is attributable to several key factors, including technology transfer, knowledge transfer, development of a skilled labor force in related industries, the benefits of agglomeration economies, and social infrastructure.

## ***2.2. The fundamentals for applying cluster theory into industrial zones***

Industrial zone mode has been developed for a long time in western countries, and started to join in Vietnam since the government made a decision to establish Tan Thuan export processing zone on January 25<sup>th</sup> 1991. However, the establishment and development of industrial zones may also be called an evolution in which several forms of industrial zones constantly occur, replace or change each other.

In the development of agglomeration economy models, industrial zone model is several decades older than industrial cluster model, if supposedly industrial cluster model was first known in 1990 when Michael Porter published the book *The Competitive Advantages of Nations*. Ordinarily later achievements can inherit available experiences, and are likely be more preminent than works ahead. Thus, as the follower, industrial clusters are ensured the foundation of theoretic of its definition, identification, role, and operation principles.

*Industrial cluster model may be the hottest agglomeration economy model in the world.* Policy-makers strongly believe that clusters will encourage an efficient allocation of limited resources available for urban and regional economic development, provide a tool for recruitment, and encourage diversification of industries. By identifying cluster, and understanding specific needs (i.e., infrastructure or work force needs) of the industries within the clusters, planners can build on the existing strengths in the region and provide more appropriate assistance to organizations. When developing industrial clusters, local policy maker can use this knowledge to fill gaps appearing in the entire production process and complete the overall production process. Cluster policies are believed to stimulate competition, which in turn leads to economic growth; to diversify an economic base by developing the supplier networks or related support services needed to serve some core firms in the cluster. Lastly,

proponents of industry clusters claim that the cluster including industries across several sectors are more adaptable to change, can better withstand downturns in the economic cycle.

The prime difference between industrial zones and industrial clusters of Cluster Theory is that clusters focus on the characteristic of including inter-related firms and industries directly or indirectly on the vertical or horizontal ways; while *"An industrial zone is a zone where industrial zone enterprises specializing in the production of industrial goods and in the provision of services for industrial production"*, according to Vietnamese laws approved by the Government<sup>2</sup>. Such difference can make the nature of industrial clusters and industrial zones as different as chalk and cheese. Then, that of including inter-related firms and industries are likely to provide amazing effects:

- Firms locating in close spatial proximity can shorten the distance in line chain of manufacturing. For example, garment industrial cluster includes clothing companies, fabric supplying companies, dye companies, laundry companies... All the firms relating to garment will be concentrated in a cluster, which provides lower transportation and transaction costs;
- Many industries within the cluster can use together some public facilities, similar labor force and local material sources. For example, all the firms within the cluster can use a research centre with specialized tools. The similar labor force can freely move to other related firms in the same cluster;
- It is simpler and more convenient to dispose wastes from inter-related industries because of treating one kind of waste instead of treating various different wastes;
- An agglomeration economy is a system in which firms, companies and institutes are elements. It is no wisdom to maintain the state of separated and individual elements, on the contrary, relationships should be set up to link all organizations within the cluster to take full advantages of spatial proximity. A system with closely relationship of elements promises the definitely sustainable development.

### **3. Solution based on cluster theory to innovating model of industrial zones**

#### ***3.1. Classification of industrial zones***

Industrial zones have complex economic structure. In order to find out a development-oriented for industrial zones, we should classify industrial zones

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<sup>2</sup> The Government of Socialist Republic of Vietnam, *Decree No.36-CP of April 24<sup>th</sup>, 1997 issuing the regulation on industrial zones, export processing zones and hi-tech zones*, 1997, Article 2.

to have identification of each certain type at first. According to aim at researching industrial zones, there are several different ways to classify them:

- On aspect of characteristic of the inner fields: one-field industrial zone, multi-field industrial zone, ecological industrial zone;
- On aspect of scale: large-scale industrial zones, medium-scale industrial zones and small-scale industrial zones;
- On aspect of managed objects: concentrated industrial zones, export processing zones, hi-tech parks

Although the classification of industrial zones can be done in many ways, basically there are some kinds of industrial zones existing in Vietnam up to now:

- *The first type*: industrial zones which were established on the base of existing industrial manufactories to improve infrastructure system and environment protection;
- *The second type*: industrial zones which were established in the process of clearing away individual, backward industrial enterprises to reorganize cities and prevent environment pollution;
- *The third type*: industrial zones (also called Vietnamese-style industrial cluster) which were established to attract the investment of medium and small-sized enterprises to develop industries of processed agricultural products and consumer goods or to develop traditional trading villages;
- *The fourthly type*: large-scale, concentrated and modern industrial zones established by the Government.

In comparing between the above standard classifications of industrial zones with existing models in Vietnam, basically we can realize that the development of industrial zones in Vietnam is still spending in the stage of combination between development and perfection; so-called industrial zones in Vietnam is considerably disordered, even many zones show the lack of systematization, synchronous programming calculation, and the correspondence to socioeconomic development. Vietnam do not have actual large-scale of industrial zones, one-field industrial zones, and either ecological ones. Most of Vietnamese industrial zones are multi-fields industrial zones including all kinds of industries which can join in a given provinces. However, these zones just focus on the geographical concentration of industries, and have no idea of the aspect of relationship between industries. This characteristic sometimes makes industrial zones become miscellaneous mess of industries. It causes the lack of connectivity among fields, reducing economy effectiveness and increasing costs for environment protection.

### ***3.2. Description of the industrial zone model including related firms and industries***

Generally, the industrial zone including related industries can be displayed in some forms:

1. *Specialized industrial zone*: just allows investors to develop one kind of industry. A central waste disposal plant will take responsibility for all process of waste treatment to help enterprises reduce their spending. This model also is convenient for develop friendly manufacturing projects or applying friendly technology;
2. *Ecological industrial zone*: An industrial symbiosis model in which industries will be chosen carefully so that this factory can use waste materials of other factory in its production process. The amount of wastes in industrial zones will reduce. Many interactive industries can be chosen to create the environmental balance and sustainable development;
3. *Auxiliary industrial zone*: a model including a core enterprise and other firms and factories providing input products and services for manufacturing process of the core enterprises.

#### ***May the new model be better than the current one?***

The new industrial zone model which may take benefits from the relationship between industries concentrating in a geographical area will have following strong points:

- *Including prime strengths of the current model*: concentrating firms and enterprises in a planned geographical area; impulse the development of the social infrastructure system; creating more jobs for local laborers...;
- *More effective environment protection*: the industrial zone with related industries will be easier to classify wastes from enterprises with that industrial zone. One industrial zone with one kind of waste makes waste treatment more simply. Moreover, a public waste treatment centre can be build for all enterprises in a specialized industrial zone to use. For ecological industrial zones, recycle by using one another's waste in manufacturing will reduce the large amount of wastes;
- *Lowering the cost for doing business*: With inter-related firms and industries together concentrated in an industrial zone, enterprises can save the costs of material transportation, distribution, labor training, waste treatment... And they also have opportunities to use public specialized facilities or tools;
- *Attracting investment more effectively*: Faced with the effective concentrated economic management model which ensures conditions of

traffic and labor resource, saves the costs of transaction and training, and close to necessary suppliers, domestic and foreign investors will be satisfied and feel safety when joining in such industrial zones;

- *Contributing to shift of provincial industrial structure:* Any province has a key industry to develop. So, when establishing industrial zones, selection of that key industry to develop in a given specialized industrial zone in accordance with development orientation. This will attract the participation of related enterprises in that industry to make its density in industrial structure increase remarkably.

### **3.3. Recommendations**

- Reforming the model of industrial zones must be done in the direction of modernization and correspondence with the open market's conditions. The new model of industrial zones should be change so that: (1) the model will be shifted from industrial zones which focus on taking benefits from local labor force and natural conditions to attract investors in order to cover the zone to industrial zones in which manufacturing and processing are specialized higher and higher to reach the prime objective of economic effectiveness; (2) it focuses both specialized models of industrial manufacturing specialization and export manufacturing specialization and collective models including industrial manufacturing, banking services, postal services and high science - technology services; (3) the model of industrial zones without residence will be change to industrial zones within residence to form open economic zones, economic special zones...
- The model of industrial zones including related firms is ensured to be applied effectively and appropriately to the development of science and technology. To ensure the sustainable development and effectiveness of the industrial zones, the internal structure of industrial zones need to be change according to trends: (1) Turning industrial zones with large number of employees to industrial zones requiring numerous capital and high technology; (2) Turning industrial zones including polluted manufacturing industries to friendly technology industrial zones; (3) shifting from purely manufacturing industrial zones to industrial zones combining manufacturing with R&D activities.
- Determine the right position to locate the industrial zone! The history of establishment and development of industrial zones over the world and Vietnam also proves persuasively that all the successful industrial zones were located in convenient position in terms of geography and economy. Everyone knows the evident factor and everyone accept that conception. However in practice it is not always easy to make it work. In some cases, the less convenient place was chosen to build industrial zone because the

construction was under the governance of other factors such as politics, society, compensation costs.

- Determine the key industry in the new industrial zones appropriately to development orientation and practice demand of localities! When selecting the kinds of industries to develop in industrial zones based on Cluster Theory, notice that (1) giving the priority to industries which have more potentials and more investment attraction rate to create the premise for hastening other industries; (2) when selecting the types of industries to develop in the industrial zone, we must focus on the market's demand and customers' wishes instead of subjective interests of industrial zone infrastructure development company.
- It is in need of disclosed and explicit policies to encourage foreign and domestic investment into industrial zones. Especially investors want to access more details in kinds of industries, capacity of enterprises, and orientations of investment encouragement to develop linkages between enterprises with foreign-invested capital and domestic enterprises./.

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