

Clusters Initiatives in Port Hinterlands

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ABSTRACT

For the effective use of port hinterlands, the concept of supply chain logistics should be applied. Port hinterlands have a geographical advantage and an important infrastructure nearby. However, these merits of port hinterlands are not very significant from the point of view of supply chain logistics. In this respect, clustering can emerge as an alternative to develop port hinterlands. Small and medium enterprises (SMEs) that are related with specialized industries in relevant regions can be clustered into a port hinterland to improve the competitiveness of supply chain logistics. In addition to the synergy effect it creates, clustering is expected to meet the construction objectives of port hinterlands thanks to its export-oriented nature. Types of businesses that would create synergy effects through clustering should be selected among regionally specialized industries adjacent to a port hinterland. The characteristics of selected businesses among candidates should also accord with the successful factors of clustering, technology accumulation, the likelihood to secure skilled labor, innovation and R&D capacities. As an illustration, locating a packaging cluster near a port can lead to a better connection between manufacturing to logistics. The “total logistics service with packaging” is not a new concept, but this could be a more cost efficient business model in port hinterlands.

Key words: Clustering, Port hinterlands, Supply Chain Logistics, SMEs, Packaging clusters.

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1. Why clusters?

Recently, to attract port cargoes and create added values, the role of port hinterlands becomes increasingly important. The Korean government is aiming to enhance the competitiveness of the nation's logistics industry by developing port hinterlands as backup areas for ports. The government is also trying to maximize spillover effects by linking ports and hinterland industries to attract high value added industries. In 2006, the "National Master Plan for the Development of Port Hinterlands" was established and eight ports - Pusan, Kwangyang, Incheon, Pyeongtaek-Dangjin, Ulsan, Mokpo, Pohang, and Masan Ports - were designated to be developed. According to the phased plan, the development of the hinterlands of these ports started, and a number of enterprises have already settled into some areas. In 2011, 19 enterprises among 30 qualified entrants started their business in the Pusan New Port hinterland, and 12 among 20 selected startups were established in the Kwangyang Port hinterland.

But, the occupancy rates of the port hinterlands and the amount of value they have created still remain poor. In addition, most companies in the port hinterlands are doing "storage businesses" and lack the capability to create additional throughput. Moreover, it requires a long period for adjustment to make their business on track.

It is because that the occupant companies have little overseas networks to create added values and lack competitiveness due to the absence of advanced management skills. In general, their business activities are focused primarily on the existing throughputs rather than making new demands. A range of measures designed to overcome such problems have been proposed by many studies, which have alleged that improvements in the fields of legislation and system that are related with occupancy requirements, such as designation criteria, designation processes, the minimum amount of investment, import and export volumes and proportions, should be fulfilled. In addition, they have insisted that core port hinterlands should be designated as a free trade zone and that various incentives including tax credits, affordable rents should be given to the occupants. Given the possible conflicts with the existing laws, the lack of equities and the necessity for big financial aids, however, the practicality of such approaches seems doubtful. Even if these measures would be accepted, their real effects would be still dubious.

This study suggests other kinds of alternatives that are based on the concept of supply chain management (SCM). There are as many definitions as literatures about SCM. Hugos (2003)¹ gave a simple definition: "SCM is the coordination of production, inventory, location, and transportation among the participants in a supply chain to achieve the best mix of responsiveness and efficiency for the market being served". Logistics is also concerned with the physical and information flows and storage forms of raw material until

¹ Hugos M (2003), *Essentials of supply chain management*. Wiley, Hoboken, NJ

the final distribution of the finished products². A certain area, trying to induce financial investment or enterprises, should hold a dominant position in supply chain logistics. Port hinterlands have a geographical advantage and an important infrastructure nearby. However, these merits of port hinterlands are not very significant from the viewpoint of supply chain logistics. Although the favorable condition of port hinterlands itself is not sufficient to attract many new businesses, it is a necessary condition for that purpose, which can be accomplished only when port hinterlands hold a superior position as an industrial location by strengthening regional characteristics and improving the competitiveness of supply chains.

The original plan of the government, which was designed to attract multi-national logistics or major companies that would take large throughputs into port hinterlands, has been not successful. Despite the government's continuous endeavoring, it seems difficult to obtain any result because the location of such major companies depends on their own management strategies or reasons, and in some cases needs an exceptional decision of top management.

Then, what kinds of problems are in the government's efforts to vitalize port hinterlands? First of all, it is pointed out that the strategy of vitalization is too abstract. It merely focuses on the surface meaning of environmental conditions and systems with no concrete action plans. The government's strategy missed the right direction and lacked consistency from the beginning. Now the strategy has lost many of its original features. Also, there is no difference among ports in strategies to attract new businesses into their hinterlands. Each port needs different approaches on which industries are the best fit.

In this respect, clustering is emerging as an alternative to develop port hinterlands. Small and medium enterprises (SMEs) that are related with specialized industries in relevant regions can be clustered into a port hinterland to improve the competitiveness of supply chain logistics. Pertinent support and proper intervention of the government will make it easier to bring in desirable businesses. In addition to the synergy effect it creates, clustering is expected to meet the construction objectives of port hinterlands thanks to its export-oriented nature. It is also noticeable that if clustering works, attracting additional investment and inducing new businesses can be easily achieved as well as securing the competitiveness of relevant regional industries. These are the points asserted in this literature.

2 Baker ARPCP(2006), *Handbook of logistics and distribution management*, 3rd ed. Kogan page, London

2. Previous Researches

There are so many previous researches about port hinterlands. They are mainly focused on the fields of legislation and system for the promotion of port hinterland use. The competitive status of port hinterlands are highlighted in attracting business but the broad concept of supply chain logistics was not used and concrete action planning was also not addressed enough. In this respect, this literature has superiority in that it suggests clustering initiatives as an alternative of action plan to boost the utility of port hinterlands based on the concept of supply chain logistics.

Gil(2003)³ presented the improvable way about the port hinterland development and management through comparative analysis for the legal systems. There are some results from the study. The concept of the port hinterland should be included among port facilities to make it possible to develop the port law applicable to port hinterland. For the continuous management, it needs to add provisions of port hinterland to existing port laws. He also emphasized government should concern about the port hinterland development with the positive support besides leading private business.

Lee(2007)⁴ provided policy directions for enhancing the competitiveness of port distriparks in Korea by analyzing the various patterns of logistics business models. His study identified Korean four leading industries in Northeast Asia with respect to technology and trade volume, which would facilitate international specialization of distriparks. He addressed several policies should be pursued to enhance the competitiveness of Korea's logistics industry through distriparks at ports. They were to maximize spillover effects by linking ports and hinterland industries to attract high value added industry, to enjoy the benefits of FTAs (Free Trade Agreements), and to develop business models related to international specialization.

Kim(2005)⁵ analyzed the Korean port labor market to accomplish the following purposes : (1) comparing the labor market structures of Korea, China and Japan in port-backup areas, (2) suggest some ways how to standardize the Korean labor market , focusing on port-back up area, and (3) suggest some ways to improve the port labor system overall. He emphasized some key points: (1) amending the Employment Security Law and its enforcement ordinance in order to abolish the Union's exclusive right and open market, (2) expand the labor outsourcing system to ports and back-up areas, (3) try to develop a peaceful environment of labor relations between labor and management, and

3 Gil, Kwangsoo(2003), *Comparative study of laws and institutions related to the construction of port hinterland*, Korea Maritime Institute.

4 Lee, Sungwoo(2007), *A study for the inducement of enterprises into the port hinterland for the era of international labor division*, Korea maritime Institute.

5 Kim, Hyungtae(2005), *Comparative study for the labor market of ports and back-up area in Korea, Japan, China*, Korea Maritime Institute,

simplifying the dismissal processes.

Kim (2008)⁶ studied the necessity of hinterland in port of Kwangyang and related policy directions. He analyzed AHP for the construction of port hinterland and derived the amount of financial assistance from the government. He also calculated the regional economic impact by using the input-output analysis and suggested the desirable policy direction the basis of the studied results.

3. What is Clusters?

3.1 Definition and features

There is no precise definition for clusters. A cluster is generally accepted to be a geographically proximate group of interconnected companies and associated institutions in a particular field linked by commonalities and complementarities. Clusters encompass an array of linked industries and other entities important to competition including governmental organizations and other institutions – such as universities, standard setting agencies, think tanks, vocational training providers and trade associations. UNIDO⁷ also define clusters as sectoral and geographical concentrations of enterprises that produce and sell a range of related or complementary products and thus, face common challenges and opportunities (UNIDO 2001). Another definition points out that an industry cluster is “a group of business enterprises and non-business organizations for whom membership with the group is an important element of each member firm’s individual competitiveness. Binding the cluster together are buyer- supplier relationships, or common technologies, common buyers or distribution channels, or common labor pools”(Bergman and Feaser (1999)).⁸

Most of the above definitions focus on the geographic scope of clusters. Based on this concept, clusters can be divided in two categories of “deep” and “shallow” clusters. A cluster’s depth refers to the number of firms in a specific geographic area. Where there is a large concentration of firms in a particular area, the cluster is said to be “deep” and, conversely, where there is a low concentration of firms, the cluster is said to be “shallow”.

Nowadays we can see a lot of cluster’s features in many countries. Clusters are inter-related industries and institutions that mutually reinforce and enhance competitive

6 Kim, Hakso(2008), *A study for the improvement of laws and institutions to boost the occupied firms in the port hinterland*, MOMAF.

7 United Nations Industrial Development Organization.

8 Bergman EM, Feaser EJ (1999), *Industrial and regional clusters: concepts and comparative applications*. West Virginia University.

advantage by acting as each other's consumers, competitors, partners, suppliers and sources of research and development, relying on collaboration and cooperation between public and private sectors, breaking down barriers and promoting the intangible assets of synergy, trust and social capital. Clusters give an industry a stronger collective voice on R&D funding, skill development, legislation and regulations.

It is also necessary to distinguish between clusters and networks. Networks are groups of firms that cooperate on a joint development project, complementing each other and specializing in order to overcome common problems, and achieve collective efficiency and penetrate markets beyond their individual reach. But as networking intensifies and more and more enterprises get involved, the territorial, or cluster, dimension starts to emerge with the involvement of business development service providers, associations of enterprises and government institutions. Therefore, a large number of different institutions are required to be involved to construct a cluster.

3.2 Backward and forward approach

Cluster initiative has a strong component of export promotion as of their commercial objectives. The opportunities clusters offer firms to significantly increase the quantity and quality of export has been well established through experiences in many countries. Particularly, in smaller and developing countries, export promotion tends to be a primary focus of cluster initiatives. Establishing a successful presence in foreign markets is considerably more difficult for an SME⁹ than for a large enterprise, particularly in developing countries. Minimum volume requirements, quality controls, complex export processes, and limited financial resources are the main barriers for a less experienced and smaller enterprise.

It can be inferred from the successful export clusters in the world that there are two approaches for developing export clusters, which can be referred to as backward and forward development of clusters, similar to the well known backward and forward integration strategy of firms. The basic definition of cluster dictates the geographic proximity of the cluster's entity : however, as global supply chains become more integrated, there are more and more examples where this integration led to additional investments and activities that ultimately strengthened the exporting cluster. For example¹⁰, in Caldas, Columbia, Nespresso has established relationships with local cooperatives to produce "specialty coffee" as a buyer. This initiative includes joint activities in area such as specialized technical education, tasting, quality control, infrastructure upgrading, logistics,

⁹ Small and Medium Sized Enterprise

¹⁰ Reza Zanjirani Farahani and Nasrin Asgari and Hoda Davarzani, Supply Chain and Logistics in national Integration, International and Governmental Environment, Springer Dordrecht Heidelberg London New York, 2009, pp. 161-162.

and traceability. This has contributed to the Columbia's ability to compete successfully in the "specialty and gourmet" coffee segment, where increased and consistent quality strongly influence the market price of the product. This type of cluster development can be called backward development in which the international buyers cooperate with local (usually small) producer due to some regional advantages of producers. In other type of cluster development, forward approach, which is a common industrial cluster initiative: firms cooperate with each other to take advantage from collective actions. This type of cluster development is mostly what we seek to achieve in port hinterland. From this, we can consider the advantages of clustering as follows ;:

- Collective efficiency,
- Opportunities to access market information more expeditiously,
- Ability to obtain specialized inputs and technical support more easily and cost effectively
- Ability to participate in 'consortiums' to fulfill large orders,
- Ability to leverage market development and promotional expenses,
- Group shipments to minimize transportation costs

3.3 *Success factors*

There are different descriptions of success factors for export cluster. Department of trade and industry(DTI 2003)¹¹ of England in a report as "a practical guide to Cluster Development", expresses these factors as following three critical issues : network and partnerships, strong skill base, innovation and R&D capacity.

3.3.1 Networks and Partnerships

Some networks generate formal and informal flows of knowledge and information through a cluster. These networks are the basement for success over time. Collective learning and more competitive performance could be carried by the access to tacit knowledge. Many cluster evolution activities are delivered by the networks way.

Prosperous clusters are prone to have powerful embedded networks and relationship systems. Trust and inter-personal relationships are favorably progressed, supplying the cluster with a high rate of social capital. The improvement of these relationships and connections needs time. Networks may be supported through strong organizational structures, or through shared cultural values and a common purpose.

Face to face links or remote technologies such as the web could be the tools to sharing knowledge through networks and partnerships. Technology has advanced considerably in this field and cluster practitioners are using interactive cluster portals to

11 Department of Trade and Industry(DTI)(2003), *A practical guide to cluster development*. London, England

aid networking, share information about the cluster as well as using them for actual business to business interactions. The key is that a flow of knowledge occurs in more complex networks in which active collaboration is encouraged.

3.3.2 The presence of a strong skill base

There is a consensus¹² across the literature that the successful clusters are those that have a great base of skills, in higher levels and in management skills, and also have an appropriate and qualified force in general. For drawing the companies toward a cluster and keep them with a cluster, and also to keep on with a prosperous development of companies in a cluster, labor force should be taken highly into consideration. So considering all of these factors and as a reasonable component we could say that the quantity and quality of labor force is a highly vital element in the development of successful clusters.

A range of adequate skills and abilities are required for successful clusters. The kinds of business skills that are pursued in successful clusters are those associated with global business such as strategic management skills for business leaders, entrepreneurship for graduates, management and production techniques, leadership skills, mentoring/coaching and personal development skills, etc.

The quality and availability of training can also be a factor contributing to the progress of successful clusters. This can apply to the existing workforce as well as to the new and potential entrants to the labor market. The capacity of the available training infrastructure to respond to employer needs and provide relevant training is a key factor. The cluster can have an influence on the provider side in terms of encouraging appropriate provision that is flexible and meets the needs of employers.

3.3.3 Innovation and R&D capacity

The evidence shows that product evolution and well developed research structures, with other forms of innovation, are essential for a dynamic cluster¹³. Innovation keeps the cluster at the head of the market whilst a strong R&D base would be able to give the ideas and products for future development. The advancement of innovation and R&D are two separate but inter-related activities. Innovation in general applies to product or process development, but what is meant by R&D is the development of new knowledge. In the best cases successful innovation is the outcome of the R&D process. Innovation can be incremental so that existing products and procedures are built upon little by little, or may be more radical by introducing a completely new product or approach. Successful

12 Reza Zanjirani Farahani and Nasrin Asgari and Hoda Davarzani, Supply Chain and Logistics in national Integration, International and Governmental Environment, Springer Dordrecht Heidelberg London New York, 2009, pp. 159-160.

13 Department of Trade and Industry(DTI)(2003), *A practical guide to cluster development*. London, England

clusters are inherently innovative and practitioners can support the innovation process through encouraging networking and sharing of ideas. The development of networks outside the cluster could also be beneficial as often innovative ideas are the ones that work well in one setting and are being applied for the first time to another idea. The benefits of information and intelligence services in this area are often worth exploring.

Constitution based on research activities, as for universities, non-profit foundations and for-profit R&D could function greatly as catalysts for research and innovation. They are able to provide the foundation for developing new ideas and applications, besides that, they could also play an essential and critical role in nourishing high technology entrepreneurialism. Looking from this point of view it could be said that, public and private research tools and resources are the key drivers for clusters.

4. Can clusters boost the port hinterland?

Port hinterland possibly accommodates a cheap and large factory area equipped with necessary infrastructure which is required in clustering since port hinterland is to be established according to its prearranged development plan by government. Clusters are regarded as kinds of organic wholes formed with dispersed SMEs in a special zone. The equipment of infrastructure makes it easy to build the networks and partnerships, one of successful factors of clusters. The fact that most of port hinterlands are located within easy access of densely populated area such as Pusan, Incheon, Pyoungtaek, Ulsan is another merit. If clustering in port hinterland is connected to the specialized industry of each region, the presence of strong skill base can be possible utilizing the skillful labor force and cumulated knowledge of each area. If then, can clusters boost the port hinterland with its superior geographical merits? It may be answered 'yes'. Although, clustering is not the only alternative to vitalize the port hinterland, it, cooperating complementarily with existing strategies, takes a role of breakthrough to overcome the pendent difficulties in Korea. The reasons are as follows:

First of all, the nature of clusters coincides well with the purpose of constructing port hinterlands, creating additional cargo demand of port. As discussed earlier, most of studied cluster had a strong component of export promotion as part of their commercial objectives. It has already been approved that the opportunities with which clusters offer firms increase the export of product significantly. Particularly, in smaller and developing countries, export promotion tends to be a primary focus of cluster initiatives. Establishing a successful presence in foreign markets is considerably more difficult to a small or medium company than a large enterprise.

Second, cluster strengthens the practical environment attractable to the internal

or external investments and enterprises with the improvement of competitiveness of supply chain logistics. Geographical advantages of port hinterland discussed earlier such as cost reduction of transportation, low-cost and large-scaled area equipped with complete infrastructure, are only part of successful business factors from the viewpoint of supply chain management. Port hinterlands successfully achieve its expected role only if geographical merits should be connected to the intensification of competitiveness in supply chain management. In that respect, clustering has an important contribution to reinforce the competitiveness of supply chain of enterprises.

Third, Clustering is suitable strategy to foster SMEs. Practically, it is not easy to accommodate large enterprises on port hinterland because most of them are already in mature stage and foundation of a new factory or its extension is carried out on the long term basis of entrepreneur resource strategy. As local production (in foreign country) becomes a general trend, attraction of large company often confines to the case of entry to new business of existing firms. As an alternative to this, clustering stands out and forms a part of national strategy of promoting SMEs. Many of the constraints faced by SMEs are related to SMEs isolation rather than their limited size. SMEs in a cluster could benefit from the cluster's advertisement impact and the possibility of meeting the requirements of large-scale orders through networking. Moreover cluster members benefit from collective action such as joint marketing, purchasing, technology management, training, facilities, testing, etc. which are all factors leading to the achievement of economies of scale. Therefore, the key feature of this type of SMEs grouping is cluster dynamics which leads to SMEs growth.

Fourth, the desirable role of government and its policy direction for boosting the port hinterlands can be inferred from analyzing the case of clustering because the role of government as a catalyst is clear in a cluster. To develop a successful cluster, the existence of a catalyst, a coordinator and a leader is almost essential. However, in a developing or developed countries this catalyst can be a public or private entity or a mixture of both. Singh (2003)¹⁴ has investigated the government's role as a cluster catalyst and indicated the key government functions, actions and impact on selected clusters along with areas for governments to support clusters with several examples of government's intervention in different parts of the world. In addition to the three basic roles of government in providing suitable macroeconomic conditions, improving microeconomic capacity and, establishing a supportive and progressive regulatory environment, Porter (1998)¹⁵ argues that government's role should also include facilitating and upgrading cluster development and creating opportunities for productive dialogue to bring cluster participants together.

14 Singh (2003), Can government catalyze clusters?, Examples of Government Actions, The Sixth Annual International Conference of the Competitive Institute (CTI) on innovation system and clusters, Gothenburg, Sweden, September, p. 17-19

15 Porter (1998), *Clusters and the new economics competition*. Harvard Bus Rev Nov-Dec, 77-90

5. Case studies

We provide many case studies in this section. These case studies include some successful experiences in developing and developed countries. The construction plan of Foodpolis as Korean national food cluster is also referred.

5.1 Tirupur in India¹⁶

Indian industrial clusters have acted as nucleus that develops surrounding urban societies. One of these clusters is centered in Tirupur city in southern and works on hosiery exports. In 1999, this cluster was accountable for more than 90% of Indian exports to Western Europe, USA, and Japan. During the last decade, Pressures of local international standards in textile wet processing, forced dyestuff manufacturers and hosiery clusters to act under eco-textile standards, both in individual and industry group activities.

The main characteristic of India's individual states is their clusters of small and medium size industries that drive local economic development process. Clusters in some zones are homogeneous and in some others are heterogeneous. Each cluster has created its own urban centers, which are penetrated in traditional rural areas. These rural ecosystems are expected to share their natural resources with industrial and urban areas, and accept industrial wastes. But, rapid growth of industrial and urban areas, is eradicating rural parts. Tirupur is a classic example of this model.

Because of the rapid and unplanned migration of population from rural areas to urban areas and negligence in proper town planning, sanitation and other basic amenities are inadequate in these new urban areas. To move toward a sustainable developing state, Tirupur should develop a cohesive strategy in which both the hosiery cluster and rural areas should be taken account. This strategy should be based on the availability of local knowledge and skills. In this strategy, clusters and urban areas should be thought as resource productive centers, especially shared natural resources like water, land and energy. This ensures a sustainable resource from rural environment for a long time. Some pricing policies must be taken into account to persuade industries to use resources more productively. An appropriate GIS on clusters and rural-urban interdependencies would be helpful in zoning clusters to achieve sustainability.

The leader of Tirupur Exporters Association (TEA) discovered the potential impact of globalization in the early 1990s, when the association was formed. As TEA's focus was on exports, its approach was global. India decided to welcome open market economic

¹⁶ Subramanaism RM (2005), Developing and maintaining a competitive export cluster : what's best practice the experience of Tirpur export cluster. Competitiveness through export clustering : strategic considerations, ITC, Tirupur, India, 11-13 April

policies, but TEA decided as well beforehand. Like founding any other clusters, the first step in developing an export cluster is to evaluate any internal and external developments that is probable to influence the performance of the cluster.

5.2 *Greater Boston*¹⁷

Greater Boston is known as economic engine of Massachusetts and also as one of the most developed and innovative regions in the world. This region includes all of Suffolk County, a large share of Middlesex and Norfolk counties, and portions of Plymouth and Essex Counties.

Based on the Bureau of economic analysis, the personal income of Suffolk, Norfolk, and Middlesex counties is more than 50% of the total state's income. Six large export industry clusters are known as the component of export sectors. These clusters could be divided into two types: the first type of these clusters includes Information Technology, Health Care, Financial Services and Knowledge Creation. The other type, itself is divided into two main categories of clusters: "Travel and Tourism" and Traditional Manufacturing (such as paper, plastics and rubber and metal working companies).

The knowledge-intensive export clusters that drive the larger economy of State are concentrated in Greater Boston. These export clusters are: Knowledge creation, information technology, financial services, care health, traditional manufacturing and travel and tourism. The gains that were achieved in the Knowledge Creation includes gains of research and testing, engineering and architectural services, and the management, public relations, advertising, and accounting industries. The most balanced growth of clusters belongs to knowledge creation and also most of clusters in knowledge creation grew close to their state wide. The most effective export cluster in term of employment in this region is the Information Technology export cluster, in a way that growth of it was more faster than average(60% vs. 21%) Some of the factors that caused this rate of growth could be listed as the availability of land for development, ready access to professional services firms, the cultural amenities their employees desired.

17 Swift J (2002), Toward a new prosperity : building regional competitiveness across the common wealth. A collaborative effort between the Department of Economic Development and University of Massachusetts (UMASS).

5.3 *Chemicals in central Germany : New potential awaiting launch*¹⁸

The Chemicals industry cluster in Central Germany has undergone an exhaustive, difficult, yet successful transformation from the standards of the former East Germany to those of EU. This transformation has enabled the cluster to develop world-class expertise in several fields, from redevelopment of contaminated industrial sites, to implementation of EU and national regulations, to the identification and needs assessment of chemical sites. Yet the cluster has not yet capitalised on these opportunities to take a leading role in new markets for such expertise.

A structural and political transformation

The chemical industry in Central Germany has undergone 17 years of structural transformation and a radical shift in its political environment since re-unification in 1990, moving from a climate in which business were hardly able to act independently and through which resources were procured by political means, to a relatively free and competitive market that nevertheless imposed far stricter environmental, safety and other regulations. The industry employed some 26,000 people in the “chemical triangle” in the state of Saxony-Anhalt, yet productivity was low, and sales and marketing functions non-existent. It faced two basic choices: a steady decline in productivity and perhaps failure, or a radical re-adjustment and modernization. Although the region had one of the most modern transportation and telecom infrastructures in the world, the region had little entrepreneurial experience, little equity and venture capital, small market share, and only one significant trans-regional urban centre, Halle-Leipzig. Maintaining a strong chemical industry would require development of new competencies and incentives for skilled workers to prevent mass migration to western Germany and the rest of Europe.

There is no doubt that the clustering efforts of the “Mitteldeutschland Industrial Initiative”, a success in terms of building up productivity and innovation capability. Yet, these efforts have not yet led to the development of new lead markets for chemical applications, alternative sources of research, or greater mobility of knowledge and people among the industries.

Building the potential for market innovation

In meeting the challenges of the past decades’ restructuring, the cluster has developed excellent know-how in the following areas:

- Renovating contaminated industrial sites (clearance and redevelopment):

¹⁸ European Commission (2008), Case studies of clustering efforts in Europe : Analysis of their potential for promoting innovation and competitiveness, Preliminary draft version for distribution in the European Presidential Conference on Innovation and Clusters, Stockholm 22-23 January.

registering, evaluation, planning and implementation and creation of clean settlement areas

- Demolition: project management for the redevelopment and the disposal of old chemical sites
- Environment protection (air, water, soil, noise, waste): organization of environment management and the ongoing monitoring of working processes
- Support in developing chemical sites: identifying, systematizing and describing existing or needed expertise and outlining the technical, organizational, financial and promotional potential for the development of chemical sites.

Despite the fact that this outstanding know-how could be an important source of cost reductions and improved efficiency for chemical sites all over the world, no successful product or service has been launched from the Central Germany cluster to benefit from this specific competitive advantage. The Chemical industry has benefited at home, however, achieving world-class productivity levels.

The cluster is well poised to become a strong service-based industry as the core industry seeking efficiency through outsourcing and splitting of the value chain, as has occurred in the manufacturing of cosmetics and pharmaceuticals. This trend is accompanied by the trend of the establishment of a new industrial segment for broad services as well as site-related industrial infrastructure. This is of particular importance for the SMEs in context of intensification and diversification of their activities, extended market access and business establishment.

Help in focusing R&D&I resources

The main focus of the Central German cluster initiative has been increasing production capacity and in supporting R&D projects. Additionally, the rise of outsourcing agreements from multi-nationals have provided impulses for the development of innovation infrastructures. Several technology and innovation centres are operating in the region, which enjoys a relatively high level of public support for research. The region has recently been promoted as a national centre for chemical research. Perhaps most noteworthy is the Fraunhofer pilot plan, which aims at lowering the barriers to innovation and piloting new products. Notwithstanding those achievements, the clustering efforts have not favored a shift from traditional research funds-seekers to new ones that could bring completely new approaches to traditional industries (for example the mini-plants being developed in other areas of Germany.)

The clustering efforts have helped in creating a dialog between industry and policy makers of the different landers, on such topics as innovation, investment support, new enterprises, innovation centres, or the improvement of general framework conditions.

Contribution to an increased mobility of people and knowledge

The Chemicals cluster has engaged in a significant expansion of inter-industry cooperation since the mid-1990s, when the chemical industry associations covered all the three states, but their initiatives were focused on industry, not involving other parts of the value chain such as suppliers or customers. Such cooperation was sparked by multinational executives such as Bart Groot of Dow, who made use of his personal networks. When BMW decided to locate a major new factory outside Leipzig in 2001, the leaders of Dow and BMW got together. Today, the regional industry as a whole is in fact represented in the cluster organization by the networks, which are involved in such fields as lobby work focusing on future clusters; deepening regional cooperation of the chemistry/plastics cluster with science and research institutes in order to strengthen innovation capacity, and development of synergies with other Central German Clusters, in particular automotive, biotech and environment.

Remaining challenges

The cluster has extended relationships across the value chain between chemicals and plastics clusters, but has yet to link with the regional automobile cluster. The cluster initiative is planning to invest in a new plant dealing with issues related to buildings insulation in order to respond to the future challenges in the industry, the only company in the region specialized in insulation, Philippina, is not a member of the cluster and therefore not “inside” the process. Another peculiarity is that local car manufacturers are not buying plastics pellets from local producers. In coming years as many of the older generation of skilled labor retires, the cluster will face manpower and training challenges, particularly in export oriented and technology intensive enterprises. The cluster will require greater competency in knowledge management as the dynamics of high turnover in an extended value chain make themselves felt

5.4 *Plastics and Packaging clusters in Saudi Arabia*¹⁹

The Kingdom of Saudi Arabia (KSA) is rich in oil and gas, the key natural resources used to manufacture petrochemicals products, the feedstock for plastics and packaging. KSA has up to 25% of the world’s proven oil reserves, more than any other country. Saudi Arabia has some 265 billion barrels of proven and recoverable oil, accounting for a fifth to a quarter of global oil reserves. It also has up to 258 trillion cubic feet of natural gases, giving KSA the fourth-largest reserves in the world. The country’s huge exports of oil and gas help to give it an annual current account surplus of \$75 billion,

¹⁹ <http://www.ic.gov.sa/en/industrial.cluster/plastic>;

or 22.9% of GDP. KSA is the largest exporter in Middle East-North Africa (MENA), and the 16th largest in the world. The largest market in MENA, KSA offers: easy, tariff-free access to Gulf Cooperation Council and Greater Arab Free Trade Area markets; access to over 400 million consumers in the wider MENA area; the abundant energy needed for large-scale production; and close industrial-academic ties.

Furthermore, KSA offers significant government commitment, support and incentives. The Ministry of Commerce & Industry and Ministry of Petroleum and Minerals Resources are particularly closely involved, using its targeted Industrial Clusters program, to develop the plastics and packaging sector.

Industrial clusters aims to :

- Make KSA the service hub for consumer packaged goods (CPG) companies to export plastics and packaging worldwide
- Encourage and support further Saudi Arabian and foreign investment in the sector
- Reduce imports and increase exports
- Create and sustain employment
- Assist with national economic diversification

Industrial Clusters is also developing KSA's Automotive, Solar Energy and home Appliances clusters, all certain to benefit from a strong plastics and packaging sector.

5.5 Foodpolis, the Korea National Food Cluster²⁰

The global food market is expected to grow from around 5 trillion dollars in 2009 to 604 trillion dollars in 2020. The center of the food market is shifting to the Asia Pacific of which the share is 36% in 2009, being predicted to increase up to 40% by 2020. Korea has many advantages as the strategic hub of food industry in Northeast Asia such as: Access to 60 major cities with 1 million population within a 2-hour flight: Complete 1-day travel transportation connection to China, Hong Kong and Japan: Rapidly emerges as a major logistics zone in the world along with Europe and North America: Incheon International Airport ranked 2 in cargo handling: All area is regarded to be safe from natural disaster. In addition, government policy of borderless trade environment brings new market opportunities. Korean government concluded FTA with 44 countries that represent EFTAs, ASEAN, EU and FTA implementation and negotiation are underway with major countries around the world such as U.S, New Zealand and China. Also, Korea became a member of GATT in 1967, a member of WTO, and a member of OECD in 1996.

Taking advantage of these merits, Foodpolis, Korea's national food cluster is

20 Foodpolis (2011), Foodpolis and Food Packaging Center, Conference on Critical Research Needs in Food and Packaging Industry, Michigan State University, 14 November.

planned to be established in Iksan, North-Jeolla province. The plan is to build a 2,400,000 m² national industrial complex specializing in food by 2015, attracting some 150 global food companies and research institutes. In the complex, 6 government-support facilities such as 3 major R&D centers will reside. Iksan is easy access to transportation network and cultural heritage. That's the reason for selecting Iksan as food cluster.

Foodpolis, agency for Korea national food cluster, has the role of encouraging the involvement of internal and external innovators in the form of industry-academia-research institutions' partnership and joint research development initiatives, equipment sharing, and training programs. Korean government initiates a project to give direct & indirect incentives to enterprises and residents in clusters.

6. What kind of cluster strategy should it be?

6.1 Implications

One question that should be asked before discussing a proper cluster strategy is what kinds of implications and common knowledge can be drawn from these case studies. Firstly, although there is no clear difference between developed and developing countries in terms of the successful factors of clustering, countries in the both categories have a few things in common: In developing countries, a stable business environment, suitable policy intervention, and large firms acting as catalysts are clear factors that have introduced themselves as significant and extremely relevant in certain contexts. In developed countries, important common factors shown in the Greater Boston case study included low taxes, sufficient venture capital, risk-taking startup culture, a flexible flow of skilled labor and intellectual properties, local academic and research institutes, the presence of role models, etc.

Secondly, in setting the strategies, the necessity to build a sustainable competitive advantage for a new lead market is very well known but the traditional industry representatives would hardly accept it: rather, they would press for the status quo. Therefore, it is important to define the strategies to build sustainable competitive advantages not with the existing, established companies but with innovative ones.

Thirdly, most successful clusters have a strong and respectful facilitator. He or she should have detailed knowledge on clustering and a powerful network of contracts and enjoy the respect of cluster members.

Fourthly, in developing countries, a majority of clusters are tactically made to expedite exports. In contrast, clusters in developed countries are primarily established spontaneously to improve the competitiveness of industry in a certain region on the basis

of its abundant human and intellectual capitals. In the latter case, the existing clusters are sometimes renovated or recreated to upgrade the accumulated skills and to attract financial investment necessary to manufacture new products in preparation for the future. Like Greater Boston, clusters are made by the gathering of similar IT enterprises and their backgrounds consist of plentiful labor force, research and training institutes and creative enterprise culture. But generally, success is in fact the mixture, combination, arrangement and order in which the ingredients come into play, and how the factors settle beside each other, the environment-both local and global, the opportunities and timing (Singh 2005).

Fifthly, it can be inferred from the case studies that clustering is related to the geographic or resource advantages of each region. Clustering of the plastic packaging industry in Saudi Arabia is associated to its raw material, petroleum gas (Saudi Arabia is the world's largest producer of petroleum gas) and clustering Tirupur is based on the cheap labor force, a core successful factor of the textile industry. In the cases of Germany and Italy, clustering aims at specialized regional industries. Taking advantage of regional strengths for the success of clustering is the common feature, despite differences in causing factors and clustering processes.

6.2. The proper approach to clustering strategies in port hinterlands

In this literature, the approach to the clustering strategy is based on the following criteria: the type of businesses that would create synergy through clustering should be selected among regionally specialized industries adjacent to a port hinterland. For example, mechanic, metal and assembling part industries that are related with car manufacturing, packaging for car assembling parts, vessel storage or supply industries are target businesses in the hinterland of Pusan New Port. In the case of Kwangyang Port, petrochemical and relevant industries such as mechanic, metal and assembling part industries that are related with car manufacturing and nonferrous industries conform to this kind of businesses.

It should be confirmed that the characteristics of selected businesses among candidates should accord with the successful factors of clustering, technology accumulation, the likelihood to secure skilled labor, innovation and R&D capacities. Judging whether exchanges and cooperation can be realized through networks and partnerships in chosen businesses is another task.

It is notable that the competitiveness of selected enterprises can be improved if they reside in the port hinterland. It means that the attracted businesses should be in specific kinds of industries that are capable of improving the competitiveness of supply chain management by utilizing the geographical or economical advantages of each relevant region. Of course they should correspond to the objectives of the port hinterland

To establish a concrete strategy to select target enterprises that are suitable for clustering into a port hinterland, the types of industries should be more segmented. If

necessary, a field survey and on-site researches should be conducted to collect detailed data on target businesses in the region.

Among enterprises that meet all of the four criteria discussed earlier, the most proper ones are those that correspond to the effective use of port hinterlands. In selecting them, their intention of occupancy should be considered and necessary prior conditions or obstacles to their occupancy also accurately analyzed. If possible, synergy effects they would create should be taken into account and their input and output should be analyzed, as it is desirable to select ones that have stronger positive influence on the local economy.

In the following section, as an example of application, the effect of clustering will be analyzed on the assumption that packaging enterprises for car manufacturing, which are dispersed in the Ulsan region, are clustered into the hinterland of Pusan New Port.

7. An Example of Application : The Effect of Packaging clusters in Pusan port hinterland.

Packaging cluster in the port hinterland

Packaging becomes a crucial logistics function in today's complex logistics industry. Packaging not only protects the product from physical damage, but affects the cost of every logistical activity, such as transportation, freight handling, warehousing, waste disposal, and information management. Packaging also plays a critical role in the total cost management and sustainability of the supply chain. Efficient packaging can reduce significant supply chain costs, product damages and environmental burdens. Without any doubt, packaging is a highly value added logistics activity and matches very well with goals of the port hinterland development.

Before we discuss about the possibility of packaging cluster in the port hinterland, it is necessary to understand the nature and value of the packaging industry. Packaging is highly cross-linked to other industries and technologies. The customers are nearly every industry, ranging from automotive (including automotive part and service) to food industry. Overall packaging industry size (US \$19.3 billion in 2007²¹) in Korea is smaller than major industries such as automotive and semi-conductor industry because packaging companies are mostly small and medium size companies and heavily rely on the business with domestic customers. However, the impact and value of packaging industry cannot be explained with the size of the economy.

The basic logistical functions of packaging are

21 Report on development of Korea Food Packaging Center, 2010, Institute of Korea Packaging Systems, p.2

- creating and/or increasing value of the products
- increasing logistical standardization and cost efficiency of goods
- protecting and preserving goods during supply chain processes
- providing easy handling and safety features
- increasing visibility and traceability of products throughout the supply chain.

Packaging clustering efforts around world

Many European countries such as Germany and Austria are running packaging clusters successfully. For example, the Czech Republic has been very active in clustering SMEs since 2001 and established the Czech National Cluster Program. Among active clusters in the Czech Republic, the packaging cluster in Jaromer, in the Hradec Kralove region, is the most advanced and unique cluster²². The packaging cluster, branded as “Omnipack,” groups a number of packaging companies focusing on the automotive industry. The Czech Republic realized that packaging has become a globalized market and needs better technical and creative approach in order to sustain their small and medium size packaging companies. The Omnipack is embracing various challenges from very sophisticated customers such as automotive industry. The automotive industry requires a wide range packaging materials (e.g. wood, paper, metal and plastics) and deep knowledge on product handling and cost management. By collaboration with various packaging companies in the cluster, the Omnipack is gaining strong competitive edges in the cost and quality against their global rivals. The Czech Republic utilizes the Omnipack as a cooperative packaging technology development and testing center for all packaging industry providing exceptional service to their clients such as Toyota, Kia, Volkswagen, Peugeot and General motors.

Similar cases can be found from the Distriparks at the port of Rotterdam, Asian Logistics Centre at the port of Singapore, etc²³. Successful packaging clusters in Europe are characterized as

- a highly integrated collaboration and communication center with other cluster participants such as universities, companies, local technology centers, research institutes and governments
- a productivity improvement and HR management center with being closer to main production and logistics centers
- a strategic marketing partner for market expansion and market creation

22 Case studies of clustering efforts in Europe: Analysis of their potential for promoting innovation and competitiveness, Preliminary draft version for distribution in the European Presidential Conference on Innovation and Clusters, Stockholm, 22-23 January, 2008

23 ‘UNESCAP’ Commercial Development of Regional Ports as Logistics Centres, Transport Division, 2002, pp. 41-52

A Case Study: Packaging and automotive industry in Korea

Highly specialized packaging manufacturing and related service can help a port hinterland improve its relative competitiveness of the logistical service. One of the possible opportunities would be a packaging service sector related to the automotive part industry. For the last ten years, the Korea's automotive industry has made a huge leap and is currently the fifth largest in unit production and the sixth largest by export volume in the world. According to the KAICA (Korea Auto Industries Cooperation Association) data, the total amount of automotive parts exported was 12,128.5 billion Korean Won or US\$10.1 billion in 2010. In 2011, according to the data from the KAMA(Korea Automobile Manufacturers Association) and the Auto Herald²⁴, the amount of automobile exports (including parts, service, and knock-downs) were US\$55.9 billion. Automotive parts alone were US\$19.3 billion, which account for 52.6% of finished car exports.

Table 1. Automotive parts sales in Korea

Year	Annual sales (100 Million Won)				Variance (%)
	OEM	After service	Export	Total	
2006	360,004	23,400	76,704	460,108	10.3
2007	386,409	23,185	92,306	501,900	9.1
2008	368,486	22,109	105,271	495,866	-1.2
2009	342,236	20,533	82,689	445,458	-10.2
2010	440,794	26,448	121,285	588,527	32.1

Note : 1) Data from after service sales are collected and estimated from 1st tiers only.

2) For export data, parts from finished vehicle companies and KD (Knock down) were excluded.

Source : KAICA(Korea Auto Industries Cooperation Association) 2011.

With this promising export outlook, many exporters ignore that automotive part packaging costs take huge part of total logistics costs. The recent report by the Korea Railroad Institute revealed that packaging costs account for 2.4% of total automotive part sales, which is about US\$ 463 million or 509.3 billion Korean Won if converted to the annual total exports. Total volume seems small considering overall size of automotive part industry, but the packaging cost takes up 37% of the total logistics cost according to the study.

24 <http://www.autoherald.co.kr/news/articleView.html?idxno=1608>

Table 2. Compression of Logistics and Packaging costs on Automotive Parts

Automotive parts	Logistics costs (A, %)	Packaging costs (B, %)	Logistics vs. Packaging costs (B/A*100)
Fuel tank valves	7.0	1.0	14.0
Pipe tube assemblies	12.0	3.0	25.0
Brackets	7.0	2.0	29.0
Engine mounts	7.0	2.0	29.0
Antennas	1.0	0.0	30.0
Seat belts	10.0	5.0	50.0
Belts	1.0	1.0	100.0
Retainers	2.0	2.0	100.0
batteries	5.0	5.0	100.0
Handles	2.0	5.0	250.0

Source : Development of Packaging Standardization for the Intermodal Transportation and Unit Load Systems, Korea Railroad Institute, 2009

Benefits of the packaging cluster in the hinterland

The current export packaging process in Korea does not fit well in terms of the logistical efficiency. Most packaging activities happen at the manufacturing sites in Korea. Hence, packaging companies have to send their workers, tools and packaging materials to the customer's manufacturing sites to work. Packaging at the manufacturing sites only increases overall packaging and logistics costs because this will require additional labor and logistics activities. In Japan, most exporting goods are delivered from the manufacturers to the packaging companies which are located in or near ports, and shipped at the port.

Table 3. Comparison between Korea and Japan automotive part packaging flow for export

Korea	Manufacturer			Transporter	Port
	Product produced	Packagers go to manufacturing sites	Packing at the manufacturing sites	Packaged goods to the port	Shipping process
Japan	Manufacturer		Port		
	Product produced	products to packagers	Packing at the packager's sites	Packaged goods to the port	Shipping process

The export packaging paradox: the local packaging for the export goods

The export packaging business is labor intensive mixed with material converting, structural design and logistics service. A packaging is viewed as a product when it is sold, but it is not considered as a part of the goods anymore once the goods are packaged and shipped. This is where the paradox begins. In fact, packaging contributes to exporting products tremendously because packaging a product is virtually essential process to ship. However, the current hinterland policies (or any free trade zone and free economy zone laws and policies) in Korea do not reflect or recognize the essence of the export packaging business.

In order to receive a resident (or business) permit at a hinterland in Korea, a company needs to be qualified by one of following conditions²⁵.

1. For logistics business

- A person who intends to run 1) a logistics business such as loading/unloading, transport, storage, display, 2) international logistics services such as international transportation assistance, international vessel trade, packaging, repairing, converting, assembling, etc., falling under the Article 10, clause 1, item 3 of the “Act on Designation and Management of Free Trade Zone” and the Article 7, clause 4, item 1 of the Decree
- A foreign investor who intends to run a manufacturing business or a business falling under the Article 2, clause 1, item 1 of the “Foreign Investment Promotion Act”
- Manufacturing business
 - Falling under the Article 10, clause 1, item 1 or 2, and the Article 7, clause 1, item 2 of Decree of the “Act on Designation and Management of Free Trade Zone”, a manufacturing business primarily for export purposes and has achieved exports that correspond to 50 percent or more of the total sales amount for not less than one consecutive year within three years prior to the request date of a residence permit (in the case of a resident company, the relevant business day)
 - A foreign investor (including planed person) who intends to run a manufacturing business or a business falling under the Article 2, clause 1, item 4 of the “Foreign Investment Promotion Act”
 - Manufacturing business which helps to increase the value of Pusan New Port should be prioritized

25 The public tender notice made by Pusan New Port, October 18, 2010, Pusan Port Authority

According to these conditions, not many packaging companies can bid for a spot at the Pusan Port hinterland. The export packaging industry is essentially regarded as a manufacturing business, but it would be very difficult to satisfy any requirement of the “exports that correspond to 50 percent or more of the total sales amount” because most of them do not export their “packaging products and services” directly to foreign countries. A common practice for the export packaging business would be providing packaging goods and services to the customers who are ultimately going to export their products.

Besides, most Korean export packaging companies are not owned or invested by foreigners due to the nature of the business. Individual export packaging companies are dispersed and consisted of small to medium enterprises with no or very little research ability to improve the quality of the export packaging. It would be more applicable if a packaging company provides “international logistical packaging service for exporting goods” which includes both international logistics and packaging services. Under the current policy and laws, it is almost impossible to take an advantage of the port hinterland²⁶ for most export packaging companies.

Clustering effects for moving up the value chain

The packaging cluster can increase the value chain in logistics, significantly. Locating a packaging cluster near the port can easily connect manufacturing activities to logistics. The “total logistics service with packaging” is not a new concept, but this could be a more cost efficient business model in the port hinterland.

The packaging cluster also creates new value for the existing companies and clusters. The Free Trade Agreements (FTA) with Europe, the US, and other countries will create new value chains and continue to demand more value added services at the port. The existence of the packaging cluster with logistical functions can provide the one-stop service that specializes in all aspects of material handling, packaging, and shipping.

A similar example is the New Vehicle Kit Export Center in Incheon port by GM Daewoo Auto and Technology Co. This company established the largest complete knocked down (CKD) export facility in Korea and partnered with logistics companies such as Hanjin Shipping and Korea Express. This plant can assemble automotive parts into the packaged kits, and then the kits are shipped to Asia, Europe, Latin America, and other countries. Although GM Daewoo Auto and Technology Co. is neither a packaging company nor a small-medium company, this type of the dynamic and productive business can make the port hinterland much more competitive.

26 Hyungbin Kim, <http://www.packnet.co.kr/news/print.html?newsid=6074>, Monthly Packaging, September 17, 2007

In conclusion, a main barrier to the design and implementation of the packaging cluster in the port hinterland in Korea is current policies and laws. Policy makers, port authorities and government officers for the port hinterland have very limited knowledge of the business structure of export packaging industry.

The key challenges for developing a packaging cluster in the hinterland remain the following:

- initiating the changes of port hinterland related laws and policies to help export packaging manufacturers and related service companies facilitate to run their business in the port hinterland
- reinforcing the business support system for small and medium packaging companies which provide export related goods and services
- expanding the business scope of the existing logistics business that does not have packaging service functions
- Improving cooperative interactions between product manufacturers and export packagers to seek more cost effective total packaging solutions.

Since current laws and policies is the key barrier for export packaging companies, the criteria and process for selecting eligible companies for the hinterland should be reviewed and re-evaluated by the port authorities and government. The packaging is like the land that everyone claims to know, but no one really knows because most people are only searching on the surface. The responsible authority should find a proper shovel and find the hidden treasure soon.

8. Conclusion

In this literature, with an aim to build up a concrete action plan for the effective use of port hinterlands, the concept of supply chain logistics is introduced. Port hinterlands have a geographical advantage and an important infrastructure nearby. However, these merits of port hinterlands are not very significant from the viewpoint of supply chain logistics. Although the favorable condition of port hinterlands itself is not sufficient to attract enterprises, it is a necessary condition for that purpose. Port hinterlands need to have a dominant position in the supply chain to achieve their goal.

In this respect, clustering is emerging as an alternative to develop port hinterlands. Small and medium enterprises that are related with specialized industries in relevant regions can be clustered into a port hinterland to improve the competitiveness of supply chain logistics. In addition to the synergy effect it creates, clustering is expected to meet the construction objectives of port hinterlands thanks to its export-oriented nature. Although clustering is not the only alternative to vitalize port hinterlands, it would serve as a tool

to get over the difficulties that Korea is suffering, through complementary cooperation with the existing strategies. This study has examined what the proper cluster strategy would be based on a range of criteria. The types of businesses that would create synergy through clustering are suggested to select proper ones among regionally specialized industries near port hinterlands. It should be confirmed that the characteristics of selected businesses among candidates should accord with the successful factors of clustering and the competitiveness of selected enterprises can be improved if they reside in the port hinterland. To establish a concrete strategy to select target businesses that are suitable for clustering into a port hinterland, the types of industries should be more segmented.

As an illustration of applicable case studies, the effect of clustering and prerequisites for success are analyzed on the assumption that packaging enterprises are clustered into the hinterland of Pusan New Port.

This case study reveals that we still have a long way to go. Without a series of detailed planning processes from a practical strategy to concrete action plans and target businesses, all the laws and policies would be in vain. We may have searched on the surface as shown in the case of clustering of the packaging industry. The criteria and processes for selecting suitable companies for hinterlands should be reviewed and re-evaluated based on in-depth studies by port authorities and the government.

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