EKONOMIA ECONOMICS 3(20) • 2012

ISSN 2080-5977

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# THE SPECIFICITY OF CLUSTERS IN ASIAN ECONOMIES[1]

**Summary:** Clusters are interconnected companies and national institutions, contributing to increased competitiveness, to increasing innovation, to creating new products, new businesses and new jobs. Clusters, by the specificity of their character, combine business operations and local government agencies and scientific entities, thus contributing to the rapid growth of local economies. They are also an opportunity formany small- and medium-sized companies operating locally and without hope of crossing the boundaries of the region. Therefore, they constitute a good solution for both local businesses and for local economies which drive economic growth. Clusters are present in most national economies, but in different economic conditions they are invarious stages of development. Despite the theoretical and practical analysis of clusters, one has not yet defined a generic model that can explain the success and decline of some clusters. However, the advantages of this phenomenon are well-known and recognised and are one of the main reasons for the current focus on clusters. Clusters work in most national economies, but in all conditions the structure and pattern of action is different. The final shape of the cluster is affected by a number of factors, which are indirectly and directly related to the location. This article aims to provide specific models of the functioning of clusters in Asia, particularly in China and Japan. There is also a very interesting forecast for the Asian clusters in 2040, according to which a number of significant clusters of different industries will be located just in Asian countries.

**Keywords:** clusters, Asian economies, industrial clusters.

## 1. Introduction

Globalisation has opened for companies possibilities previously unknown to them. Corporations are now etched into the main stream of globalisation and have become the main actors. Their activities on the international market have been simplified but at the same time companies faced international competition operating on the global market. A common phenomenon is the formation of clusters which provide a combination of forces in a more or less formal structure. A cluster, understood as

[1] The article was written as a part of the project funded by the National Science Center “Clusters as an innovation carrier of enterprises and regions. Verification and implementation of Asian models in terms of the Polish economy”, No. 2011/01/B/HS4/00639.

a combination of companies cooperating and competing at the same time, is a form of cooperation which has existed for a long time in the world economy but only recently has it become a deliberate strategy of companies.

One of the first definitions of clusters was given by M.E. Porter, who conducted a series of studies on clusters and networks of links of companies as well as on their competitiveness and usefulness. According to his definition, “Clusters are geographic concentrations of interconnected companies, specialised suppliers and service providers, firms in related industries, and associated institutions (e.g. universities, standard agencies, and trade associations) in particular fields that compete but also cooperate”.[2]

Clusters can be compared to a sports team. On the one hand, players are forced to interact and cooperate because only the game played by the whole team can ensure success. Injury or the bad form of one player can shatter the success of the entire team. Combining the skills of each and every participant in a common effort and cooperation is essential because it is the foundation for a good team performance. On the other hand, each player plays for himself or herself, promoting his or her name, a place in sporting history, and fights for endorsement deals as a source of income. The individuality of each unit puts a strong pressure on their own improvement and development, which translates into the entire team’s performance. The cluster is also a combination of individual players who achieve their own profits or losses but through mutual cooperation with other participants their success may be more spectacular.

## 2. Clusters in Asia

The countries of the Asian region are becoming an increasingly commonplace to locate clusters. On the one hand, there are clusters which are created from a bottom-up initiative which is derived from the enterprises themselves; on the other hand, they are made with the strong support of public institutions. The growing phenomenon of clustering overlaps varying factors. First, the Asian region is an attractive region for foreign direct investment, so there are a lot of new businesses. Often, foreign companies spread experience in creating clusters of which local entrepreneurs will benefit. Secondly, in Asian countries there is a strong industrial tradition; therefore, clusters are formed naturally as a consequence of the concentration of specialised industries in the area. Thirdly, there are many small- and medium-sized Asian companies that are involved in international trade and only through the creation of the cluster have a greater impact on the market, such as garment manufacturing in the world. Fourthly, the local authority provides an effective policy cluster, which supports the cluster initiatives and the awareness of entrepreneurs of the potential benefits of this form of cooperation.

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[2] M.E. Porter, *Porter o konkurencji*, PWE, Warszawa 2001, p. 246.

Asian clusters differ significantly from each other and there is no single Asian model cluster. In Asia both clusters are formed bringing together a large number of small and medium enterprises, which by cooperation join forces but also can provide lots of examples of clusters created by large transnational corporations that are surrounded by their suppliers and make up whole industrial cities. Asian clusters are diverse, as diverse as the various Asian economies are. On the one hand, one can observe clusters dealing with the simplest production resulting in the Asian developing countries; on the other hand, there are clusters of modern technology, supra-regional units that make up the international market from Asian developed countries. Here, as examples of an Asian cluster, existing clusters will be presented in Chinese and Japanese economic conditions.

## 3. Clusters in China

Chinese clusters are typical industrial clusters, which are identical with the nature of Chinese manufacturing firms. Identifying China as a country that is the "factory of the world" translates into models of clusters occurring in this country. Individual regions and industrial cities have been highly specialised in the production of certaing oods and have become a world center for this kind of production, for example, Socks City, Sweater City, Kid's Clothing City, Footwear Capital, and so on. Chinese clusters are derived somehow from "specialty cities" of a particular kind. They associate thousands of specialised small and medium enterprises but also larger players, who cooperate with each other in the same area which naturally favors the formation of clusters in China. The cluster-based rural industrialisation not only plays a significant role in China's industrial growth but also has been important in the early stages of industrialisation in other East Asian countries.[3] Most of the industrial clusters in China have emerged spontaneously, as in many other countries, but government (especially local government) has given all kinds of support to their development process. Chinese clusters operate mainly in the labour-intensive manufacturing sectors, that is, at the lower end of the global value chain.[4]

Actually in China there exist a lot of clusters and this number is still increasing in connection with the enlargement of the industrialised regions. Some of the cities have become famous for their particular industrial cluster, to name just a few examples: electronic products in Dongguan (Guangdong), bras and ladies underwear in Shantou (Guangdong), transport equipment in Shandong and lighters in Wenzhou (Zhejiang). The clusters are predominantly still located in the eastern part of the country.

One of the examples of Chinese clusters which can be considered as a "specialty city" is the Zhili Cluster. Zhili is a town named after the textile industry located in

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[3] B. Fleisher, D. Hu, W. McGuire, X. Zhang, *The Evolution of an Industrial Cluster in China*, Development Strategy and Government Division, IFPRI Discussion Paper No. 00896, September 2009, p. 1.

[4] D.Z. Zeng, *How Do Special Economic Zones and Industrial Clusters Drive China's Rapid Development?*, Policy Research Working Paper 5583, The World Bank, 2011, p. 25.

the east of Huzhou city in Zhejiang province. It is a complete production chain of children's wear and is composed of 10,400 enterprises, which represent particular links in the production chain, such as design, printing, embroidery, buttons and garment manufacturing factories. Most of the output of companies from the cluster reaches the international market; only 21% remains on the domestic market. The cluster and related industries are responsible for 40% of the GDP of the whole region and 250 thousand of 300 thousand people in the town are migrant workers and entrepreneurs involved in the cluster's activities.[5]

According to the data, the cluster represents a major power in its region, as well as nationally, and through the pro-export orientation also shapes the international market. However, the composition and structure of this cluster of entities is very interesting. The vast majority of the cluster operators are small businesses employing up to 60 employees while large enterprises are few.[6] Detailed research data shows that 70% of those responsible for sewing materials are super-small and small businesses, while in the case of production they number 60% of entities. This means that the undoubted success of the cluster corresponds to a great many small businesses, which through the development of the cluster's bond contributes to the increase in the production cluster.

Every Chinese cluster has its own development history and was formed in a different way. However, some of the main reasons for creating a cluster in China can be presented as follows:

- *The open door policy and reform* – almost all the clusters were formed after China's opening-up. The reforms and open door policies provided a macro-environment that allowed the private sector to flourish and foreign investment to enter China. Before the reforms, all private businesses were officially forbidden.
- *Long history of production or business activities in a particular sector* – business activity in a given sector preceded many Chinese clusters. For example, the Wenzhou footwear cluster in Zhejiang Province has a long history of shoemaking and has built up local production capacity over time.
- *Proximity to major local markets and infrastructure* – in general, most of these clusters are located in the coastal region, close to international markets. In addition, they are also generally based in a town or major city and are close to main roads, railways, highways, and ports. This location advantage is especially important for export-oriented clusters.
- *Entrepreneurs with tacit knowledge and skills in production and trading* – the long tradition and knowledge passed down from generation to generation through family and kinship ties have played important roles in cluster formation.

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[5] H. Zuhui, Y. Jifei, S. Yu, *Stay Factors in the Industrial Transfer of Cluster: A Case Study of Children Wear Cluster of Zhili, Zhejiang, China*, Systems of Innovation for Inclusive Development, International Development Research Council, Canada, pp. 3–4.

[6] Super-small enterprises have less than 20 employees, small enterprises have 21–60 employees, medium-small enterprises have 61–120 employees and the rest have more than 120 employees.

- *Foreign direct investment and the diaspora* – clusters benefiting from FDI and the diaspora are concentrated mostly on the eastern side of the Pearl River Delta region, in the Dongguan, Huizhou and Shenzhen areas. The economies of these clusters are driven mainly by overseas Chinese and foreign firms.
- *Natural and human endowments* – such factors are especially important for natural resource-based clusters, such as those in seafood processing, fruits, stone carving, aquaculture, ceramics and furniture.
- *Market pull* – when China first opened up, there was a huge shortage of almost everything as a result of the centrally planned economy. These desperate market needs provided a powerful reason for the existence of numerous clusters that sprang up in a short period of time.
- *Government facilitation and industrial transfer* – in recent years, because of rising costs, limited land, and tough environmental requirements, many coastal clusters have begun to move inland; some clusters in the middle and western regions were formed through such a transfer. In some cases, the moves were highly influenced by deliberate government policies; however, such transfers are still based largely on market choice, where government plays mainly a facilitating role.[7]

## 4. Clusters in Japan

According to Small And Medium Enterprise Agency (SMEA), which is the unit of the Ministry of Economy, Trade and Industry of Japan, there are four types of cluster in the Japanese economy:
- *Company town clusters* – these are clusters formed by the siting of numerous subcontractor groups around the mass-production plant of a particular large enterprise. Typical examples include the Hiroshima region around Mazda, the area around Toyota City in Aichi, which has Toyota Motor at its heart, and the Kitakyushu region in Fukuoka Prefecture, which has formed around Yawata Steel (now operated by Nippon Steel Corporation).
- *Production region clusters* – clusters of this kind are formed by enterprises belonging to a specific industry (such as consumer goods) concentrating in a particular region, and they have grown through their members' mutual use of raw materials and technologies that have accumulated in the region. Typical examples include the Tsubame-Sanjo region in Niigata Prefecture, where cutlery and blade manufacturers have clustered, the spectacle-making cluster in the Sabae region of Fukui Prefecture and the furniture-making cluster around Asahikawa City in Hokkaido.
- *Mixed urban clusters* – these clusters have formed in urban areas around prewar production bases or munitions plants, or wartime factories set up to disperse

[7] D.Z. Zeng, *op. cit.*, pp. 26–27.

production, around which related enterprises have concentrated. There are a lot of such clusters in the machinery and metalworking industries, and there often occur divisions of labour between enterprises in the same cluster and business relations that cut across traditional industry groupings. Typical examples include the Jonan region in Tokyo, Ota region in Gunma Prefecture, Suwa region in Nagano Prefecture, Hamamatsu region in Shizuoka Prefecture and Higashiosaka region in Osaka Prefecture.

- *Mixed invitation clusters* – these clusters are formed as a result of local government efforts to attract enterprises and the implementation of industrial relocation plans. Many of the enterprises invited belong to industry groups outside the cluster, and collaboration within such clusters is often not very advanced. Typical examples include the Kitakamigawa basin region, the Kofu region and the Kumamoto region.[8]

The association of clusters of companies in Japan has lasted for many years, hence there exists a large number of clusters in different industries and services. In addition to industrial clusters, there are clusters of advanced IT technology, biomedical, aviation equipment, medical, etc. A summary of clusters in the Japanese economy is presented in Table 1.

**Table 1.** Clusters in Japanese economy

| Industry | Number of clusters | Number of firms/cluster | Employment/cluster | Employment/ firm (average) |
|---|---|---|---|---|
| Food processing | 83 | 82 | 1,260 | 15.37 |
| Textiles | 126 | 241 | 1,518 | 6.30 |
| Clothing | 34 | 208 | 4,986 | 23.97 |
| Wood products and furniture | 78 | 102 | 823 | 8.07 |
| Clay, stone, and glass products | 62 | 125 | 920 | 7.36 |
| Machinery | 56 | 128 | 1,986 | 15.52 |
| Miscellaneous | 98 | 111 | 1,175 | 10.59 |
| Total | 537 | 145 | 1,496 | 10.32 |

Source: H. Yamawaki, *The Evolution and Structure of Industrial Clusters in Japan*, World Bank Institute, 2001, p. 14.

[8] *White Paper on Small and Medium Enterprises in Japan*, Small and Medium Enterprises Agency, Japan Small Business Research Institute, 2006, p. 135.

A good example of a Japanese cluster is Toyota City, which can be acknowledged as the Japanese way of creating clusters. Toyota manufactures its cars and parts for them in many different places around the world. Undoubtedly, the center unit is Toyota City, in which major business units and factories are located. Around this city there is a cluster which can be classified in accordance with the typology of the Japanese as company town clusters.

Toyota City has Toyota Motor Corporation at its heart. Cluster regions have developed as a result of enterprises cutting the cost of expensive tasks, such as production management and the acquisition of new customers, and their move to specialise in certain production processes. SMEs benefit from being within the same business groups as the large enterprises. The success of Toyota Motor Corporation raised the number of employees living in Toyota City as well as the value added by 1.5% and 0.6% between 1997 and 2007, respectively.[9]

Toyota has set up a cluster in Aichi Prefecture. Aichi Prefecture has one of the world's largest concentrations of automotive and automotive-related companies, centred on global vehicle sales leader Toyota Motor Corporation, which provide the driving force behind the region's economy. The number of business facilities for transportation-related equipment and machinery is more than 2,225, and they employ more than 300,000 people. All of this is supported by advanced production technology capabilities, outstanding human resources and a legacy of industry. The result is that Aichi's total shipment amount for transportation equipment and machinery makes up 38.1%[10] of the national total and puts it in the position of Japan's automotive industry leader.

In the auto cluster in Toyota City, the dominant company – Toyota – plays a double role as both a production provider and system organiser. The foundations of Toyota's success lay in "transferring productivity-enhancing knowledge" throughout the set of companies with which it is interconnected. The creation of learning routines is apparent and results from the fact that Toyota has the most to gain from "public goods" that span the entire set of companies in its cluster. In the early stages of cluster formation in Japan, Toyota "heavily subsidised" the cluster. This transnational company tried to engineer the creation of a fresh set of identity based ties, e.g. by promoting a "co-existence and co-prosperity" agenda with its suppliers. The adoption of a very long term perspective by the core firm in a calculative cluster may lead this firm to try to mimic the key characteristic of organically growing, identity-based clusters. This ideology was given substance through four elements: a supplier association that acted as an instrument of socialisation and transfer of explicit knowledge, a core firm consulting division that was given the "responsibility

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[9] S. Uchikawa, *Regional Variation of Industrial Clusters, Small and Medium Enterprises in Japan*: *Surviving the Long-Term Recession*, 2009, http://www.adbi.org/workingpaper/2009/11/27/3388.japan.sme.recession/regional. variation.of.industrial.clusters/.

[10] *Investing in Japan*, Japan External Trade Organization (JETRO), www.jetro.go.jp.

to acquire, store and diffuse valuable production knowledge" residing within Toyota's cluster, voluntary (small group) learning teams, interfirm employee transfers.[11]

## 5. Future of clusters in the global economy – a special place for Asian clusters

According to forecasts prepared by PricewaterhouseCoopers, clusters from developing countries and emerging economies will grow much more dynamically than those derived from developed countries. The development of the Asian clusters will be closely followed by the vigorous economic development of countries, such as China and India but it should be remembered that the clusters of Great Britain and the United States will remain strong players. We should therefore recognise the growing importance of Asian clusters that will form a strong group in their region and will be free to compete with the other clusters. The enormous expenditure on investment and science, which is now being made in Asia, may help to increase the novelty of these clusters and regions, and thus the degree of competitiveness in the international arena.

The PwC report examines in detail the situation in five different industries and clusters in their functioning and formulates projections of the cluster situation in 2040. On analysing the initial data on the financial industry, it can be expected that every region of the world will havea strong, regional financial cluster, whose role will be to service financial assets in selected parts of the globe. The dominant global cluster will be located in New York, which along with Boston will manage the finances of North America. The financial centre of Asia will be Singapore or HongKong, which supports China's finances. In Europe the key financial cluster will be in London. Thus, in the financial asset management industry one can see relative stability in which each region of the world will be operated by a major regional center.

A somewhat different situation will arise in the pharmaceutical industry and higher education. Currently, the strongest research units are located in highly developed countries, the United States and Europe, and although Asian countries spend huge financial outlays on the creation of R&D units in their areas, the R&D market is still dominated by European and American units. The finest universities and colleges are now located only in OECD countries – none of the universities of non-OCED countries are classified among the top 100 universities in the world. The location of clusters of higher education also depends on the placement of the pharmaceutical industry clusters. Therefore, there is a forecast of the growth of the clusters of the pharmaceutical industry located in Shanghai, which happens to be one of the largest in its field, but the clusters in London and New York will continue to be dominant.

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[11] A.M. Rugman, A. Verbeke, Multinational enterprises and clusters: An organizing framework, *Management International Review* 2003, Vol. 43, Special Issue 3, p. 163.

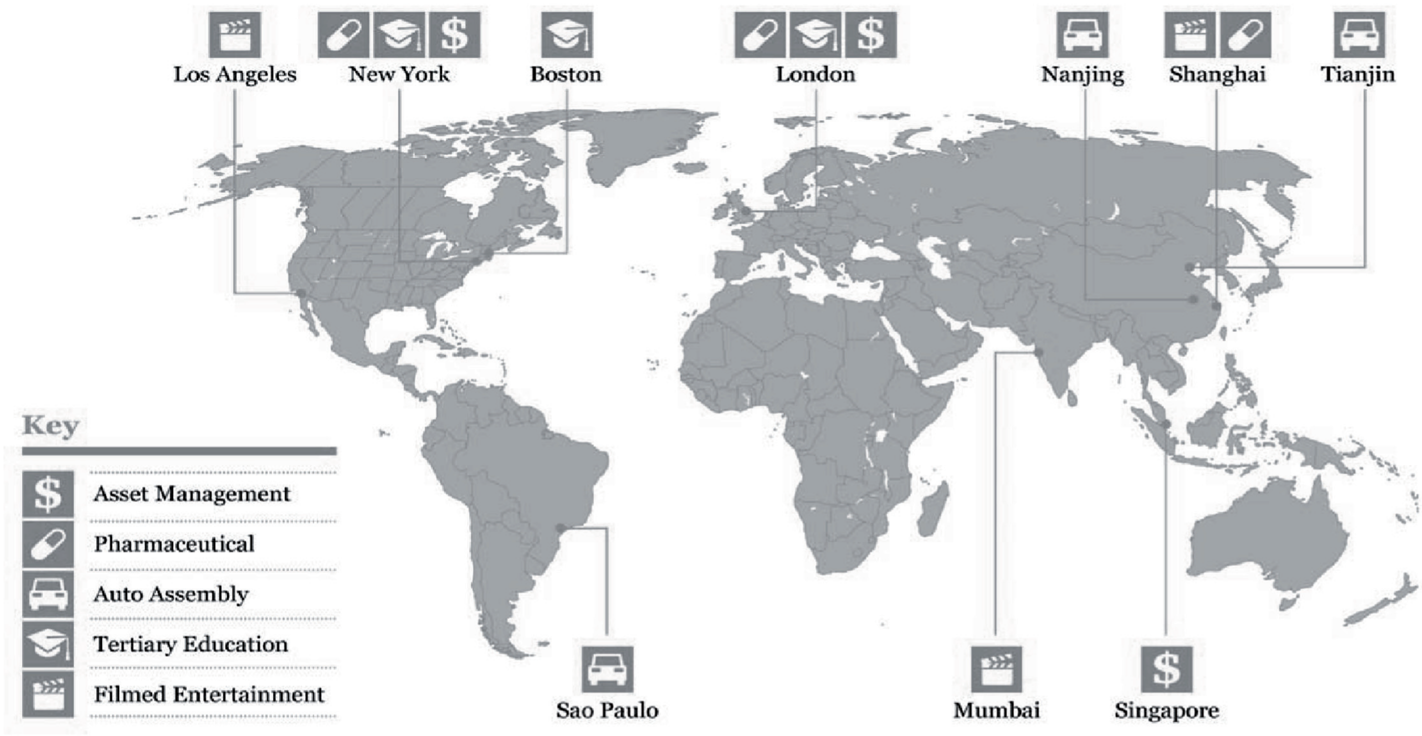


**Figure 1.** Map of the largest clusters in the global economy according to the forecast for 2040

Source: *See the Future, Top Industry Clusters in 2040 Revealed*, Economic Views: Future Industry Clusters, Pricewaterhouse Coopers, 2010, p. 1.

In the case of the film and entertainment industry, by far the largest cluster is Hollywood, which produces the biggest blockbusters and shapes the global film market, but the cluster of Mumbai (known as Bollywood) is a local entertainment center producing even more videos than its American precursor. The currently prevailing fashion for films from Asian countries means that they are recognisable but reach only a narrow audience. The barriers are the cultural and linguistic differences that allow this cluster to grow locally, but are an obstacle to the full conquest of the global market. In Asia further variations of this type of clusters are developed, such as Chinawood, but the position of the US cluster from California is just as bright as ever.

A completely different situation can be observed in clusters of the automotive industry. Due to the increasing cost of buying a car in Europe or the United States, the cost of maintenance fees, high oil prices, and road congestion in developed countries means the steady decline of car sales in these markets. On the other hand, the rapidly growing demand for cars in Asia, which is becoming an increasingly rich society, and wants to consume more and more. Local car manufacturers constantly increase production and at the same time European and American brands have been moving their production to Asian countries to serve this market. It therefore seems certain that the dominant automotive clusters will be located in developing countries, whether Asian or South American.[12]

In conclusion, a lot of clusters operate in Asian countries although they are very different entities. In most cases, a significant role in the Asian cluster is played by a policy pursued by local and national authorities that support the current clusters and create new units. It can be assumed that with the economic development of Asian countries, there will also be the development of clusters, which are now often operating as separate cities. In future the important world clusters will be located just in Asia, and in some industries Asian clusters will be dominant.

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[12] *See the Future, Top Industry Clusters in 2040 Revealed*, Economic Views: Future Industry Clusters, Pricewaterhouse Coopers, 2010.

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## SPECYFIKA KLASTRÓW W GOSPODARKACH AZJATYCKICH

**Streszczenie:** Klastry, czyli powiązane ze sobą firmy i instytucje narodowe, przyczyniają się do zwiększenia konkurencyjności, do wzrostu innowacyjności, do tworzenia nowych produktów, nowych firm i nowych miejsc pracy. Klastry, poprzez specyfikę swojego charakteru, łączą w sobie działania przedsiębiorców i lokalnych instytucji rządowych oraz jednostek naukowych, przez co przyczyniają się do dynamicznego wzrostu lokalnych gospodarek. Są również szansą dla wielu małych i średnich firm działających lokalnie i nie mających szans na samodzielne wyjście poza granice swojego regionu. Stanowią zatem dobre rozwiązanie zarówno dla firm lokalnych, jak i dla lokalnych gospodarek, w których napędzają rozwój gospodarczy. Klastry są obecne w większości gospodarek narodowych, choć w różnych warunkach gospodarczych znajdują się w różnych fazach swojego rozwoju. Pomimo wielu teoretycznych i praktycznych analiz klastrów nie istnieje jeden model tej formy współpracy, który tłumaczyłby zarówno sukces, jak również porażkę niektórych klastrów. Dobrze rozpoznane są natomiast zalety klastrów i korzyści jakie przynoszą zrzeszonym podmiotom co staje się przyczyną dla stałego zainteresowania gronami. Klastry działają w większości gospodarek narodowych, lecz w każdych warunkach struktura i schemat działania jest inny. Na ostateczny kształt klastra wpływa bowiem cały szereg czynników, które w sposób pośredni, jak i bezpośredni, związane są z lokalizacją. Celem artykułu jest przedstawienie specyficznych modeli funkcjonowania klastrów w Azji, szczególnie w Chinach i w Japonii. Niezwykle interesująca jest także prognoza dla klastrów azjatyckich na rok 2040, zgodnie z którą wiele znaczących klastrów różnych branż będzie ulokowanych właśnie w państwach azjatyckich.

**Słowa kluczowe:** klastry, gospodarki azjatyckie, klastry przemysłowe.