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FOREIGN EXPERIENCE IN CLUSTER FORMATION: AMERICAN, EUROPEAN AND ASIAN MODELS

Toshbotirov Ulugbek Uktam ugli
Assistant of the Navoi State Mining and Technological University, Uzbekistan
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Abstract: This article examines international experience in the formation and development of cluster structures, with particular emphasis on the American, European, and Asian models. The study analyzes the specific features of cluster formation, the role of government and the private sector, mechanisms of cooperation between business and scientific institutions, and the importance of innovation and investment in cluster development. The American model is characterized by private initiative, market competition, venture capital, and innovative entrepreneurship, while the European model emphasizes cooperation among government, business, and research institutions. The Asian model is distinguished by the active strategic role of government, industrial policy, infrastructure development, and targeted investment support. A comparative analysis of these models is provided, and their potential application to the economic conditions of Uzbekistan is considered. Based on the analysis, the development of a mixed cluster model that combines the effective elements of the American, European, and Asian approaches is proposed.

Keywords: cluster, cluster formation, cluster policy, American model, European model, Asian model, innovation, competition, venture capital, government support, regional development, economic competitiveness.

Introduction. The intensification of competition in the global economy, the acceleration of technological change, and the increasing integration of production processes at the international level require the development of new approaches to economic development. Under these conditions, not only the independent activities of enterprises but also cooperation among them, interaction with research and educational institutions, the concentration of skilled labor, and the rapid introduction of innovations are becoming increasingly important. In this context, clustering has emerged as an effective mechanism for strengthening regional and sectoral competitiveness.

In economic literature, the concept of a cluster is generally associated with the concentration of interconnected enterprises, suppliers, service providers, and related institutions within a particular geographical area or economic activity. The cluster concept developed by Michael Porter subsequently became an important component of regional development, industrial policy, and innovation policy in many countries. Sopoligová and Pavelková note that since the 1990s, national and regional governments have increasingly introduced special cluster programs aimed at using clusters to strengthen competitiveness [1].

However, cluster formation mechanisms are not identical across countries. In some economies, clusters have developed naturally as a result of market relations, private initiative, and entrepreneurial activity, whereas in others, government strategy and financial support have played a significant role in their emergence. Therefore, studying the experience of the United States, European countries, and Asian economies makes it possible to identify different models of clustering and assess their advantages and limitations.

Main Part. Theoretical Foundations of Cluster Formation. The economic essence of clustering is broader than simple cooperation between individual enterprises. Within a cluster,

multifaceted relationships are established among producers, suppliers of raw materials and components, financial institutions, research centers, universities, and government organizations. Such an environment creates opportunities for the exchange of knowledge and experience, efficient use of labor resources, specialization, and the introduction of innovations into production.

Cluster policy is generally understood as a set of government measures aimed at strengthening the competitiveness of clusters through cooperation among enterprises, universities, and other economic actors. The main areas include infrastructure development, education and personnel training, development of business services, stimulation of inter-firm cooperation, and support for innovation activities [1].

International experience demonstrates that the success of a cluster is determined not merely by the geographical proximity of enterprises but, more importantly, by the depth of their economic, technological, scientific, and institutional relationships. Therefore, cluster policy in developed countries is increasingly associated with innovation, human capital, and knowledge exchange.

The American Model. The main characteristic of the American model is the formation of clusters through market mechanisms, private initiative, and entrepreneurial activity. In this model, the role of the government is primarily to create the institutional conditions necessary for the development of entrepreneurship and innovation rather than directly managing the internal activities of clusters.

The most prominent example of the American model is Silicon Valley. The interaction of technology companies, universities, research centers, venture capital, and skilled professionals in this region has contributed to the formation of a highly innovative environment. Studies of the development of Silicon Valley identify the use of university resources, developed infrastructure, an entrepreneurial culture willing to accept risk, and venture capital as important factors contributing to cluster development [2].

The formation of clusters in the United States has also been influenced by the emergence of new companies. S.Klepper's study of Silicon Valley and Detroit demonstrates that the establishment of new firms, the emergence of spin-off companies from existing enterprises, and the entry of firms from related industries have significantly contributed to cluster formation [3].

This demonstrates an important characteristic of the American model: clusters develop not primarily as a result of administrative decisions but through entrepreneurial and innovative relationships emerging within an existing economic environment. Consequently, competition serves as one of the internal mechanisms of cluster development, while cooperation facilitates innovation and knowledge exchange.

The role of government in the American model is not completely limited. Through the financing of research, support for universities, development of innovation infrastructure, and creation of mechanisms for venture financing, the government indirectly contributes to cluster development [2].

The European Model. The European model places particular emphasis on cooperation among government institutions, the private sector, and scientific and educational organizations. Unlike the American model, it is characterized by a more active role of government in cluster policy.

In Denmark, France, and Germany, cluster policy has been closely associated with regional development, innovation, and human capital development. Sopoligová and Pavelková note that Denmark has placed considerable emphasis on supporting small and medium-sized enterprises, while France and Germany have given significant attention to human capital and innovation within cluster programs [1].

The German experience represents one of the important examples of the European model. The German government has paid particular attention to supporting regional clustering within technological policy. D.Dohse's study analyzes the incorporation of regional clustering principles into federal technology programs in Germany and demonstrates that regional innovation policy can serve as an instrument for increasing national competitiveness [4].

Another important feature of the European model is the integration of cluster policy with other public policies. Cluster support is not limited to industrial policy but is implemented in conjunction with innovation, regional development, education, personnel training, and small business development policies [1].

Thus, in the European model, the government functions primarily not as a direct manager of clusters but as an institution that creates the necessary environment for their development and coordinates cooperation among participants.

The Asian Model. The distinctive feature of the Asian model is the active role of the state in establishing and developing clusters. In China, Japan, South Korea, and other Asian economies, cluster policy has often been implemented as an integral part of national industrial, innovation, and export policies.

The study by Sopoligová and Pavelková demonstrates that China, Japan, and South Korea have developed cluster policies based on government support, institutional mechanisms, and innovation objectives. In China, cluster policy has been directed toward strengthening innovation through science parks and incubators, while Japan and South Korea have placed considerable emphasis on developing links among science, business, and technology [1].

K.Otsuka's study of East Asian experience, particularly Japan, Taiwan, and China, explains cluster development through three stages: initial formation, imitation and quantitative expansion, and qualitative improvement through innovation. According to the author, the development of market relationships among producers, component suppliers, and traders contributes to cluster growth [5].

In China, special industrial zones and clusters established with government support play an important role. The government creates conditions for cluster development through infrastructure, investment, technological development, and the expansion of export opportunities.

A comparative study of cluster policies in Asian countries shows that in South Korea and Singapore, cluster policy has increasingly been integrated with innovation policy, with particular emphasis on cooperation between science and business, knowledge exchange, and technology transfer. In China and Thailand, foreign direct investment plays an important role within clusters. In these countries, a top-down approach, based on government programs and decisions, has played a significant role in cluster formation [6].

Comparative Analysis of the American, European, and Asian Models

The analysis above demonstrates significant differences among the three models. While the American model prioritizes the natural development of clusters and private-sector initiative, the European model emphasizes coordinated cooperation among government, business, and science. In the Asian model, government plays a relatively stronger role in strategic planning and financial support.

Table 1.

Criterion	American Model	European Model	Asian Model
Main source of formation	Market and private initiative	Cooperation among government, business and science	Government strategy and industrial policy

Role of government	Indirect support	Coordination and support	Active strategic management
Cluster initiative	Mainly bottom-up	Mixed	Mostly top-down
Main objective	Competition and innovation	Innovation and regional development	Industry, technology and exports
Financing	Private and venture capital	Public and private funds	Public funds and investment
Role of universities	High	High	Strategic
Science-business relations	Market-based	Institutionally coordinated	Supported through government programs
Leading examples	Silicon Valley, Detroit	Germany, France, Denmark	Japan, China, South Korea

Table 1. Comparative Analysis of the American, European, and Asian Models

Analysis of the table. The table demonstrates that the main difference among the models lies in the relationship between government and market mechanisms. In the American model, entrepreneurship, competition, and investment determine the internal development of clusters. In the European model, considerable attention is given to the coordinating role of government and cooperation between business and science. In the Asian model, the determination of strategic objectives by the government, infrastructure development, and financial support constitute important factors in cluster development [1].

However, these models cannot be regarded as completely isolated from one another. In practice, countries increasingly combine elements of different models according to their economic conditions. For example, although the private sector plays a leading role in the United States, the government influences cluster development through financing research and innovation. In Europe, despite the significant role of government, clusters continue to rely on market competition and private business activity. In Asian countries, clusters initially established through government initiatives increasingly incorporate the role of private-sector and market mechanisms.

Significance of Foreign Experience for Uzbekistan. When applying international experience to Uzbekistan, it would be more appropriate to combine the effective elements of different models with local economic conditions rather than simply reproduce one particular model. This is because Uzbekistan has its own economic structure, degree of government involvement in the economy, regional specialization, and specific characteristics of the business environment.

From the Asian model, Uzbekistan can benefit from experience in strategic planning by the government, infrastructure development, and support for priority industries. At the same time, it is necessary to develop mechanisms characteristic of the American model, including venture capital, private initiative, innovative entrepreneurship, and university-business cooperation.

The European experience is important in terms of integrating clusters with regional development, science, education, and innovation policies. In particular, involving small and medium-sized enterprises in cluster value chains, commercializing research results, and training qualified specialists are important areas for Uzbekistan.

On this basis, the development of a mixed cluster model would be appropriate for Uzbekistan. At the initial stage, the government should determine strategic priorities and create the necessary infrastructure. Subsequently, the independent initiatives of the private sector, investors, universities,

and research institutions should be expanded. Such an approach would make it possible to combine government support with market mechanisms.

Conclusion. The analysis of international experience demonstrates that there is no single universal model for cluster formation. Each country develops its cluster policy according to its own economic, institutional, and technological conditions.

The American model relies on private initiative, market competition, venture capital, and innovative entrepreneurship. The experience of Silicon Valley demonstrates that clusters can develop through the interaction of a favorable economic environment, universities, technology companies, skilled professionals, and investment capital [2;3].

The European model is based on cooperation among government, business, and science, regional development, and the integration of innovation policies. The German experience demonstrates that government-supported regional cluster policy can serve as an important instrument for increasing innovation and competitiveness [4].

The Asian model is distinguished by the active strategic role of government, industrial policy, infrastructure development, technological advancement, and investment attraction. The experiences of Japan, Taiwan, and China demonstrate the transition of clusters from initial formation through quantitative expansion toward innovative development [5].

For Uzbekistan, each of these experiences contains valuable elements that can be adapted to national conditions. It would be appropriate to combine the strategic and infrastructural support characteristic of the Asian model with the private initiative and venture financing mechanisms of the American model and the science–education–business integration characteristic of the European model. As a result, clusters could become not merely administratively established structures but real economic mechanisms for strengthening competitiveness, promoting innovation, expanding exports, and creating high value added.

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