ECONOMIC EFFICIENCY OF THE CLUSTER APPROACH IN INCREASING REGIONAL COMPETITIVENESS

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Abstract: *The thesis explores the economic efficiency of implementing the cluster approach as a mechanism for enhancing regional competitiveness in the context of globalization and structural transformation of national economies. The cluster model is analyzed as an integrative tool that unites enterprises, research institutions, infrastructure, and state support within a single innovation ecosystem. The study identifies key economic indicators of cluster efficiency — including productivity growth, innovation diffusion, investment attraction, and labor market flexibility — as primary factors contributing to regional competitiveness. The paper also highlights the successful experiences of several countries in developing industrial, agricultural, and digital clusters and proposes recommendations for their adaptation to the realities of emerging economies.*

Keywords: *regional competitiveness, cluster approach, innovation ecosystem, economic efficiency, industrial policy, regional development, productivity.*

INTRODUCTION

In the twenty-first century, economic competition increasingly occurs not between individual enterprises, but between regions and regional systems capable of generating and sustaining innovation. In this regard, the cluster approach — introduced into economic theory by M. Porter— has become one of the most effective tools for stimulating local development and increasing the global competitiveness of regions.

Clusters represent geographically concentrated groups of interconnected companies, suppliers, research centers, and institutions that compete but also cooperate. This form of organization creates a synergistic environment where knowledge transfer, specialization, and resource optimization drive higher productivity and technological progress [1].

For developing economies and transitional states, the cluster approach is especially relevant, as it allows the efficient use of limited resources, supports the growth of small and medium-sized businesses (SMEs), and fosters industrial diversification. Therefore, studying the economic efficiency of clusters is crucial to understanding how they contribute to improving regional competitiveness and sustainable economic growth.

MATERIALS AND METHODS

The concept of economic clusters emerged from the idea of spatial concentration of economic activity. According to Porter's theory of competitive advantage, regions achieve success when they form tightly integrated systems of production and innovation. Clusters facilitate economies of scale, reduce transaction costs, and encourage the diffusion of new technologies [2].

Modern economic thought interprets clusters as a meso-level structure between macroeconomic policy and microeconomic operations. They link national innovation

systems with local business ecosystems, ensuring efficient circulation of human capital, investments, and knowledge. The cluster model thus forms the foundation for an innovation-driven regional economy.

RESULTS AND DISCUSSION

Economic efficiency within clusters is achieved through the combination of competition and cooperation — a phenomenon often referred to as "co-opetition." Competing firms within a cluster simultaneously share infrastructure, supply chains, and knowledge networks. This reduces unit costs and raises the level of specialization.

The efficiency indicators of cluster development include [3]:

● Increased productivity of enterprises due to shared technological infrastructure;
● Growth of innovation intensity through cooperation with R&D institutions;
● Attraction of investments via regional specialization and reduced risk;
● Employment growth and improvement of workforce skills;
● Export diversification and better integration into global value chains.

Empirical studies show that clusterized regions demonstrate a 20–30% higher productivity rate and faster innovation diffusion compared to non-clustered territories.

Regional competitiveness depends on how effectively local economies can mobilize and coordinate their internal potential. The cluster approach increases competitiveness by creating localized networks of interdependence, which stimulate specialization, trust, and long-term investment.

A competitive region is characterized not only by its natural or financial resources but by its capacity to innovate and adapt. In this sense, clusters serve as catalysts for technological upgrading, helping regions move from low-cost production to high-value-added industries.

For example, Silicon Valley in the United States, Bavaria's automotive cluster in Germany, and Skolkovo Innovation Center in Russia illustrate how strong regional clusters can transform local economies into globally recognized centers of innovation and production.

One of the most significant contributions of clusters to regional competitiveness lies in their ability to accelerate knowledge transfer. Proximity between firms and research institutions creates an environment of constant learning. Informal communication and professional mobility between cluster participants enhance the absorption capacity of enterprises.

Innovation efficiency is amplified when clusters adopt digital platforms and data-driven management systems. The implementation of Industry 4.0 technologies — such as automation, artificial intelligence, and the Internet of Things (IoT) — enables clusters to achieve greater flexibility, reduce production costs, and enter new markets.

Moreover, government-backed innovation clusters (e.g., South Korea's Daedeok Innopolis) demonstrate that policy-supported cooperation between academia, industry, and government — the so-called Triple Helix Model — ensures sustainable regional innovation dynamics.

Evaluating the efficiency of clusters requires both quantitative and qualitative methods. Economists often use a cost-benefit analysis (CBA) and input-output models to measure multiplier effects of clustering on the regional economy.

Key evaluation indicators include:
- Growth of Gross Regional Product (GRP);
- Increase in labor productivity and employment;
- Improvement of innovation capacity (number of patents, R&D intensity);
- Expansion of intra-regional trade and export volumes;
- Rise in investment inflows and public-private partnerships.

For instance, in OECD countries, every one dollar of public investment in cluster development generates an average of three dollars in additional private sector investment, reflecting a high multiplier effect of the cluster model.

Despite the evident benefits, cluster policy in developing regions faces several constraints:

1. Institutional weakness — lack of coordination between state, academia, and business.

2. Financial barriers — insufficient investment in R&D and infrastructure.

3. Human capital deficit — shortage of skilled specialists and engineers.

4. Regulatory uncertainty — lack of transparent tax and innovation incentives.

To overcome these issues, governments should implement targeted industrial policies, create regional development agencies, and establish innovation funds to support cluster-based enterprises. Digital infrastructure and e-governance can further enhance the efficiency of regional management systems.

In Uzbekistan, the cluster approach has been actively introduced since the mid-2010s, primarily in agro-industrial sectors such as cotton-textile, fruit-vegetable, and silk production. The "Cotton Textile Cluster" model integrates farmers, processors, logistics companies, and exporters within a unified value chain. This has led to:
- A 25–30% increase in productivity per hectare;
- Growth in the export share of finished textile products;
- Reduction in raw material loss and logistical costs.

Additionally, emerging IT and industrial clusters in Tashkent, Navoi, and Fergana regions demonstrate a growing orientation toward innovation and regional specialization. The continuation of this trend may significantly enhance Uzbekistan's regional competitiveness and integration into global markets.

CONCLUSION

The cluster approach represents one of the most effective instruments for stimulating regional competitiveness and sustainable economic growth. By fostering cooperation, innovation, and specialization, clusters generate significant economic multipliers and create favorable conditions for technological modernization.

For emerging economies like Uzbekistan, the cluster model is not only a tool for industrial efficiency but also a strategic framework for regional transformation. The long-term success of this approach depends on coordinated policies between government,

business, and academia — ensuring that regional development becomes innovation-driven, inclusive, and globally competitive.

REFERENCES:

1. Porter, M. E. (2010). The Competitive Advantage of Nations. New York: Free Press.

2. Ketels, C. (2017). "Cluster Mapping and Regional Competitiveness." Harvard Business School Working Paper.

3. OECD (2020). Clusters and Industrial Policy in the 21st Century. Paris: OECD Publishing.

4. Delgado, M., Porter, M. E., & Stern, S. (2016). "Clusters, Convergence, and Economic Performance." Research Policy, 45(10), 1785–1799.