# AVIATION CLUSTERS AND THE SME ECOSYSTEM IN UZBEKISTAN'S REGIONAL DEVELOPMENT

***Azimova Mohinur Nozimovna***
*Master's student, Department of Business Administration,*
*Tashkent State University of Economics*
*mohinurazimova20@gmail.com*

***Abstract.*** *This thesis examines the inextricable link between aviation clusters and the SME ecosystem in Uzbekistan. First, it is shown that institutional market openness—Open Skies/5th freedom and LCC entry—expands the route network and increases competitive pressure on fares; this, in turn, enriches the range of basic demand and services within the cluster.*

***Keywords:*** *aviation cluster, Open Skies, LCC, slot policy (WASG), airport charges, small and medium-sized enterprises (SMEs).*

International experience shows that liberalizing the air transport market increases passenger flows, broadens the route network, intensifies pressure on average fares, and generates additional gross value through tourism and trade channels [5].

From 2019 to 2025, Uzbekistan pursued a consistent policy in this direction. From 1 October 2019, an Open Skies regime based on 5th freedom rights was launched at the Qarshi, Nukus, Termez, and Bukhara airports. From 1 August 2020, the regime was expanded to cover regional airports such as Andijan, Fergana, Namangan, Samarkand, Urgench, and Navoi. This approach facilitated the entry of foreign carriers and, by increasing competitive intensity, sought to raise route diversity and flight frequencies. During this period, major infrastructure projects ensuring external balance also commenced: on 15 October 2025, construction began on a new international airport in Tashkent region with a capacity of 20 million passengers and 129 thousand tons of cargo per year; the consortium includes Vision Invest (SA), Sojitz (JP), and Incheon International Airport Corp. (KR) [6].

The effectiveness of aviation clusters rests on classic agglomeration economics: the concentration of firms and service providers in one area reduces transaction costs and accelerates productivity and innovation. Duranton and Puga demonstrate the micro-foundations of these three mechanisms through formal models; they argue that sharing common infrastructure, achieving precise matching in the labor market, and local diffusion of knowledge generate the advantages of clusters [1].

Porter distinguishes three channels of cluster impact: increasing firm productivity, intensifying innovation, and fostering the birth of new businesses. Aviation clusters that form around transport and logistics nodes raise regional competitiveness through this triad [7].

Market liberalization in aviation (Open Skies—particularly 5th freedom) provides a demand-side impulse to cluster mechanisms. The empirical literature notes that the entry of

LCCs and new carriers heightens pressure on fares. Brueckner–Lee–Singer (Economics of Transportation) show a significant impact of competition on fares in the U.S. domestic market; their methodological approach accounts for the number of rivals and the presence of potential competitors [2].

From the perspective of resource allocation, slot policy is a central instrument for cluster efficiency at capacity-constrained airports. The academic literature shows that allocating slots through market mechanisms rather than historic precedence reduces congestion, cuts delays, and increases social welfare. Therefore, in policy design, transparent auction/trading mechanisms aligned with WASG principles maximize cluster benefits [3].

**Conceptual Relationship**

Conceptually, the "institutions × inter-firm proximity × connectivity" triangle of aviation clusters yields the following systemic relationship:

Conceptual diagram:

LCC/Open Skies → direct pressure on fares and assortment; slot/charges policy → shapes efficiency of resource use; high connectivity → agglomeration-driven growth of SMEs and supporting networks within the cluster.

Here, LCC/Open Skies exerts direct pressure on fares and the service mix; slot/charges policy shapes the efficiency of resource use; and higher connectivity stimulates the growth of SMEs and supporting networks within the cluster through agglomeration forces [1].

As a result, the most effective combination for aviation clusters is **liberalization that strengthens competition (new carriers/LCCs)**, **slot mechanisms that allocate capacity neutrally and internalize congestion**, and **transparency in data and support-service markets**—which also increases innovation intensity and SME productivity within the cluster [3].

**Structure of an Aviation Cluster**

An aviation cluster consists of three rings:

1. **Core infrastructure:** passenger terminal, cargo terminal, air traffic control (ATC);
2. **Core services:** ground handling, fueling, catering;
3. **Supporting businesses:** MRO, logistics & forwarding, ULD/warehousing, IT.

Airport-centered clusters deliver the greatest benefits at the intersection of institutions (WASG-aligned slot policies and neutral charges), competition (Open Skies/LCC), and proximity. Managing slot resources transparently in line with WASG principles, institutionalizing secondary trading, and piloting cautious auctions to internalize congestion—these maximize the micro-innovation and connectivity effects of the cluster [5].

**SME Roadmap (Key Stages)**

**Identify demand bottlenecks:** cold chain, perishables, e-commerce.

**Cluster office:** airport operator, regional administration, tax/customs, banks.

**Asset & service bundle:** modular warehouses and ULD workshops, customs facilities.

**Finance:** leasing and supply-chain finance (factoring).

**Competition incentives:** open access to ground handling, new route development.

**Human capital:** short courses under IATA/ICAO standards, dual programs [4].

**Conclusion**

Between 2019 and 2025, liberalization, PPP-based modernization, and fleet renewal strengthened the institutional foundations of Uzbekistan's aviation market and opened a "window" for clustering. To fully leverage this window, it is necessary to align slot/charges policy with international standards, enhance monitoring through open data, and rapidly commission infrastructure that provides SMEs with ready-to-use sites and service bundles. As a result, regional clusters will take root sustainably, and the country will advance toward becoming an aviation-logistics hub in Central Asia

**References**

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