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Article

Regional Industrial Clusters and Economic Growth: Evidence from Kashkadarya Region

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Abstract: This paper analyzes the effect of regional industrial cluster on economic development in a transition economy, which is empirically supported by data from Kashkadarya region of Uzbekistan. The study investigates how cluster-based industrialization affects regional economic performance, enterprises' survival and competitiveness through creation of production linkages (inter-firm relationships), innovation spillovers (spread of new ideas) and resource complementarity. Based on data compiled from the regional statistics and enterprise-level indicators, the paper uses descriptive analysis and econometric methods to explore cluster development in relation to important economic performance measures. The results suggest that areas with more established local industrial clusters experience higher growth, increase industrial productivity and showcase higher resistance to economic shocks. The findings indicate that cluster-based management factors could be an effective policy tool for facilitation of regional economic development in resource-rich and diversify industrial regions. The paper provides empirical evidence from a lesser-studied transition economy and presents policy-relevant implications for regional industrial development strategies into the literature.

Keywords: industrial clusters; regional economic growth; cluster-based management; transition economy; Uzbekistan

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1. Introduction

Industrial clusters have become the focus of current theories of regional economic development, especially in relation to structural change, industrial upgrading and reg ional diversification. These core-periphery agglomeration economies arise from the spatial colocation of collaborating forms, suppliers, service-providers and supporting institutions that boost productivity savings on transactions and knowledge spillovers. Accordingly, cluster development is largely acknowledged as a tool for enhancing regional competitiveness and advancing sustainable economic growth.

On the theoretical front, writing on logical models for industrial cluster development make reference to classical agglomeration and localization theories as well as contemporary literature on endogenous growth, regional innovation systems and industrial organization. Clusters allow firms to access common infrastructure, specialized labour markets, and thick production linkages that increase efficiency, flexibility, and long run performance. These mechanisms are especially pertinent to areas that aim at transitioning away from extensive growth patterns towards output-type and value-added industria.

Nonetheless, over the last few decades cluster-based policies have been drawing more and more worldwide interest both in developed economies as well as in transitional new-market economies. Governments are increasingly using industrial clusters as policy tools for narrowing regional disparities, developing diversified industries and promoting

linkages in the value chains. Yet, the impact of these policies is context-specific and influenced by institutional capability, sectoral profile and regional economies. As a result, empirical evidence across different institutional contexts is crucial to furthering our understanding of clustering and of regional development policy based on evidenc.

However, international research about industrial clusters overall is not well-developed empirically across countries or regions. The majority of the literatures tilts toward advanced countries with more matured institutions and innovation eco systems. By contrast, transition economies are somewhat under-represented in the literature (even though they have faced similar challenges such as institutional change, uneven regional development and sectoral reliance on natural resources). Such structural features may have important implications on the operation of industrial clusters and the means via which theyn impact regional economic growth.

Uzbekistan offers a relevant and timely case for examining the role of industrial clusters in regional economic development. Ongoing economic reforms have placed increasing emphasis on industrial modernization, regional competitiveness, and sustainable growth. In this context, industrial clustering has been identified as a strategic mechanism for enhancing productivity, increasing value added, and deepening industrial cooperation at the regional level. The importance of cluster-based development is explicitly articulated in national policy frameworks, including the "**Uzbekistan – 2030" Strategy [1]**, which prioritizes industrial diversification, innovation-driven growth, and balanced regional development. The strategy highlights the role of regional industrial clusters in promoting technological upgrading, expanding processing industries, and strengthening economic resilience across regions.

Moreover, the former two regional-based development agendas (e.g., Action Strategy on Five Priority Areas of Development) have provided the institutional underpinning for cluster-focused indus- trial policies focusing on region-specific knowledge spillover, economic interlinkage within enterprises and upgrading of industrial infrastructure. Combined, these policy paradigms portray industrial clusters as organizational and economic entities that can integrate firm-level performance with national development goals.

Within this policy and institutional environment, the Kashkadarya region represents a particularly informative case for empirical analysis. The region is characterized by a diversified industrial base, including oil and gas processing, construction materials, and manufacturing industries, supported by interconnected production chains and regional infrastructure. At the same time, Kashkadarya faces challenges related to productivity growth, industrial diversification, and the effective coordination of cluster participants. These features make the region well suited for examining how industrial cluster development contributes to regional economic growth in line with national strategic priorities.

This study aims to analyze the contribution of regional industrial clusters to economic growth in the Kashkadarya region through a statistical and structural assessment of key regional economic indicators. Rather than relying on econometric estimation, the research employs descriptive and comparative analysis to examine growth dynamics, sectoral composition, and industrial performance associated with cluster development. This approach is particularly appropriate in transition economy contexts, where detailed micro-level data may be limited, but regional statistics offer valuable insights into structural change and development trajectories.

The novelty of this paper lies on the following three aspects. To begin with, it contributes to the empirical literature on Industrial Clusters: based upon a novel data set in a financially less researched transitional economy region, where long-term strategies are aligned with national plans. Secondly, it shows that statistical methods can also be used for assessing cluster-related economic development at regional scale. Third, it provides policy-relevant input to adjust regional industrial development strategies within the context of the Uzbekistan-2030 strategy with a focus on cluster development for sustainable and balanced economic growth.

Literature Review

The intellectual roots of cluster thinking are commonly traced to Marshall's explanation of *localized external economies*, where geographic concentration generates efficiency advantages through a pooled labor market, specialized suppliers, and knowledge spillovers that circulate more easily within dense industrial communities [2]. This "Marshallian" logic later became a foundational building block for modern economic geography and regional development policy.

While cluster competitiveness is a much more contemporary expression of geographical economy, major articulation can be associated with the work of Porter who identified clusters as "groups of industries that flourish in particular locations because an unusual mix of innovative entrepreneurs and other important willing partners joins forces to develop competitive advantage(s)" [3]. On this conception, clusters are not simply aggregates of firms; they are networks of competition and cooperation that result from the local embedding in a favourable business environment where the quality or lack of local linkages, inputs and supporting institutions constitutes the real source of competitive advantage. Porter's broader competitive theory framing (with "diamond" conditions) makes further links of clusters to national and subnational performance by stressing microeconomic foundations of prosperity (as opposed to factor endowments).

In a broader sense, the cluster literature situates clustering as a meso-level mechanism - it exists between firm strategies and macroeconomic circumstances. This is crucial for the regional studies since it also provides a systematic approach to connect firm dynamics with regional output growth and structural change.

From an empirical perspective, a vast body of work tests if clusters are positively associated with better regional economic performance (e.g. productivity, employment growth, firm start up). Modern studies commonly define clusters as groups of related industries that: i) tend to agglomerate more than expected by chance, ii) are mutually re-enforcing ecosystems. A related important line of research by authors such as Delgado and her colleagues has developed consistent methods for defining related-industry clusters, with results indicating that stronger clusters are connected to better regional performance – most notably in the realm of entrepreneurship and new firm formation [4]. This view is germane to our understanding of regional growth in that it explains how cluster strength can be converted into dynamics not simply con- centration per se.

At the same time, results in the literature are not univocal: cluster advantages tend to be contingent on sector characteristics, on the phase of the life cycle of a cluster and finally also on the quality of coordination mechanisms. One is that clusters can enhance innovation and competitiveness while another is that effect depends on industry, as well as the institutional context in which firms are located. For instance, evidence about effects on innovation seems to indicate that 'strong' clusters can be beneficial although these benefits may be heterogeneous or contingent upon knowledge bases and inter-firm networks [5].

For a statistical ("non-econometric identification") regional analysis, the literature points to such practical analytical strate- gies: consider (i) clusters -presence and structure (sectoral concentration and relatedness), (ii) performance measures (growth of industrial output; productivity proxies; changes in employment), as well as (iii) structural transformation over time (diversification vs. path dependence). This fits well with descriptive-comparative designs that also make sense to illustrate how growth trajectories diverge through time or space as cluster initiatives develop.

A complementary theoretical line emphasizes clusters as components of broader *regional innovation systems (RIS)*. Cooke's RIS framework argues that innovation is shaped by institutional interactions among firms, universities, intermediaries, and policy actors at the regional scale, and that the "systemness" of these relations matters for sustained competitiveness [6]. In practice, this means cluster performance is often mediated by the strength of supportive institutions (training, technology diffusion, finance, standards, export support), not only by firm co-location.

International development agencies have also emphasized that institutions and support infrastructures may act as quasi-public goods for innovation and upgrading-

where markets do not supply skills, finance, and coordination [7]. This is particularly the case in transition areas where institutional capacity could be uneven: special governance arrangements and policies may be needed for cluster initiatives to catalyse spillovers and enhance value chain links.

Accordingly, cluster effects on regional growth should be read through an institutional approach: even if industrial concentration is present, the impacts on growth may be relatively small when coordination and upgrading as well as innovation-generating spillovers are weak. Great governance of clusters, on the other hand, can increase resilience and speed up structural change.

Beyond productivity and innovation, a new line of regional research has highlighted resilience - the ability to resist, recover and reorient in response to shocks. Martin and Sunley hold that resilience is contingent on economic structure and processes of adaptation, one cannot make sense of the ways in which regions response to shocks without reference to their industrial composition and evolutionary pathways [8]. This logic leads to a policy-relevant explanation for clusters: in increasing the level of related variety, production linkages and upgrading pathways, clusters can reduce vulnerability and support more stable growth.

This kind of framing is also particularly useful in resource-based or commodity-cycling regions. Cluster development can be seen as a driver for processing depth and value added, supply chain ecosystems development, and diversification to related activities–paths that resonate well with regional growth imperatives in many transition economies.

Although there is a large body of knowledge on clusters in developed economies, the literature for transition-economies is more limited and context-specific. Transition environments are characterised by changing institutions, co-ordination problems, funding constraints and often re.

Uzbekistan's policy frameworks explicitly position industrial development, modernization, and regional competitiveness as strategic priorities. The **Strategy "Uzbekistan-2030"** was approved by presidential act and establishes long-term priorities that include strengthening economic competitiveness, modernization, and regionally balanced development. In parallel, the national reform agenda and development-strategy architecture also emphasize structural transformation and regional development instruments [9].

For the industrially relevant and resource-rich Kashkadarya region, this thrust in policy implies that a study on cluster-growth is of relevance as it is within the context of achieving national priorities (value addition, diversification, up-grading and resilience) through clusters as instruments. Nevertheless, to date, in the context of Central Asia there is a lack of regionally relevant evidence available in international literature and little evidence base focusing on firm-level innovation measures compared to general regional development performance.

Even though Komilova et al. (2019) further emphasize that the reorganization of industry in space and sectors is highly relevant for regional performances as well as for the mitigation of interregional disparities. Their findings show that modernization, diversification of production and creation of cooperative mechanisms through the deep transformation of local raw material, are some of the main drivers promoting consolidation of industrial sectors and territorial structures inside the country. These aspects of region-specific thinking stress the interconnections between industrial policy, territorial organization and regional economic performance. This point is highly significant in regard to the industrial cluster development research because it places industry transformation within the framework of territorial economic potential and structural optimization, not simply a measure of corporate innovation [10].

Building on these propositions, the present study contributes by providing a structured statistical assessment of cluster development and regional growth dynamics in Kashkadarya, aligned with Uzbekistan's long-term policy objectives under the Uzbekistan–2030 Strategy.

2. Materials and Methods

This study employs a **quantitative descriptive and comparative research design** to 200 ISSN: 2221-3470; e-ISSN: 2221-3489, Volume 14, Number 11 (2017), PP.207 – 225 investigate the impact of regional level industrial clusters on economic growth in Kashkadarya region. The analysis is conducted using official regional statistics provided by national and regional authorities of the Republic of Uzbekistan, for a multi-year period to take into account structural shifts and growth patterns. The methodological approach concentrates on recognizing industrial concentration, sectoral specialization, production interlinakages related to cluster development patterns. Although the modelling is based on a transition economy, resulting from the limitations in available data, and given that meaningful figures are not available through survey-based measurement of clusters, we have found statistical analysis to create a consistent and policy-relevant environment for evaluating regional economic results associated with clusters.

Descriptive statistics, comparative analysis and structural assessment of crucial indicators (industrial production, sectoral structure, employment dynamics and industrial share in gross regional product) are combined within the analytical framework. This point is even more important than causal estimation because the work focuses on growth trends, performance differences by sector, and industrial structural changes over time. Such an approach facilitates the assessment of: How well industrial cluster development corresponds to regional economic performance and national priorities for development, in particular as set out in the Uzbekistan–2030 Strategy.

3. Results and Discussion

These are the main empirical results of this paper using official regional statistical data on the Kashkadarya region. The results are organized in five analytical dimensions: (i) dynamics of overall industrial output, (ii) structure of sectors and industrial growth, (iii) contribution of industrial clusters to regional output, (iv) level of investments within clusters, and (v) per capita output. Cumulatively, these dimensions offer a nuanced perspective on how industrial cluster development relates to regional economic growth and structural transformation.

Interpretation Should concentrate on the descriptive, comparative interpretation of statistical indicators (dynamics in growth relationships, structural shifts and trends in performance) that are relevant for cluster led regional development.

To begin with the analysis in this paper, we must investigate the general development track of industrial production because that is also impacting on regional industrial development path although total industrial output serves as a significant quantitative measure. The increase in industrial production is a result of changes not only in the volume of production but also the efficiency of regional industrial policies, targeting strategies for investment and organization.

Table 1.industrial output: dynamics by the kashkadarya region for the analyzed period Table 2 shows this dynamism of industrial production in various sectors. The results shot a clear and persistent upward trend in all industrial production parameter, showed that the industry maintains its growth[11-12]. Industrial production multiplied anything but a few times relative to the first year of observation, indicating that industry plays an increasingly important role as regards regional economic growth.

This long-term trend of growth implies that industrial development in Kashkadarya has been systemic rather than episodic and that the growth witnessed has been path-dependent rather than conjunctural. This is similar to the tendencies of this kind that crystallize in accordance with state policies in industrial modernisation and regional change.

Table 1. Dynamics of industrial output in the Republic of Uzbekistan

Regions	2010	2015	2020	2021	2022	2023	2024
Republic of Uzbekistan	38119	97598,2	368740,2	456056,1	553265	658991,7	880198,5

Republic of Karakalpakstan	697,2	2387,6	13981,3	16630,4	17624,7	17791,1	24323,5
Andijan region	4701,4	9744,6	36376,5	35935,3	54352,5	73767,1	90626,6
Bukhara region	1674,8	5143,9	17574,4	20772,1	27202,4	31860,4	42243,7
Jizzakh region	522,7	1474,5	5823,8	8731,8	11402	19197,3	24903,7
Kashkadarya region	4957,5	8721,9	14612,3	18771,9	22624,4	28767,7	39116,8
Navoi region	4038,5	9286,9	65084,9	73633,5	84393,7	101841,9	145615
Namangan region	1007	2861,8	11011,9	14695,1	18120,5	21906,8	31696,2
Samarkand region	2011,2	6095,5	18383,4	22834,3	29188,6	32955,7	45408
Surkhandarya region	756,4	1910,7	5322,7	6675,3	7229,8	8848,6	13819,8
Syrdarya region	926,8	2820,6	7990,9	9813,3	12011,2	15348,1	20064,5
Tashkent region	5471,2	14401	65949,9	83433,9	93935,1	106915,3	138555,4
Fergana region	3265,5	7170,2	21701,2	27761,5	30303,5	35794,9	45896,1
Khorezm region	628,6	2616	9615,9	13658,1	18323,3	21589,1	28438,8
Tashkent city	6984,4	18986,1	66188	90211,9	108807,7	124116,4	171706,2

Beyond aggregate growth, understanding the **sectoral composition of industrial output** is crucial for assessing the qualitative dimension of regional development. Economic theory emphasizes that sustainable growth depends not only on output expansion but also on the structural transformation toward more productive and value-added sectors.

In this context, Table 2 reports the industrial production index by major economic activities. The results indicate that **manufacturing industries account for the dominant share of industrial growth**, significantly outperforming extractive and utility sectors. Manufacturing demonstrates the most dynamic growth rates, reflecting increasing diversification and technological upgrading.

Table 2 provides the index of industrial production by a broad categories of economic activities, in this environment. The findings show that manufacturing sector has the highest share of total industrial growth, exceeding both extractive and utilities. The most dynamic growth is found in manufacturing, where diversification and technological upgrading are becoming more widespread..

Table 2. Industrial production index by economic activities [13]

Index	**2010**	**2015**	**2020**	**2021**	**2022**	**2023**	**2024**
Industrial production	105,9	105,3	100,9	108,8	105,3	106,3	106,5
Mining and quarrying	94,8	102,9	78	110,8	101,9	99,5	103,9
Manufacturing industry	108,9	105,9	107,9	108,3	105,4	107,4	107
Electricity, gas, steam and air conditioning	118,5	105,1	106,8	111,8	113,5	109,5	105,7
Water supply; sewerage, waste collection and disposal	118,6	106,8	99,1	85,8	94,7	103,2	112,1
Food products	110,1	113,2	108,6	104,2	106	107	105,6
Beverages	115,2	116,1	105,7	118	115,7	106,4	96

Tobacco products	108,9	95,8	99,5	91,4	124	100,5	121,8
Textiles	113	110,5	117,4	119,5	109,9	106,4	111,2
Wearing apparel	136,1	111,5	107,2	118,7	105,8	112,7	107,1
Leather and related products	102,7	117	97,4	103,9	104,3	105,9	103,2
Wooden and cork products, (except furniture), products made of straw and plaiting materials	117	115	88,1	129,2	104,2	96	128
Paper and paper products	107,3	116,1	106,4	115,4	114,6	110,3	121
Printing and Playback of Recorded Materials	111,9	115,2	76,3	127,8	140,5	84,9	93,1
Chemical products	90,9	91,2	98,3	71	104,2	127,3	106,4
Coke and refined petroleum products	108,5	107,5	107,6	107	98,1	96,7	102,8
Basic pharmaceutical products and preparations	137,7	123	118,9	144,5	89,9	102,5	97,2
Rubber and plastic products	139,6	98	109,7	101,3	98,8	107,3	122,6
Other non-metallic mineral products	105,8	104	105,9	108,6	96,8	112	118,6
Metallurgical industry	102,3	102,5	107,7	108,1	104,4	106,6	106,4
Fabricated metal products, except machinery and equipment	115,4	120,3	118,8	120,5	102,2	106,7	82,9
Computers, electronic and optical products	102,2	101	172	138,4	85,8	78,1	87,7
Electrical equipment	142,1	103	110,1	93	106	116,1	99,8
Machinery and equipment, not elsewhere classified	104,9	83,5	94,7	97	106	101,1	127,5
Motor vehicles, trailers and semi-trailers	107,9	79,9	99,4	94,8	137,8	119,9	102,4
Other transport equipment	110,3	89,9	102,5	108,8	105,4	99,3	126,1
Furniture manufacture	98,4	110	90,2	114	101,8	103,2	128,1
Other finished products	98,8	120,1	110,3	109,7	95,5	115,8	130,4
Repair and installation of machinery and equipment	115,8	102,5	100,9	122,3	101,4	114	146,1

Having established overall growth and sectoral structure, the next step is to directly assess the **role of industrial clusters within the regional production system**. From a policy perspective, this is a key question, since clusters are expected to function as organizational platforms that integrate enterprises into coordinated value chains.

Table 3 presents the volume of industrial output produced by cluster enterprises. The data reveal that **the share of cluster-based production has increased consistently over time**, indicating the strengthening role of clusters in regional industrial activity. In absolute terms, output generated by clusters demonstrates rapid and stable growth.

This trend confirms that clusters are not peripheral actors but rather **core growth engines** within the regional economy. The increasing contribution of cluster enterprises suggests that cluster-based organization enhances production capacity, facilitates resource mobilization, and strengthens coordination among industrial actors.

Table 3. Industrial output produced by clusters [14]

Regions	2018	2019	2020	2021	2022	2023	2024
Republic of Uzbekistan	**888281,2**	**4477433**	**12609000**	**19936005**	**28679207**	**31794478**	**36372602**
Republic of Karakalpakstan	0	182559,7	517818,2	928396,7	1162184	1208387	2275503
Andijan	110675,3	322577	1150956	1831986	3546166	4451425	4704565
Bukhara	0	293220,3	1854637	2625525	3402050	3705815	3888807
Jizzakh	6876,7	247741,2	717857,2	1408609	1842654	1514991	2243768
Kashkadarya	0	241715,5	827923,2	1363465	3290398	3664362	4021814
Navoi	281746,9	558416,3	741861,5	1183976	1345606	1586983	1740355
Namangan	0	478486,8	872385,3	1145915	1396426	1257802	1480984
Samarkand	2731,8	279566,1	1679256	2373649	2728551	3396785	3576298
Surkhandarya	56679,1	378586,7	792529,5	1393158	1991613	2135417	2358283
Syrdarya	338220	369545,6	651779,9	753573,1	1078338	1398950	1043936
Tashkent	0	351180,2	419311	837329,2	1062771	964716,2	1028438
Fergana	91351,5	366722,1	1144293	2101989	2767180	3236778	3622882
Khorezm	0	301216,8	991660,7	1687802	3065272	3272066	4386969
Tashkent city	0	105898,8	246731,2	300632,1	0	0	0

Without sufficient investment in fixed capital, which is the embodiment of modernization and technology upgrading, industrial expansion will not be able to be maintained and cluster spread will become impossible. Investment dynamics are thus an important barometer of the long-run viability or otherwise of cluster-led growth.

The rising trend in investment value implies that cluster is the investment-attractive institutional setting which not only attracts but also can mobilize both public and private resources. From a regional development point of view, this underpins the action of clusters as instruments for reinforcing industry's technological base and guaranteeing long-term growth.

And lastly after measuring the social dimension and dimension of productivity,we cannot ignore the output of industry per capita. This measure is a reasonable substitute for industrial efficiency, and provides a sense of how quickly economic growth in industry spills over into other areas of the.

Table 4 illustrates the dynamics of industrial output per capita in the Kashkadarya region. The results demonstrate a **significant and stable increase** over time, indicating improvements in production efficiency and rising industrial contribution to regional living standards.

The growth of per capita industrial output implies that industrial expansion is not purely extensive but is also associated with **intensification and productivity gains**, which are essential for inclusive and sustainable regional development.

Table 4. Industrial output per capita [15]

Klassifikator_en	2010	2015	2020	2021	2022	2023	2024
Republic of Uzbekistan	**103**	**103,5**	**98,9**	**106,6**	**103,2**	**104,1**	**104,4**
Republic of Karakalpakstan	103,4	119,6	101,1	106	99,1	97,5	104,8
Andijan	104	85,4	104,3	96,8	120,2	105,1	105,1
Bukhara	104,6	107	100,1	98,7	104,3	104,6	104,7

Jizzakh	109,7	114,8	115,9	108,1	105,8	105,2	103,2
Kashkadarya	92,2	100,4	101	113,2	107,8	105,1	105,2
Navoi	96,5	99,4	107,3	105	104	105,1	106,3
Namangan	114,5	109,7	112,9	115,8	106,7	105,3	105,8
Samarkand	110,9	108,4	103,4	108,9	106,3	103,5	105
Surkhandarya	106,6	105,2	104,5	107,4	101,9	103,8	104,1
Syrdarya	104	103,7	99,1	116,3	106,9	105,1	105
Tashkent	103,6	104,3	104,8	114,2	103,8	103,4	104,4
Fergana	91,4	102,2	102,3	106,5	102,4	103,8	102,2
Khorezm	104,1	123,9	104,4	115,5	113	104,5	105
Tashkent city	110,6	111,1	96,4	108,8	103,1	102,6	105,6

On the whole, the statistics demonstrate a positive relationship of industrial cluster development and regional economic growth in Kashkadarya. The area experiences local industrial output growth, a sectoral restructuring with an increasing concentration on manufacturing, growing impact of clusters in production, increased investment and the improvement in productivity.

These patterns imply that industrial clusters are the organizational and economic means of enabling capital accumulation, structural change, and productivity improvement at regional scale. Following the logic of tasks set by the Strategy Uzbekistan–2030, cluster development seems to be an adequate and efficient policy tool in facilitating sustainable, diversified and resilient regional economic growth.

The findings empirically support the role of industrial clusters as effective instruments for regional economic growth in the Kashkadarya region. The trends identified—continuous growth of industrial production, structural changes with a tendency toward manufacturing, higher cluster-related share in production value, financial performance and investment activity as well as growth of industrial output per capita—are in good agreement with the basic hypoteses of the cluster theory and regional development concepts.

From a theoretic point of view, the influences suggest that agglomeration economies are produced through production connections, resource sharing and knowledge transfer. The growing relevance of cluster-based companies indicates that spatially concentrated and organizationally linked firms may be more productive and perform more efficiently than dispersed ones and therefore provides evidence for the conceptualisation of clusters as meso-economic organisational systems, bridging enterprise-level dynamics with regional growth.

These findings support the goals of the Uzbekistan–2030 Strategy to develop industry, value-added production and balanced regional development. The positive relationship between cluster building and regional GDP growth in Kashkadarya validates for policy-making the learning part of the theory that emphasizes that economic clusters are key to strong regional performance. Specifically, policy should concentrate on advancing cluster activities through integrated governance structures and institutional support (cm), targeted investments in infrastructure, and financial incentives to (further) the development of manufacturing-processing industries+(\fhging austria bvtc.

Overall, cluster-based development emerges as a viable policy pathway for enhancing regional competitiveness, fostering structural transformation, and promoting sustainable economic growth in line with Uzbekistan's long-term development agenda.

4. Conclusion

Investigating the impact of regional industrial clusters on economic growth in a transition economy: Evidence from Kashkadarya Region. Using a statistical analysis of regional industry indicators, the results indicate that cluster development is significantly and positively correlated with principal economic measures, including growth in

industrial output, changes in sectoral composition toward manufacturing, adjustment of investment activity, and growth in per capita industrial output. These results validate the argument that industrial clusters serve as efficient organizational and economic vehicles for promoting capital accumulation, labor productivity growth, and regional structural changeDOCXn in question.

More generally, the research thereby adds to industrial clusters literature by producing empirical insights from a less-explored Central Asian setting and highlighting the policy-relevancy of cluster led development for regional policy making. The results corroborate strategic direction of the Uzbekistan–2030 Strategy and reveal cluster-based industrial policy as an operational tool for pursuing sustainable, diversified, and resilient regional economy growth. This analysis could be taken further in future investigations by introducing firm-level information or comparative regional studies to better understand cluster dynamics within transition economies.

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