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Prospects for Developing Innovation Infrastructure for Small Businesses in Andijan Region

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Abstract: This article examines the organizational and economic factors influencing the innovative development of small businesses in the Andijan region using an econometric approach. The study analyzes key indicators for the period 2016–2025, including the volume of industrial products produced by small businesses, the volume of information and communication services, investments in small businesses, the number of newly established small business entities, and the share of small businesses in industry. To comprehensively assess the impact of organizational and economic factors, an integral index was developed using the geometric mean approach. The findings demonstrate a significant increase in the innovative development potential of small businesses in the Andijan region during 2016–2025. In particular, the integral factor index increased from 100.0 in 2016 to 546.4 in 2025. The growth in investment and information and communication services also emerged as important factors contributing to the innovative development of small businesses. The results provide a basis for developing practical recommendations aimed at increasing innovation activity, expanding investment opportunities, and improving digital infrastructure for small businesses in the region.

Keywords: Small business, innovative development, Andijan region, organizational and economic factors, econometric analysis, integral index, digital infrastructure, investment, information and communication services, business entities, innovation activity.

1. Introduction

The acceleration of technological renewal and diversification processes worldwide, as well as the expansion of digital and innovative platforms, have been identified as key factors and examined in the statistical studies presented in the previous chapters and sections.

At the same time, it can be noted that, as of 2025, the volume of services provided by small business entities in Andijan Region reached 39.288 trillion soums, accounting for 72.8% of the total volume of services. In addition, in the same year, small businesses accounted for 92.5% of retail trade turnover and 47.5% of exports.[1] These indicators demonstrate that small businesses have a significant economic impact on the region's economic potential, particularly in the areas of services, retail trade, and foreign economic activity. However, in the future, it is necessary to develop this economic impact and activity on the basis of innovative services, high-value-added products, and technological developments.

Accordingly, when assessing the prospects for establishing innovation infrastructure that supports the development of small entrepreneurship and businesses in the region, it is advisable to consider not only the number of infrastructure facilities but also such criteria as their interconnectedness within the innovation ecosystem, potential, coverage, participation of small businesses and entrepreneurs, capacity to support business entities, and ultimately, the resulting outcomes.[2]

The innovative development of small businesses is widely recognized in the scientific literature as an important factor in ensuring sustainable economic growth, increasing employment, improving competitiveness, and strengthening the technological potential of regions. In this context, particular attention is paid to the organizational, economic, investment, technological, and institutional factors that determine the innovation activity of small business entities.[3]

Semin, Buhtiyarova, and Nemykina proposed an indicative approach to assessing the organizational and economic potential of rural areas. Their study demonstrates the importance of combining individual indicators into an integrated index for a comprehensive assessment of organizational and economic development. This methodological approach is relevant to the present study because it provides a basis for combining several organizational and economic indicators into a single composite measure.[4]

The methodology for constructing composite indicators developed by the OECD and the European Commission Joint Research Centre (EC-JRC) is also important for assessing complex socio-economic phenomena. The authors emphasize that composite indicators make it possible to combine multidimensional information into a single index and facilitate the comparative assessment of economic processes. In the context of small business innovation development, this approach can be applied to integrate indicators characterizing investment activity, digital infrastructure, business creation, and industrial participation.[5]

Investment is another important factor influencing the innovative development of small businesses. Investments in fixed capital create opportunities for enterprises to modernize production facilities, introduce new technologies, acquire modern equipment, and increase production efficiency. Therefore, the growth of investment in small businesses can be considered one of the key prerequisites for strengthening their innovation potential.

Digital infrastructure also plays an increasingly important role in the development of small businesses. The expansion of information and communication services creates favorable conditions for the introduction of digital technologies, development of online business models, access to digital markets, and interaction with customers and suppliers. Consequently, the development of digital infrastructure can contribute to increasing the competitiveness and innovative activity of small business entities.[6]

The number of newly established small businesses is another important indicator of the entrepreneurial environment. An increase in the number of newly established entities reflects the development of entrepreneurial activity and the creation of favorable conditions for new businesses. At the same time, the sustainable development of newly established enterprises depends on their access to financial resources, digital technologies, infrastructure, and innovation support mechanisms.

The analysis of the existing literature shows that previous studies have mainly focused on individual aspects of small business development, including investment activity, digitalization, entrepreneurship, and organizational potential. However, there is a need for an integrated assessment of these factors in relation to the innovative development of small businesses at the regional level. In particular, the innovative development of small businesses in the Andijan region requires a comprehensive assessment based on a system of interrelated indicators.[7]

Therefore, this study attempts to fill this gap by developing an integral index of organizational and economic factors and examining its dynamics in the Andijan region during 2016–2025. The use of an integral index makes it possible to provide a comprehensive assessment of the changes in the organizational and economic environment supporting the innovative development of small businesses.[8]

2. Research Methodology

The study employed statistical analysis, comparative analysis, and econometric methods to examine the factors influencing the innovative development of small businesses in Andijan Region. Statistical data for 2016–2025 were collected from official sources of the National Statistics Committee of the Republic of Uzbekistan. An integral index of organizational and economic factors was constructed using the geometric mean method to combine the selected indicators into a single composite measure. The dynamics of the indicators were evaluated through comparative analysis, while growth rates were used to identify changes and trends over the study period. The obtained results were used to assess the role of investment, digital infrastructure, newly established businesses, and industrial participation in the innovative development of small businesses.[9]

3. Result and Discussion

According to our research, the formation and development of innovation infrastructure serving small businesses in Andijan Region should not be limited to a single or specialized facility. Its prospective model should be based on an approach aimed at establishing an innovation system at the regional level. In particular, it should facilitate a sequential process covering all stages, from the generation of innovative ideas to their implementation in production and commercialization, including both financial and technological stages. This sequence determines the prospective directions for the development of innovation infrastructure identified in the study.[10]

On the other hand, when forming and developing innovation infrastructure and assessing the efficiency of the resources of such facilities, it is advisable to focus primarily on the technological and economic changes occurring among small business entities that have used the services provided by these facilities.

According to the study, an integral index is used to assess the level of development of innovation infrastructure in Andijan Region:

$$I_{ii} = \sum_{j=1}^n \omega_j * z_{ij},$$

Where:

z_{ij} - i - normalized value of the j -th indicator for the respective region;

ω_j - weight coefficient of the indicators;

n - number of indicators included in the assessment.

Before calculating this index, it is important to examine the innovation development indicators that are relevant to the research and to consider international statistical data (Table 1).[11]

Table 1. International Indicators of Uzbekistan's Innovation Development.

Indicator	Significance for the Research	Statistical Result
Position in the Global Innovation Index	Demonstrates the improvement of Uzbekistan's international innovation position	79th place among 139 countries in 2025
Position among lower-middle-income economies	Indicates that the country has relatively high innovation potential within its income group	7th place among 37 countries
Position among Central and Southern Asian countries	Represents a positive result in terms of regional competitiveness	3rd place among 10 countries
Innovation resource "inputs" ranking	Indicates the availability of opportunities in education, infrastructure, finance, and institutions	69th place
Innovation outputs ranking	Shows that existing resources are not being sufficiently transformed into finished innovative products and technologies	92nd place
Innovation infrastructure component	Indicates that infrastructure conditions are relatively stronger than the country's overall ranking	69th place
Human capital and research	Demonstrates the need to improve scientific capacity and the quality of research	81st place
Business sophistication	Indicates the need to strengthen cooperation among enterprises, universities, and research institutions	77th place

As shown in Table 1, Uzbekistan's position in the Global Innovation Index improved from 93rd place in 2020 to 79th place in 2025. However, there is a 23-position gap between innovation inputs and outputs, indicating that available educational and infrastructural resources are not yet being fully transformed into commercialized innovative products and technologies.

Based on the above data, the international innovation indicators of Uzbekistan have been examined. The subsequent stage of the research focuses specifically on Andijan Region.

Accordingly, the study uses official statistical indicators for Andijan Region covering 2016–2025, with particular emphasis on proxy factors such as digital infrastructure, access to capital and leasing, accelerators, the startup ecosystem and business incubators, outsourcing, and cluster-based firms (Table 2).[12]

Table 2. Official Proxy Indicators Representing Factors in Econometric Analysis.

No.	Organizational and Economic Factor	Indicator Symbol and Meaning	Description of the Indicator
1	Dependent variable	– Volume of industrial products produced by small businesses	Represents the outcome of commercializing and implementing technical, technological, and innovative solutions.
2	Accelerators, startup environment and business incubators	– Number of newly established small business entities	Reflects the formation of interest in establishing new small business entities.
3	Outsourcing organizations and cluster firms	– Share of small businesses in industry	Indirectly reflects the participation of small businesses in industrial sectors.
4	Digital infrastructure	– Volume of information and communication services	Reflects the communication environment, including digital services and marketplace platforms.
5	Use of capital and leasing	– Investments in the fixed capital of small businesses	Represents the replacement and modernization of equipment, new technologies, and other

complementary resources for small business entities.

The statistical data for the indicators presented in Table 2 for 2016–2025 were compiled for econometric analysis based on the data presented in Table 3.

In the study, an integral index of organizational and economic factors was used for the econometric model. This index was discussed in the studies of A. Semin, T. Buhtiyarova, and J. Nemykina [13].

In addition, the formation of this index was based on the method of using composite indicators, developed on the basis of the international innovation index methodology of the European Commission Joint Research Centre (EC-JRC) and the OECD [14].

Thus, in order to represent the state of the integral index of organizational and economic factors—namely, the number of newly established small business entities, the digital infrastructure factor, and investments contributing to the growth of the fixed capital of small businesses—as a single indicator, the geometric mean approach was applied:

$$I_{idx} = 100 \sqrt[3]{\left(\frac{R_{inf}}{R_{2016}}\right) * \left(\frac{LK_{kb}}{LK_{2016}}\right) * \left(\frac{KBS_t}{KBS_{2016}}\right)}$$

Where:

I_{idx} – integral index of organizational and economic factors;

R_{inf} – volume of information and communication services;

LK_{kb} – investments in small businesses;

KBS_t – number of newly established small business entities.

2016 was taken as the base year, and the value of 100 was assigned to the base year.

Table 3. Dynamics of Small Business Innovation Development Indicators in Andijan Region, 2016–2025.

Year	Volume of Industrial Products Produced by Small Businesses, bln UZS	Volume of Information and Communication Services, bln UZS	Investments in Small Businesses, bln UZS	Number of Newly Established Small Business Entities, units	Share of Small Businesses in Industry, %	Integral Factor Index, 2016 = 100
2016	4,011.2	366.0	1,333.0	2,662	50.4	100.0
2017	4,572.2	475.6	1,909.3	2,476	34.5	120.1
2018	5,820.9	541.6	2,717.6	3,131	21.2	152.5
2019	5,878.3	544.7	4,594.4	6,632	17.7	233.8
2020	7,776.8	628.4	5,750.8	7,684	21.4	277.6
2021	9,772.8	717.7	6,269.6	7,111	27.2	291.0
2022	12,180.9	938.1	8,466.9	5,406	22.4	321.0
2023	16,361.8	1,122.7	12,901.1	4,185	22.2	360.0
2024	27,009.9	1,410.2	21,144.9	4,122	29.8	455.7
2025	41,039.9	1,797.6	25,417.7	4,638	38.0	546.4

According to Table 3, in 2025, the share of small businesses in the industrial sector of the region amounted to 38%, while the volume of industrial products produced by small businesses reached 41,039.9 billion UZS. At the same time, the volume of information and communication services increased from 366 billion UZS in 2016 to 1,797.6 billion UZS in 2025. Investments in the capital of small business entities increased from 1,333 billion UZS

in 2016 to 25,417.7 billion UZS in 2025, while the number of newly established small business entities increased from 2,662 in 2016 to 4,638 in 2025.

In addition, based on Formula (5) presented above, the integral index () was calculated. In particular, the index amounted to 100 in 2016, while by 2025 it had increased to 546.4.

At the same time, the average annual growth rate of the statistical indicators presented in Table 3 was analyzed (Table 4). According to the 10-year results presented in this table, the share of small businesses in industry showed a negative trend overall. However, starting from 2020, an upward trend was observed, with the indicator increasing from 21.4% to 38%. This situation indicates that the participation of small businesses in industrial sectors has been recovering in recent years.[15]

4. Conclusion

The study shows that the innovative development of small businesses in Andijan Region has demonstrated a significant positive trend during 2016–2025. The analysis indicates that the volume of industrial products produced by small businesses, information and communication services, and investments in small businesses increased considerably over the study period. The integral factor index increased from 100.0 in 2016 to 546.4 in 2025, indicating a substantial improvement in the organizational and economic conditions supporting small business development. At the same time, the share of small businesses in industry, despite fluctuations during the analyzed period, increased from 21.4% in 2020 to 38.0% in 2025, demonstrating a gradual recovery of their role in industrial production. The findings confirm that investment activity, digital infrastructure, and the expansion of newly established business entities are important factors in strengthening the innovation potential of small businesses. Therefore, further development of digital infrastructure, expansion of investment opportunities, support for startups and business incubators, and improvement of mechanisms for commercializing innovative solutions are recommended to ensure sustainable innovative development of small businesses in the region.

REFERENCES

- [1] National Statistics Committee of the Republic of Uzbekistan, "Statistical data on small business development, industrial production, information and communication services, investment activity, and newly established business entities," 2026. [Online]. Available: <https://siat.stat.uz/>
- [2] A. N. Semin, T. I. Buhtiyarova, and J. S. Nemykina, "Organizational and economic potential of rural areas: Indicative approach to management," *Agrarian Bulletin*, no. 9, pp. 91–98, 2019, doi: 10.32417/article_5daf430fb578d3.67431865.
- [3] OECD/European Union/EC-JRC, *Handbook on Constructing Composite Indicators: Methodology and User Guide*. Paris, France: OECD Publishing, 2008, doi: 10.1787/9789264043466-en.
- [4] OECD, *Financing SMEs and Entrepreneurs 2023: An OECD Scoreboard*. Paris, France: OECD Publishing, 2023, doi: 10.1787/a3671a50-en.
- [5] OECD, *The Digital Transformation of SMEs*. Paris, France: OECD Publishing, 2021, doi: 10.1787/20780990.
- [6] World Bank, "Small and Medium Enterprises (SMEs) Finance," World Bank Group, Washington, DC, USA, 2022. [Online]. Available: <https://www.worldbank.org/en/topic/sme/finance>
- [7] European Commission, *An SME Strategy for a Sustainable and Digital Europe*. Brussels, Belgium: European Commission, 2020.
- [8] D. B. Audretsch and M. Belitski, "Knowledge complexity and firm-level innovation," *Research Policy*, vol. 50, no. 3, 2021.
- [9] World Intellectual Property Organization, *Global Innovation Index 2024: Unlocking the Promise of Social Entrepreneurship*. Geneva, Switzerland: WIPO, 2024. [Online]. Available: <https://www.wipo.int/web/global-innovation-index>

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- [10] OECD/Eurostat, *Oslo Manual 2018: Guidelines for Collecting, Reporting and Using Data on Innovation*, 4th ed. Paris, France: OECD Publishing, 2018, doi: 10.1787/9789264304604-en.
 - [11] OECD, *SME and Entrepreneurship Outlook 2023*. Paris, France: OECD Publishing, 2023.
 - [12] World Bank, *Enterprise Surveys: What Businesses Experience*. Washington, DC, USA: World Bank Group, 2024.
 - [13] International Finance Corporation, *MSME Finance Gap: Assessment of the Shortfalls and Opportunities in Financing Micro, Small, and Medium Enterprises in Emerging Markets*. Washington, DC, USA: IFC, 2023.
 - [14] United Nations Conference on Trade and Development, *Digital Economy Report 2024: Shaping an Environmentally Sustainable and Inclusive Digital Future*. Geneva, Switzerland: United Nations, 2024.
 - [15] Asian Development Bank, *Asia Small and Medium-Sized Enterprise Monitor 2024: Volume I—Country and Regional Reviews*. Manila, Philippines: Asian Development Bank, 2024.