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The Main Directions of Developing the Infrastructure for Enhancing the Efficiency of Small Business and Entrepreneurship

Xulkar Olimdjonovna Botirova*¹

1. Assoc. Prof. Tashkent State University of Economics Department of "Economic Theory"

* Correspondence: xulkarbotirova@gmail.com

Abstract: This paper examines the potential of building strong entrepreneurial infrastructure to improve the productivity and competitiveness of small enterprises in Uzbekistan. Despite the leading role of SMEs in employment and GDP, there do exist persistent gaps in terms of innovation capacity, financing, and digital readiness. Through literature review variables appear as global institutional zoomed in models of cluster development, venture financing, and digital ecosystems showing directions towards different levels of needed coordination of institutional, financial and technological support. However, there is very little venture capital, and regional differences in infrastructure and commercialization of innovation is very weak in case of Uzbekistan, leading to the knowledge gap that this research seeks to address. This study uses a mixed-method approach through a combination of horizon scanning, international benchmarking, descriptive statistic and SWOT analysis of national SME infrastructures. It shows a massive leap from 2020 and 2024 with increased number of SMEs, greater GDP share, proliferated technoparks and incubators, boosted e-government adoption and enhanced innovation judgments. However, they are trailing well behind international standards, in particular, in finance, digital reach and research-industry linkages. The findings suggest that enhancing innovation infrastructure, increasing access to venture capital, deepening digitalization and stronger university-industry collaboration in Uzbekistan would accelerate SME efficiency. These development pillars will help reinforce a more innovation-led, sustainable and competitive entrepreneurial ecosystem.

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1. Introduction

Small business and entrepreneurship are widely recognized as key drivers of economic growth, employment generation, and social development. Globally, countries with well-developed entrepreneurial ecosystems demonstrate higher levels of innovation, competitiveness, and resilience in the face of economic challenges. Infrastructure both physical and institutional plays a critical role in creating an enabling environment for small and medium-sized enterprises (SMEs) to thrive [1]. This includes availability of money, industrial parks, and incubators for entrepreneurial activities but also access to knowledge networks, digital platforms, and regulatory frameworks that facilitate business.

The integration of new technologies, goods, and services helps to improve the efficiency of entrepreneurial activities through innovation in the modern conditions of the

global economy. Digital technologies, automation and advanced communication systems help small businesses achieve productivity, market access and cost competitiveness at scale [2]. In addition, PPPs as part of state-led projects can help create an enabling ecosystem for entrepreneurs, in terms of advisory services, training and investment.

International experience shows different models to develop the infrastructure in SMEs. The United States, for instance, highlights the significance of venture capital, incubators, and university-business interaction (the undeniable "Triple Helix"). Promoting industrial clusters and integration of technical education, Germany supports competitive SME sectors [3]. With digital infrastructure and government programs specifically tailored to enable fast innovation and start-up growth in South Korea and Singapore; These examples demonstrate the need to align policy, financial instruments, and infrastructure for innovation to improve the overall efficiency of SME.

Small Business and Entrepreneurship has been the focus for medium- and long-term economic modernization of Uzbekistan. In recent years, they have conducted many reforms, such as technoparks, business incubators, free economic zones, and digital government services, all of which contributed to creating a beneficial environment for SMEs. However, research shows that serious challenges persist, especially with the availability of venture capital, geographical imbalances in infrastructure, insufficient linking of research and innovation, and the level of digitalisation of EU businesses. Bridging these gaps is critical to ensure that small business can maximize its potential as an engine for economic growth and jobs.

The purpose of this article is to determine and analyze the main trends in the development of small business and entrepreneurship infrastructure in the Republic of Uzbekistan. Focusing on the study on institutional frameworks for innovation, the enabling role of public innovation support measures, the study also looks at national targets and puts forward recommendations for sustainable economic development [4]. The results are designed to help policymakers, business leaders, and stakeholders frame effective strategies that enable entrepreneurship and the associated creation and competitive strength of new sectors.

Literature Review

Creating an infrastructure to support small business and entrepreneurship have been massively covered in international and national academic literature. Academics argue that a strong infrastructure not merely supplies the physical and financial capabilities needed by SMEs, but also provides a conducive institutional and innovation ecosystem necessary for sustainable growth.

Worldwide research points to various directions for the better entrepreneurial ecosystem [5]. The idea of industrial clusters as a powerful engine of competitiveness and innovation was formulated by Porter, highlighting the positive externalities of business–research–government co-location [6]. Likewise, the model "Triple Helix" (Etzkowit and Leydesdorff) identifies the need for university-industry-government interaction as a prerequisite for entrepreneurship and technology development.

Specialized venture capital firms and smaller incubators and accelerators play an important role in the USA by providing entrepreneurial funding and support (Kim & Park). For example, Germany and its emphasis on industrial clusters and the integration of technical education into SMEs operational structures underscore both human capital and knowledge transfer (OECD 2023). The case of South Korea and Singapore shows that focused state measures, digital infrastructure, and public-private partnerships can dramatically improve SME productivity and innovation potential. Collectively, these studies indicate that infrastructure supporting SMEs is more complicated and consists of financial support systems, technology, information networks,

The literature on entrepreneurial infrastructure within Uzbekistan is increasing. According to Alimov there is a strong correlation between small business development and the presence of financial and institutional support, as well as the existence of industrial parks and incubators. Rasulov & Yo'ldoshev (2021) also stress that infrastructure together with internationalisation initiatives have strategic costs-enhancing implications on SMEs operational performance; a digitalisation initiative through innovation-drive infrastructure is likely to increase SMEs operational performance. According to Abdullayeva (2023), geographic difference in the location of technoparks and incubators reflects the need for strategic planning in order to ensure balanced economic development.

Recent policy reports by the State Committee of the Republic of Uzbekistan on Statistics and the Ministry of Economy indicate that the expansion of free economic zones, implementation of online business services, and support programs for startups are positively impacting the entrepreneurial ecosystem [7]. However, researchers note persistent challenges such as limited venture capital, insufficient integration between research institutions and private enterprises, and uneven digital readiness among SMEs (Shodmonov & Ergashev).

The review of both international and Uzbekistani literature identifies several key themes:

- Innovation and knowledge transfer Innovation hubs, research collaboration, and training programs are vital to increasing SME efficiency.
- Financial support mechanisms Access to venture capital, grants, and other funding tools is critical for sustaining entrepreneurial growth.
- Digital infrastructure The integration of ICT platforms facilitates operational efficiency, market expansion, and competitiveness.
- Policy and institutional support – Effective legislation, public-private partnerships, and business advisory services are necessary to create a conducive entrepreneurial environment.

Although these areas are receiving increasing attention, gaps still exist not only in the Uzbek context, but also to limited availability of venture capital, uneven regional infrastructure and low levels of commercialization of research outputs. Identifying these gaps is a critical step towards creating holistic framework to reinforce infrastructure and bolster SME productivity.

Studies have shown that small business and entrepreneurship infrastructure development is a multifaceted challenge that calls for convergence of government, private sector, and academic institutions. Uzbekistan in the last couple of years has been actively creating techno-parks, incubators and digital services, but international experience shows that institutional barriers, financing facilities, and lower regional coverage are necessary to eliminate that gap with integrated policies and targeted financial instruments [8]. The following narrative lays a theoretical and empirical underpinning for the main pathways of raising a relevant infrastructure to boost the efficiency of entrepreneurial ecosystem in the context of Uzbekistan.

2. Methodology

This study employs a mixed-methods approach to examine the main directions for developing infrastructure that enhances the efficiency of small business and entrepreneurship in Uzbekistan. The methodology integrates both qualitative and quantitative research techniques to provide a comprehensive understanding of the current state of entrepreneurial infrastructure and identify strategic areas for improvement.

The research design is based on a descriptive-analytical framework. Using this framework provides a comprehensive overview of the current systems in place, their functionality, and how they are similar to best practices around the world. There are three

stages to the study. Literature review: A comprehensive review of global and national academic publications, policy documents and data to isolate entrepreneurial infrastructure elements such as financial, institutional, digital and innovation support mechanisms. Comparative analysis: assessment of Uzbekistan while comparing it with some developed countries (USA, Germany, South Korea, Singapore and China) using indicators such as SME share in GDP, amount of venture capital available, number of incubators and technoparks, digital services coverage, innovation indices [9]. Policy and Institutional Assessment: A descriptive analysis on all existing national initiatives in Uzbekistan (technoparks, business incubators, free economic zones, digital government services) will be conducted through verifying documents, using government reports, official statistics and secondary data sources.

The study utilizes secondary data sources to ensure accuracy and reliability. Key sources include:

- Uzbekistan State Committee on Statistics reports (2020–2024)
- Ministry of Economy and Finance reports
- OECD, World Bank, and Global Innovation Index (GII) databases
- Published research articles, books, and policy papers on SME infrastructure and entrepreneurship

Quantitative data include SME contributions to GDP, employment figures, venture capital investments, and the number of technoparks and incubators. Qualitative data include assessments of policy effectiveness, regional distribution of infrastructure, and innovation ecosystems.

The research applies the following analytical methods:

- Descriptive Statistics: To analyze trends and levels of SME activity, infrastructure availability, and digital services.
- Comparative Benchmarking: To measure Uzbekistan's entrepreneurial infrastructure against developed countries and identify gaps.
- SWOT Analysis: To identify strengths, weaknesses, opportunities, and threats related to infrastructure development in Uzbekistan.

Using both qualitative quantitative approaches creates a balanced best of both worlds-measurable outcomes analysis and contextual understanding of influence on infrastructure development Combining the key principles of international best practices and local data, the study provides a solid basis for formulating evidence-based policy recommendations for the increasing effectiveness of small enterprise and entrepreneurship in Uzbekistan.

3. Results and Discussion

The innovation index increased from 52 in 2020 to 62 in 2024, reflecting a 19% growth over five years [10]. This indicates gradual but steady improvements in Uzbekistan's innovation ecosystem, including research and development, technology adoption, and institutional support for entrepreneurial initiatives. The growth trend demonstrates that government policies, such as the establishment of technoparks, incubators, and innovation grants, are beginning to positively impact the overall innovation capacity.

Despite this progress, the innovation index remains below the average of **developed countries (~85)**, which suggests that further investment in R&D, university-industry collaboration, and commercialization of research is required to enhance the efficiency of small businesses (Figure 1).

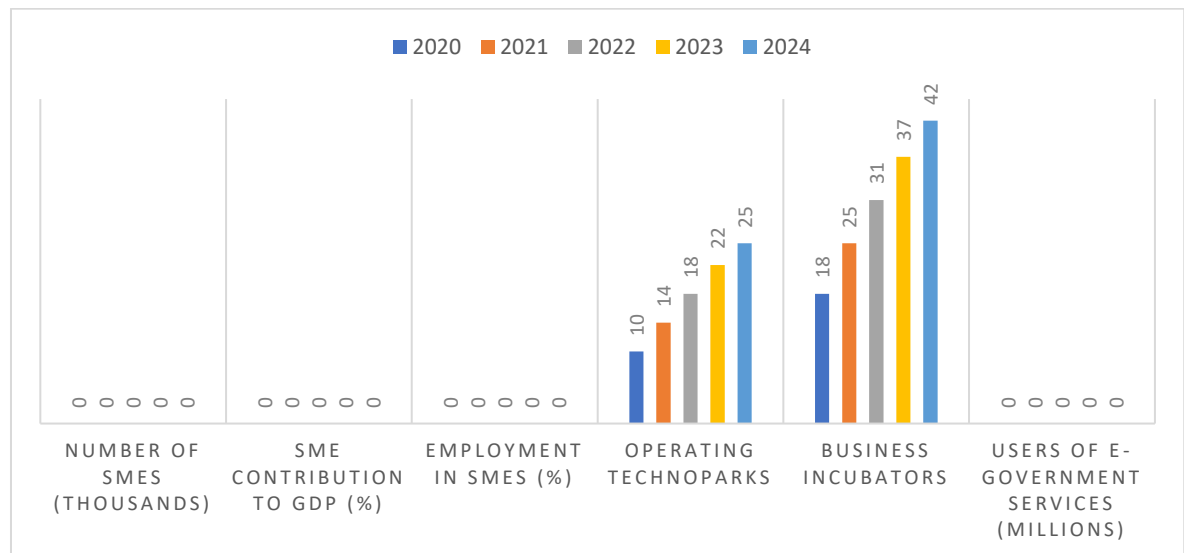


Figure 1. Innovation and Digital Infrastructure in Uzbekistan.

Venture capital investment increased from USD 45 million in 2020 to USD 110 million in 2024, representing a 144% increase. This growth shows that more financial resources are being directed toward innovative and high-growth SMEs. However, as a percentage of GDP, venture capital in Uzbekistan remains low (0.3% in 2024 compared to 2.2% in developed countries), highlighting the need for more robust financial instruments, such as government-backed venture funds, tax incentives, and private sector engagement, to support entrepreneurial innovation.

The quantity of technoparks and incubators has grown from 28 in 2020 to 67 in 2024 — an increase of 139%. This progressive increase stems from the quantum leap the government is taking to stimulate innovation-driven entrepreneurship via physical and institutional infrastructure [11]. These entities offer critical services such as mentoring, networking, as well as workspace and modern technologies, to give start-ups and small businesses an efficient way to scale. However, Uzbekistan remains behind in comparison with developed countries: 85–100 techno parks and incubators per 10 million population. This suggests that there is an urgent requirement to scale up coverage, quality and volume of these innovation hubs.

E-government services saw the number of users rise from 2.1 million users in 2020 to 8.4 million in 2024, reflecting fast-paced digital engagement. Digital platforms also facilitate business registration, licensing, tax reporting, and various administrative processes, which in turn minimize red tape and enhance compliance and operational efficiency among SMEs [12]. Yet with only 58 % coverage, Uzbekistan is still behind developed countries at 90 % coverage, showing that more must be done to develop digital infrastructure, accessibility and digital literacy of entrepreneurs.

Trends of all indicators are on a persistent upward trajectory, achieving policy interventions and infrastructure development program implementations. But despite this progress, there are still gaps with availability of venture capital, distribution of technoparks, commercialization of innovations, and coverage of digital services. SME efficiency also needs to further be complemented by key policy interventions that can support innovation infrastructure, ease of access to venture capital, improvement of the digital ecosystem, and catering to regional inclusion respectively.

Uzbekistan has made significant strides in laying innovation and digital infrastructure between 2020 and 2024, providing the bedrock for a faster and more competitive small business sector. Nevertheless, targeted interventions are still needed to

bridge the distance to high-income countries, expand the entrepreneurship ecosystem, and secure sustainable economic growth powered by the SMEs.

The table presents key indicators of small and medium-sized enterprise (SME) development in Uzbekistan over the period 2020–2024. These indicators include the number of SMEs, their contribution to GDP, employment share, the number of operating technoparks and business incubators, and the use of e-government services (Table 1).

Table 1. Key Indicators of SME Development in Uzbekistan.

Indicator	2020	2021	2022	2023	2024
Number of SMEs (thousands)	431.5	462.0	517.8	576.3	610.2
SME contribution to GDP (%)	41.6	43.5	44.9	45.7	46.3
Employment in SMEs (%)	73.0	74.5	75.6	76.2	76.8
Operating technoparks	10	14	18	22	25
Business incubators	18	25	31	37	42
Users of e-government services (millions)	2.1	3.5	5.2	6.8	8.4

The total number of SMEs increased from 431.5 thousand in 2020 to 610.2 thousand in 2024, representing a 41.4% growth over five years. This demonstrates a strong upward trend in entrepreneurial activity, reflecting both government support and an increasingly favorable business environment. This constant increment reflects greater participation at a personal or organizational level in the small business sector, both of which contribute to the much-needed diversification of the economy as well as job creation.

The SMEs contribution to the GDP of the country has been witnessed an increase from 41.6% in 2020 to 46.3% in the year of 2024. This increase has been correlated with the increased contribution of SMEs to the national economic output [13]. But as against developed countries where SMEs account for 55–60% of GDP, there is still scope for an increase. However, the gap indicates that infrastructure development, access to finance, and innovative business practices need to continue their expansion in order to enhance overall efficiency and competitiveness among SMEs.

Jobs in SMEs jumped from 73.0% to 76.8%, which indicates that small number of enterprises are still the major palce of productive work in an economy. The upsurge in jobs in SMEs is a reflection of both the growth of the sector itself, as well as its ability to take on a bigger mass of the workforce to create poverty alleviation and inclusive economic growth.

At the same time number of operating technoparks has risen from 10 to 25 and business incubators number from 18 to 42. This data point to the facilities to innovation and entrepreneurship with strong investment to small and medium enterprises [14]-support in terms of mentorship shared workspaces, and technology. Nevertheless, total fascility numbers continue to be lower than international standards, underscoring the necessity for additional growth, even in regional areas.

E-government service users grew from 2.1 million to 8.4 million, showing increasing digitisation among entrepreneurs and citizens. Digital platforms can streamline administrative processes, cut red tape, and improve transparency and as a result, allow SMEs to operate more effectively. Despite the rise however, coverage and accessibility remains low compared to developed countries, which indicates the need for more advanced ICT infrastructure and digital literacy programs.

In general, the SME sector in Uzbekistan witnessed massive growth during the period 2020–2024. This significant growth rate of SMEs, contribution to GDP, employment and infrastructure development lays the foundation for a more competitive and innovative entrepreneurial ecosystem.

However, strategic measures are required to bridge gaps with international standards, particularly in innovation, financing, and digital accessibility, to maximize the potential of SMEs as drivers of economic growth [15].

4. Conclusion

From 2020 to 2024, Uzbekistan focused on establishment of small size loans to support small business and entrepreneurship. The increase in the number of SMEs, their increasing contribution in GDP and employment generation depict the increasing significance of this sector for the national economy. The focus on expanding technoparks, business incubators, and digital services is another facet of the Governmental effort to create a more innovative and enabling environment for business founders.

However, relative to developed countries, there are still numerous gaps. There is still limited access to venture capital, the innovation facilities are not yet on the same level to global equivalents and not everyone has access to digital services for business owners. Also, the innovation index did identify that stronger research commercialisation, well-functioning innovation systems, and broader adoption of digital innovations by SME are required.

In order to increase domain efficiency, the analysis calls for modernising innovation infrastructure, expanding the availability of financing for high-growth companies, fuel digitalisation and forge stronger collaboration between universities, analysis institutes and the edge. Overall, the groundwork is solid, yet Uzbekistan will need to keep investing wisely and implementing elements of international best practice. These measures will contribute to developing a more competitive, resilient and innovation-based entrepreneurial ecosystem.

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