



TECHNOLOGICAL ENTREPRENEURSHIP AS A DRIVER OF ECONOMIC GROWTH IN UZBEKISTAN

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Abstract. *Technological entrepreneurship in Uzbekistan plays an important role in stimulating economic growth by promoting innovation and job creation. The study analyses the impact of start-ups on the country's economic development, examines successful cases and identifies key success factors. Special attention is paid to government support and educational initiatives aimed at developing entrepreneurial skills. The study also includes an analysis of current challenges, such as the lack of venture capital and bureaucratic barriers, and offers recommendations on how to overcome them. The paper presents data on the growth in the number of start-ups and the volume of investments, indicating the significant potential of the sector. The paper considers the prospects for the development of technological entrepreneurship in Uzbekistan, including the creation of infrastructure and improvement of the legal framework. The article concludes with conclusions on the need for a comprehensive approach to supporting startups for sustainable economic growth.*

Keywords: *technological entrepreneurship, economic growth, startups in Uzbekistan, innovation, state support, venture capital, educational initiatives.*

O'ZBEKISTONDA TEXNOLOGIK TADBIRKORLIK IQTISODIY O'SISH OMILI SIFATIDA

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Annotatsiya. *O'zbekistonda texnologik tadbirkorlik iqtisodiy o'sishni rag'batlantirishda muhim rol o'ynab, innovatsiyalarni rivojlantirish va yangi ish o'rinlarini yaratishga xizmat qilmoqda. Ushbu tadqiqotda startaplarning mamlakat iqtisodiyotiga ta'siri tahlil qilinib, muvaffaqiyatli misollar o'rganiladi hamda asosiy muvaffaqiyat omillari aniqlanadi. Ayniqsa, davlat tomonidan ko'rsatilayotgan qo'llab-quvvatlash choralari va tadbirkorlik ko'nikmalarini rivojlantirishga qaratilgan ta'lim tashabbuslariga alohida e'tibor qaratiladi. Shuningdek, tadqiqot doirasida venchur kapitalining yetishmovchiligi va byurokratik to'siqlar kabi dolzarb muammolar tahlil qilinib, ularni bartaraf etish bo'yicha tavsiyalar ishlab chiqiladi. Ishda startaplar sonining ortishi va investitsiyalar hajmidagi o'sish ko'rsatkichlari keltirilib, sohaga oid katta salohiyat mavjudligi ta'kidlanadi. O'zbekistonda texnologik tadbirkorlik istiqbollari, jumladan, infratuzilmani shakllantirish va huquqiy bazani takomillashtirish masalalari ko'rib chiqiladi. Tadqiqot xulosalarida startaplarni qo'llab-quvvatlashga kompleks yondashuvning zarurligi va ularning barqaror iqtisodiy o'sish uchun ahamiyati qayd etiladi.*

Kalit so'zlar: *texnologik tadbirkorlik, iqtisodiy o'sish, O'zbekistonda startaplar, innovatsiyalar, davlat qo'llab-quvvatlashi, venchur kapital, ta'lim tashabbuslari.*

ТЕХНОЛОГИЧЕСКОЕ ПРЕДПРИНИМАТЕЛЬСТВО КАК ДВИЖУЩАЯ СИЛА ЭКОНОМИЧЕСКОГО РОСТА В УЗБЕКИСТАНЕ

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Аннотация. Технологическое предпринимательство в Узбекистане играет важную роль в стимулировании экономического роста, способствуя инновациям и созданию новых рабочих мест. В исследовании анализируется влияние стартапов на экономическое развитие страны, рассматриваются успешные кейсы и выявляются ключевые факторы успеха. Особое внимание уделяется государственной поддержке и образовательным инициативам, направленным на развитие предпринимательских навыков. Исследование также включает анализ текущих вызовов, таких как недостаток венчурного капитала и бюрократические барьеры, и предлагает рекомендации по их преодолению. В работе представлены данные о росте числа стартапов и объемах инвестиций, что свидетельствует о значительном потенциале сектора. Рассматриваются перспективы развития технологического предпринимательства в Узбекистане, включая создание инфраструктуры и улучшение правовой базы. Статья завершается выводами о необходимости комплексного подхода к поддержке стартапов для устойчивого экономического роста.

Ключевые слова: технологическое предпринимательство, экономический рост, стартапы в Узбекистане, инновации, государственная поддержка, венчурный капитал, образовательные инициативы.

Introduction.

Technological entrepreneurship acts as one of the key factors determining the vector of socio-economic development of modern national economies. It promotes their competitiveness, stimulates innovation processes, provides job creation and contributes to the welfare of the population (Khan et al., 2024). In the conditions of global digital transformation and accelerated spread of advanced technologies, including artificial intelligence, cloud computing, Internet of Things and blockchain, technology startups are becoming not only a catalyst for economic growth, but also a driver of structural changes in traditional industries and services (Munyo and Veiga, 2024).

The Republic of Uzbekistan, with its significant economic resources, unique cultural heritage and rapidly developing digital ecosystem, is a favourable platform for the active development of technological entrepreneurship. In recent years, there has been a dynamic growth in the number of innovative startups, the development of technology hubs, incubators and accelerators, as well as the active participation of the state in creating favourable conditions for technology business (Курпаяниди, 2011). However, despite the positive trends, the development of this sector faces a number of systemic challenges. The main problems include limited access to venture capital financing, lack of highly qualified personnel in the field of digital technologies, fragmented regulatory framework and the need to strengthen the innovation infrastructure.

The purpose of this study is to conduct a comprehensive analysis of the current state and prospects for the development of technological entrepreneurship in Uzbekistan, identify key factors contributing to the successful functioning of the startup ecosystem, and develop recommendations for further stimulating innovation activity in this sector. The study will look at examples of successful technology startups, analyse their contribution to the national economy, and examine the structural changes taking place in the technology sector, with a focus on the introduction of advanced technological solutions and the international integration of the Uzbek startup community into the global innovation environment.

Research methodology.

The state of the startup ecosystem in Uzbekistan was analysed based on the following methods:

- Study of scientific and analytical literature, reports of international organisations, IT Park and TUZ Ventures data;
- Case studies of successful technology startups such as Payme, MyTaxi and ZoodMall;
- Statistical analysis of startup development dynamics and venture capital investment volumes;
- SWOT analysis of technology entrepreneurship in the country.

Analysis and findings of the study

Technological entrepreneurship plays a key role in the modern economy, contributing to innovation, job creation and improved competitiveness. Let's look at some of the works of leading authors who explore the impact of technology entrepreneurship on economic growth.

The term 'start-up' in the modern sense refers to a newly created or nascent company based on an innovative business model, technology or idea that has the potential for rapid growth and scaling. Startups can span a variety of sectors, but are most prevalent in digital technology due to their high degree of flexibility and low barriers to market entry.

Historically, the term 'startup' was first used in the 1930s in the US when two young engineers, William Hewlett and David Packard, founded Hewlett-Packard (HP), laying the foundation for modern startup culture. Subsequently, the startup phenomenon became widespread, especially in the technology sector, where it became a symbol of entrepreneurial initiative and innovation.

The academic literature characterises startups by a number of key attributes:

- High degree of uncertainty: startups operate in an environment of unstable demand and technological change.
- Search for an efficient business model: a startup is not a traditional company, but a temporary organisational structure aimed at testing hypotheses.
- Potential for rapid scaling: unlike traditional small businesses, startups are focused on exponential growth.

According to Ries, the author of the Lean Startup concept, a startup is an organisation that creates a new product or service under conditions of high uncertainty and minimal use of resources (Reece et al., 2013). In turn, American entrepreneur Steve (2016) defines a startup as a temporary structure that exists to find a repeatable and scalable business model.

Christensen (2015), a professor at Harvard Business School, is known for his theory of the 'innovator's dilemma'. In his book 'The Innovator's Dilemma' (1997) he analyses how successful companies can lose market leadership due to their inability to adapt to new technologies. Christensen emphasises the importance of technological entrepreneurship in maintaining competitiveness and stimulating economic growth.

Brynjolfsson and McAfee (2014) in their book 'The Second Machine Age: Work, Progress, and Prosperity in a Time of Brilliant Technologies' the authors explore how digital technologies are transforming the economy. They argue that technological entrepreneurship is driving economic progress, creating new industries and increasing productivity.

Mazzucato (2013) in her paper 'The Entrepreneurial State: Debunking Public vs. Private Sector Myths' analyses the role of the state in stimulating innovation. She argues that public investment in technology and entrepreneurship are key drivers of economic growth. Mazzucato emphasises the need for strategic partnership between the public and private sector for successful technology development.

Blank (2005), known as the father of the Lean Startup method, in his book 'The Four Steps to the Epiphany' describes how startups can successfully develop and innovate. His approach emphasises the validation of business models and rapid adaptation to market conditions, which promotes economic growth through the creation of successful technology companies.

Graham (2005), co-founder of startup accelerator Y Combinator, in his essays such as 'How to Start a Startup', shares his experiences and tips for creating successful startups. He emphasises the importance of innovation and technological entrepreneurship for economic development, noting that startups can generate significant economic value.

Perez (2002) in her book *Technological Revolutions and Financial Capital: The Dynamics of Bubbles and Golden Ages* Perez analyses historical technological revolutions and their impact on the economy. She argues that each technological revolution leads to significant changes in the economic structure and stimulates growth through the creation of new industries and markets.

Lerner (2009) in his paper 'Boulevard of Broken Dreams: Why Public Efforts to Boost Entrepreneurship and Venture Capital Have Failed--and What to Do About It' explores the role of venture capital in supporting technological entrepreneurship. He analyses successful and unsuccessful examples of government policies to stimulate innovation and offers recommendations for creating a favourable environment for start-ups.

In the article, Tolmachev and Chukavin (2020), examines the contribution of technological entrepreneurship to the economic development of Russian regions. The authors emphasise that fast-growing technology companies contribute to the creation of new jobs and innovation. Special attention is paid to the educational and geographical trajectories of startup founders, which helps to identify the drivers of growth and development of high-tech companies.

Analysis of the literature shows that technological entrepreneurship plays an important role in stimulating economic growth. Successful startups promote innovation, job creation and competitiveness. Supporting technological entrepreneurship requires a strategic partnership between the state and the private sector, as well as the creation of a favourable infrastructure and environment for innovation.

Some of the world's most famous startups include Microsoft, Apple, Google, Facebook, YouTube, WhatsApp. Each of these companies started with a small group of enthusiasts seeking to implement an innovative business model.

It should be noted that not all startups are based on unique technological solutions. For example, Michael Dell, founder of Dell Technologies, did not invent a new computer, but introduced an innovative method of direct sales that reduced the costs of retail outlets and created a global IT corporation.

Analysis and discussion of results.

In recent years, Uzbekistan has seen an increase in the number of technology startups, driven by infrastructure development, improved internet access and government support.

In the context of Uzbekistan, the startup ecosystem is in its formative stages. In recent years, the country has seen an increase in the number of innovative projects supported by government programmes such as IT-Park Uzbekistan, the C.A.T. Accelerator. Science Accelerator and the Startup Initiatives programme. The development of venture capital financing is an important step, but its volumes are still significantly lower compared to neighbouring countries such as Kazakhstan.

However, there are a number of institutional constraints:

- Insufficiently developed market relations and low level of consumer demand;
- Administrative barriers and formal approach of officials to startups;
- Weak development of the stock market and high cost of borrowed capital, making it difficult to create venture capital funds (Каражанова, 2024).

- According to IT Park and TUZ Ventures:

- Most startup teams in Uzbekistan consist of five people, including marketers and developers;

- About 62% of startups are focused exclusively on the local market, while 21% plan to expand into the CIS;
- The age of founders ranges from 20 to 30 years old, with 12.7 per cent of founders being women;
- Only 10% of startups are at the stage of active growth and first sales;
- The main source of funding is founders' personal funds, while 44% of entrepreneurs have no experience in attracting investors.

Funding and investment environment. Venture capital investment per capita in Uzbekistan is about 20 cents, which is significantly lower than in other countries:

- Kazakhstan - \$4,
- India - \$30,
- China - \$75,
- South Korea - \$156,
- USA - over \$1,000.

The government plans to increase this figure to \$3 in the next three years by developing youth industrial and business zones (YBZs), creating new jobs and attracting investment. The Entrepreneurship Development Company JSC, together with the country's state-owned banks, intends to finance youth projects worth up to \$100 million.

Examples of successful startups:

- Payme: A payment system that has become the market leader in electronic payments in Uzbekistan. The startup provides convenient and secure solutions for payment of services and goods.
- MyTaxi: An app for ordering taxis, which successfully competes with international players due to its adaptation to local conditions and high quality of service.
- ZoodMall: An e-commerce platform offering a wide range of goods and convenient delivery terms. The startup is actively developing and attracting investments (Hapov, 2022).
- Pastoral: AgroTech startup creating a platform for regenerative livestock farming. The company has attracted investments from the venture fund UzVC. The startup was also ranked in the top 80 of the Global Impact Challenge by SVG Ventures Thrive, a venture capital firm headquartered in Silicon Valley.

Uzbekistan's startup ecosystem is in its infancy. There are:

- Startup Initiatives Programme to support youth innovative ideas and startup projects;
- C.A.T. Science Accelerator - accelerator for scientific projects;
- IT Park Uzbekistan Startup Incubation Programme.

However, all programmes are focused on projects at the MVP stage, which excludes a significant part of young people who want to engage in entrepreneurship but lack basic knowledge and skills. Systematic work is needed to:

- Incorporating the basics of practical entrepreneurship, marketing, and business planning into the curricula of technical schools and universities;
- Active creation and support of startup labs and business incubators at universities;
- Developing mechanisms for attracting investment, training mentors and counsellors.

Conclusion and suggestions.

The development of technological entrepreneurship in Uzbekistan is a strategically important direction that contributes to economic diversification, GDP growth and increasing the investment attractiveness of the country (Shehadeh, 2024). In recent years, there has been positive dynamics in this sector, but for further growth a number of challenges need to be addressed, including improving access to finance, improving the legislative framework, developing educational initiatives and expanding international co-operation.

Recommended measures to support technological entrepreneurship include:

1. Improve the legislative framework, including the adoption of a law on startups regulating investment and exit mechanisms.
2. Establish venture capital funds and stimulate their development through tax incentives and state support.
3. Strengthen coordination between the Ministry of Digital Technology, the Ministry of Higher Education, Science and Innovation and the National Agency for Project Management.
4. organise professional training in the field of technological entrepreneurship and venture capital investment.
5. Introduce systemic educational initiatives to develop entrepreneurial competences among young people.
6. Develop private consulting structures that provide analytical and marketing support to startups.

Only a comprehensive approach including institutional reforms, educational initiatives and infrastructure development will allow Uzbekistan to create a dynamic and competitive startup ecosystem capable of integrating into the global innovation market.

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