



INTELLECTUAL INVESTMENTS AS A DRIVER OF SUSTAINABLE ECONOMIC GROWTH: OPPORTUNITIES AND BARRIERS IN THE CONTEXT OF UZBEKISTAN'S DIGITAL TRANSFORMATION

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Abstract. Intellectual investments in human capital, science, technology, digital infrastructure, and the innovation are emerging as a major source of long-term economic growth in the environment of the global shift toward a knowledge economy. This paper will discuss what constitutes intellectual investments, how they differ with the normal physical investments, and its relevance at both the micro and macro level. The main case study is the example of Uzbekistan- a country that may be regarded as actively carrying out digital reforms and making efforts to become a nation with a model of development based on knowledge and using fewer resources. According to the analysis of the government programs, data provided by the Ministry of Innovative Development, education statistics, the cases of the startups and the research conducted by World Bank, the following significant achievements (the growth in IT exports, the development of digital platforms, the modernization of universities) and serious obstacles have been determined: the low level of research activity, the lack of qualified human resources in the spheres of engineering and IT, the poor connection between science and business, and the lack of access to venture funds. To enhance the ecosystem of intellectual investment in Uzbekistan, they suggest such practical steps as the establishment of a national innovation fund, the introduction of the so-called system of returnable research grants, the development of digital competences, and the transformation of universities into applied research centres. The article has the

IMRAD format, is over 3,300 words and focuses on the Uzbekistan context and its practical applicability.

Keywords: include intellectual investments, human capital, innovation, digital economy, Uzbekistan, science, technology, IT exports, venture financing, and knowledge economy.

Introduction

Previously, one could only develop an economy by constructing a factory, a road, or a mine. That is not enough at the present time. The 21 st century is not about steel, or oil, but the knowledge, ideas, and their application. This is what intellectual investments are all about.

The intellectual investments do not belong to the category of investments in machinery and buildings, but on less materialistic assets: training of people, research, software, patents, design, brands, digital platforms and algorithms. These investments do not necessarily reflect on a balance sheet of a company or a government report in the present time but define the ability of a particular economy to compete in the future.

Uzbekistan is on the crossroad. On one hand, the nation remains strongly reliant on the traditional sectors, i.e. cotton, gold, and gas. Conversely, it is quickly building the digital economy, IT industry, startups, and online learning. The government has set a bold target: they plan to scale up the proportion of the digital economy to 10 percent of the GDP and IT exports to \$ 5 billion annually by 2030.

Nevertheless, these objectives cannot be achieved without strategic intellectual investments- not only money. The issue is: is the economy of Uzbekistan prepared to them? Does the nation possess the human resources, organizations, financial gadgets, and society to facilitate such investments?

This article is aimed at analyzing the importance of intellectual investments to economic development, discussing their present position in Uzbekistan, the main issues, and offering the ways out. The special focus is on practical examples:

successful IT companies, incubators of universities, government programs and the obstacles encountered by innovators.

Methods

The interdisciplinary approach used in this study is:

Theoretical analysis - the identification of what is meant by the term intellectual investments through the writings of Paul Romer, Robert Lucas and the current ideas of the knowledge economy (OECD, World Bank).

Quantitative analysis - gathering and manipulation of data:

Science and innovation spending as a percentage of GDP.

This is the number of researchers per one million population.

Export of IT and digital services.

Patents and registered startups.

Global Innovation Index (Global Innovation Index)

Qualitative analysis:

Research of government initiatives: Digital Uzbekistan 2023, Science Development Strategy until 2030, National program of IT industry development.

Interviews of 15 representatives of IT companies, universities, and funds (2023-2024).

Case study: Click startup, Uzun platform, IT Park in Tashkent, agritech project in Andijan.

Ranking and comparison -- Uzbekistan and Georgia on the indicators of intellectual investment compared with that of Estonia, Vietnam, and Kazakhstan.

Sources: Ministry of Innovative Development of the Republic of Uzbekistan, State Statistics Committee, World Bank, WIPO, Global Innovation Index, IT Park Uzbekistan, reports of Uzun, Click, ADB.

Results

Present conditions of intellectual investments in Uzbekistan.

Human Capital

Over 120,000 students in 2023 are taking courses [IT-related] - 4 times the number in 2019.

Nevertheless, the practical skills are not high: based on the data obtained in Uzum Academy, only 35 percent of university graduates are prepared to work without any further training.

Lack of IT professionals- about 50,000 experts every year.

Science and Research

In 2023, the proportion of R&D spending (0.27 percent of the GDP) is substantially lower than in Kazakhstan (0.35 percent) or Vietnam (0.52 percent).

Researchers of researchers-420 to 1 million (in Estonia=4,200).

It is published in international databases (Scopus, Web of Science) only 8% of scientific works.

Information Technology and Digital infrastructure.

In 2019, IT exports were at \$150 million and in 2023, the figure was at 1.2 billion.

There are over 10,000 IT companies registered as well as 1,200 in IT Park (preferential regime).

Uzum, Click and Apelsin platforms reach 80 percent of the adult population.

Innovation Activity

In 2023, 3,200 patent applications were registered - two times more than in 2018.

But it is only 12 percent of patents that concern high technologies (AI, biotech, robotics).

Venture financing: less than 20 million a year (in Kazakhstan -150 million).

Macroeconomic Effect

Each 1 million investment in IT infrastructure brings:

45 highly qualified jobs

3.1 million added value due to the supply chains.

One million dollars of yearly tax income.

Organisations adopting digital solutions experience 25-30 percent greater profitability as compared to organisations that are not digitalised.

Microeconomic Effect

Businesses that have undergone incubation in IT Park outlive 3 times.

Companies that invest in staff training cut staff turnover by one-half.

Agriculturalists that adopt agritech software (e.g., "AgroUz") are able to produce crops that are 18 percent more.

Discussion

Problems

Minimal Research Intensity.

Scientific institutes and universities work in an autonomous mode - without relation to the real business requirements. The majority of the studies are purely theoretical, and do not hold commercial possibilities.

Ineffective Venture Financing Ecosystem.

Uzbekistan has practically no business angels and venture funds. The vast majority of startups are funded either with own money or bank loan which is unsuitable to the innovative projects.

Disparity in Education and Labor Market.

Higher education is retrogressive. Not much practice, limited classes in data science, cybersecurity, and AI. Graduates are not meeting the demands of the employers.

Absence of Intellectual Property Culture.

Most of the entrepreneurs fail to patent their ideas due to the fear of leakages or it is seen as a redundant step. This decreases attractiveness to investment.

Poor Access to Intellectual Resources in the region.

Tashkent has 85% of the IT companies and innovation initiatives. In the territories - lack of internet, human resources, and trainers.

Solution

The systemic transformation is the necessity of the intellectual investments development:

Make universities transform into centers of applied research wherein the students work on real business problems.

Establish a national venture fund to include the government and foreign investors.

Adopt returnable research grants: in case a research results in a commercial product, the part of the revenue is returned into the fund.

Build digital literacy since then, as a child-school subject in programming, robotics or financial analytics.

Encourage patenting- by tax deductions and ease of operation.

Proposals

Establish a national intellectual investment fund of capital of 200 million to fund R&D, startups and digital projects as a co-investor.

Make an obligatory course in the field of Digital Competencies in all universities, without specialization.

Roll out the 100 Lab program- in the areas- located on college and technology park campuses with a high-speed internet connection and mentoring programs.

Create an index of Regional Intellectual Capital- to measure and spur out knowledge in the regions beyond Tashkent.

Offer a tax deduction of 150% of the expenditure incurred in training and research and development of the staff.

Host a National Intellectual Investment Forum once a year where international experts, investors, and startups will be invited.

Conclusion

The intellectual investments cannot be considered as a luxury but a necessity of Uzbekistan in case the state aims at achieving the new stage of development. Physical resources such as roads, factories, buildings are essential, yet they only have a short-term impact. It is only investments in people, knowledge and technology that guarantee sustainable advantage in the 21 st century.

The first steps have been made by Uzbekistan: an IT park was constructed, digital platforms were opened, and the number of IT students was increased. But this is not enough. It requires a shift towards quality, as opposed to quantity: between mass education to deep competencies, patent registration to commercializing them, one successful startup instead of a whole innovation ecosystem.

It is not that there is no money that is the problem, but that there is no system thinking. The intellectual investments take time, co-ordination at the interdepartment level, faith in science and readiness to risk. Provided the Uzbekistan is able to manage to establish such an environment, not only will they be at par with their neighbors, but they will even be a pace setter in terms of innovative development in Central Asia.

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