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Development of public regulatory strategies to incentivise investment in human capital

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Abstract. The study aimed to identify the main problems and challenges in the process of development of strategies of state regulation to stimulate investment in human capital. A systematic methodology of analysis, including a comparative analysis of international experience and national approaches to state support and regulation of investment in human capital, was applied in the study. The three key areas were emphasised: educational, medical and migration programmes. The analysis was based on official statistical data of the Republic of Uzbekistan for 2019-2023, including indicators of life expectancy, education level, investment in health care and vocational training. The comparative assessment of data and practices was used to identify the strengths and weaknesses of Uzbekistan's state policy in the field of investment in human capital and formulate recommendations to improve its effectiveness. The results of the study demonstrate that the overall level of economic sustainability of the country depends significantly on the chosen strategy of state support for investment in human capital. The studied practice of state regulation of investment in human capital on the example of the Republic of Uzbekistan revealed that the successful development of such strategies depends on a comprehensive approach, which includes financing, coordination of various sectors of the economy and ensuring transparency in the implementation of programmes. The study results emphasised that a balanced combination of state regulation and private initiatives was required to stimulate investment in human capital. The key factors are sustainable legislative regulation, adaptation of modern management techniques and investment in long-term programmes aimed at developing the knowledge, skills, health and capabilities of the population

Keywords: improvement of living standards; financing of the education system; social protection of the population; health care and quality of life; migration policy; efficiency of budget expenditures

Introduction

Strategies for regulating investment in human capital from the government's perspective are a complex and multifaceted area of public policy that encompasses a wide range of activities and initiatives aimed at supporting education, health care, vocational training and other areas that can improve the level of human resources development. Stimulation of purposeful and continuous investment in improving the quality of the national human capital is one of the effective ways to achieve sustainable economic growth and increase the level of competitiveness in the global arena.

Modern global challenges, including pandemics, economic crises, rapid technological advances, and demographic changes, require prompt and thoughtful strategies from states to ensure long-term development, as policies to promote investment in human capital affect not only the level of economic stability but also social cohesion, growth in the quality of life and professional training of the labour force. For the state, investment in human capital is not just an expense but is seen as a profitable investment that can provide a return in the form of increased productivity, innovation and reduced social inequality (Novykova *et al.*, 2022). Thus, the need to develop effective strategies for state regulation in this sector is relevant for any country.

Studies conducted by Z.M. Dai *et al.* (2021) demonstrated that the use of advanced technologies for the economic growth of the country from the position of investment-oriented environmental regulators is closely related to the development of human capital. The authors emphasised that sustainable growth must address the thresholds of human capital efficiency level in the face of a changing external environment for sustainable growth to begin. A significant contribution to the analysis of the relationship that arises between such indicators as the quality of government regulation and implemented investments in human capital was made by S. Amoroso *et al.* (2024), who analysed

the role of regulation and regional quality of governance in the development of high-growth enterprises, identifying in their study the need for a balance between the flexibility of public policy and the level of control over compliance with standards to stimulate the growth of productivity indicators. K. Vithana *et al.* (2021) addressed human capital in their article from the perspective of a strategic resource that can be represented as both an expenditure item and an investment asset. The provided results of their study show that the approach of the state regarding the regulation of investments in human resources from the position of considering it as a capital imposes its reflection on the development of the national economy.

H. Wang *et al.* (2023) noted the significant impact of governance features on the volume and efficiency of investment in all sectors, while the sustainability of governance, transparency and openness of the system are determining factors for attracting capital. C.C. Lee *et al.* (2022) analysed the impact of globalisation and government regulation on country risk and investment and argued that in the context of global change, the system of government regulation should address both external risks and internal mechanisms to stimulate investment in human capital. A study by P.E. Ofori *et al.* (2024) assessed the relationship between human capital development and institutional environment quality with inclusive growth, highlighting the importance of improving the skills of the labour force and public policies to ensure sustainable growth in any economy. P.E. Ofori *et al.* emphasised the importance of improving the quality of institutional conditions for the formation of a stable investment environment, in particular, they pointed out the need for an integrated approach, including training and stimulating educational programmes, to strengthen the position of human capital in the economy. H. Wang *et al.* (2023) noted that the attraction of finance in

public-private partnerships directly depends on the characteristics of governance, transparency of procedures and the ability of the state to build long-term strategies aimed at improving the level of human capital.

In general, the sources reviewed form an idea of the problems of developing state strategies aimed at stimulating investment in human capital and emphasise the importance of adapting existing regulatory measures to improve the sustainability of the economy. The study aimed to identify specific problems and challenges arising in the process of developing strategies of state regulation of stimulating investment in human capital based on the experience of the Republic of Uzbekistan. Objectives of the study were to:

1. Analyse how the policy chosen by the Government of Uzbekistan affects the creation and development of human capital in the country.
2. Assess the effectiveness of existing state regulatory instruments to stimulate investment in human capital.
3. Develop recommendations for optimising legislation and regulatory strategies, considering international experience and the specifics of the Uzbek economy.

Materials and Methods

This study is an assessment of state regulation strategies to stimulate investment in human capital in the Republic of Uzbekistan. Special economic research methods were applied, addressing a specific function in the process of analysis: statistical method was used to process data on life expectancy, level of education, public investments in health care and education, coefficient method was used to calculate the ratio of incomes of different population groups and the share of social spending, trend method was used to track changes in key indicators for the study period 2019-2023, comparative analysis was used to compare the results of the Republic of Uzbekistan with indicators of human capital development in other countries (Republic of South Korea, the Republic of Uzbekistan, Japan, Finland), the economic and legal method was used to study the regulatory framework, including laws and policies governing the development of education and healthcare.

The study was based on the analysis of the legal and regulatory framework of the Republic of Uzbekistan, including key legislative acts, such as the Law of the Republic of Uzbekistan "On Education" (2020), which defines the legal and organizational framework of the education system, including the principles of financing educational programmes, mechanisms for their implementation, as well as the rights and obligations of all participants in the educational process, and its provisions serve as a basis for assessing the effectiveness of government measures to develop human capital. This law establishes the basic directions of state policy in the educational sphere and is a key document in assessing the impact of regulatory measures on the development of human capital. The study also analysed the provisions of Decree No. DP-5590 of the President of the Republic of Uzbekistan "On Complex Measures on the Radical Improvement of the Health-Care System of

the Republic of Uzbekistan" (2018), which defines measures to improve the health infrastructure, improve the qualifications of health workers and ensure accessibility of medical services. The relevance of the assessment of this document was determined by the health care system being an integral part of human capital and directly affecting the level of public welfare and labour productivity. For a broader understanding of the state regulation of this sector, the decrees and resolutions signed by the President and the Cabinet of Ministers of Uzbekistan were studied, including Decree No. DP-5590, as well as the "Strategy of Uzbekistan 2030" (2022), which aims to support employment, professional training and retraining, and the development of the social sphere. To identify the impact of legislative measures on actual investment indicators, official statistical data presented on the statistics website of the researched country for 2019-2023 were used in the context of key indicators such as life expectancy of the population, education level, investment in the health care system (Statistics Agency..., 2024).

In addition to national statistics, reports from the Ministry of Employment and Labour Relations and the Ministry of Economy and Finance were used, in particular, information on the distribution of funds to support professional educational programmes and the implementation of social projects was examined. Statistical analyses were conducted to identify changes in the volume of funding and their relationship with indicators of the quality of human capital, such as the level of educational attainment and the availability of medical services.

Results

One of the key challenges of globalisation for each country is the creation of a new economy, which is based on the knowledge and skills of the population, depending on the availability and quality of educational and health services, achievements in science, technology and information, i.e. the success of economic development depends directly on the level of human capital development, because this type of capital is an important factor in shaping the level of competitiveness of the country, affecting the dynamics of its economic performance (Chakrabarti *et al.*, 2020). A review of the history of the success of developed economies demonstrates that the highest performance in terms of human capital development was achieved by those countries where the government developed and implemented effective instruments of state regulation to attract investment in human capital while establishing effective inter-agency coordination. In the Republic of South Korea, the strategy of rural modernisation through the Saemaul Undong programme has significantly reduced poverty and raised educational standards in rural areas. The programme aimed to improve the self-awareness and skills of the rural population through investment in training and infrastructure, resulting in accelerated urbanisation and economic growth (Liao *et al.*, 2024). Singapore has an innovative vocational training model based on the SkillsFuture programme. The initiative reaches out to all age groups by providing

citizens with access to skills development courses and retraining programmes to adapt to rapidly changing labour market demands, and the success of the programme has been exemplified by an increase in the proportion of skilled workers and growth in the IT and engineering industries (Ni *et al.*, 2023).

In Japan, the combination of educational reforms with a national innovation strategy was a key element of public policy, with technology adoption and university research support fostering the creation of high-tech clusters such as biotechnology and robotics, establishing the country as a leader in science and innovation (Amoroso *et al.*, 2024). Finland, on the other hand, emphasises equal access to education from pre-school to university level. A free education system and training programmes adapted to the needs of the labour market provide the skills needed for high-tech industries, making Finland one of the countries with the highest levels of human capital in the world (Cheah & Ho, 2019). These examples confirm that a systemic approach involving a combination of public investment, vocational education and innovation plays a crucial role in the successful development of human capital, and the experience of these countries can be adapted to the conditions of the Republic of Uzbekistan to create similar programmes that stimulate the growth of human capital.

The experience of developed countries that have been studied on this issue emphasises that optimal transformation of the economic system is possible only when the main focus is on reforming investments in human capital and innovation, whereby the constituent elements of human capital should be defined as health, knowledge, technology and information systems that allow for higher levels of productivity and efficiency at the corporate, national and global levels. Personnel with a high level of qualification is a strategic advantage and often allows them to achieve the goals of an individual firm or society. The concept of “human capital” has such a name because it is created in the

process of purposeful investment in people, in their education, qualification training, health, social and other needs (Kalyuzhna *et al.*, 2024).

Investments acquire special importance in modern conditions as a key prerequisite for the existence, formation and evolution of human capital, as it is the person who possesses such capital that acts both as an object and a subject, as well as the result of the invested impact. Investments in human capital are usually defined as the expenditure of money and other resources on education, upbringing, health care, research and development, and culture, because all this is aimed at improving the productive abilities, qualifications and intellectual potential of an individual, and such investments are designed for long-term return, which is manifested in the growth of income in future periods and a positive impact on the economic development of the country (Ismayilov & Karimova, 2023).

Investment sources of human capital include individual families, enterprises, private and public foundations, and international organisations. The selected course of development of the Republic of Uzbekistan defines one of its main directions as improving the quality of life of the population. Over the years of independence, positive changes were noted in several demographic indicators, in particular, the mortality rate has decreased, and life expectancy has increased, which emphasises the increasing prosperity of the population. However, the Government is aware that further development of human capital is needed, as there are several unresolved social issues and the economy is facing difficulties and constraints due to the low quality of human capital, as its existing potential is not sufficient to meet the needs of the population (Liao *et al.*, 2024). One of the indicators to assess the state of human capital is the income ratio: the top 10% of the wealthiest and the bottom 10% of citizens (Cao & Rees, 2020). In the country under consideration, this indicator is 7%, which indicates the effectiveness of government policy in the social sphere (Fig. 1).

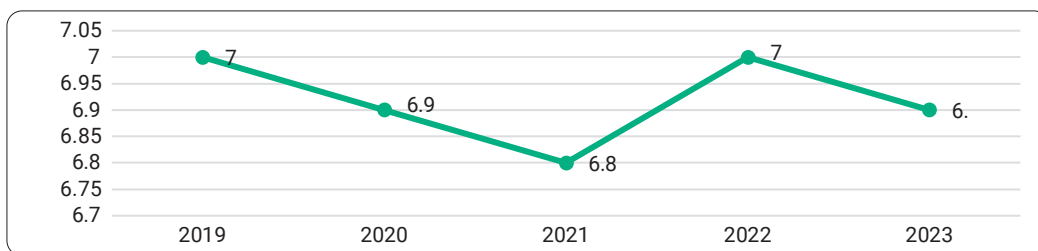


Figure 1. Income distribution ratio by 10 percentage groups of the population of the Republic of Uzbekistan in 2019-2023

Source: compiled by the authors based on the Statistics Agency under the President of the Republic of Uzbekistan: Demography (2024)

The instruments of state regulation of investment in human capital in the Republic of Uzbekistan aim to increase the level of qualification of the population and improve the quality of life and competitiveness at the global level. For this purpose, the country is actively developing and implementing strategies that support the system of

education, health care, employment, social protection, and migration processes. The fundamental document in this direction is the “Strategy of Uzbekistan 2030” (2022), which views human capital as one of the key components that make up sustainable socio-economic development (Table 1).

Table 1. Priority areas of the development strategy of the Republic of Uzbekistan until 2030 oriented towards the development of human capital

Priority area	Description	Expected results
Improvement of the quality of education	Improvement of the education system, expanding access to quality educational resources, and developing professional skills and competencies.	Increase in the number of qualified personnel, reduction of youth unemployment, and training of specialists for high-tech industries.
Improved healthcare	A developed healthcare system, affordable and high-quality medical services, and a focus on preventive care and people's health.	Increased life expectancy and quality of life, increased labour productivity, and improved demographic indicators.
Development of the employment system	New jobs, the development of small and medium-sized businesses, as well as training and retraining will help to increase employment.	Reduction of unemployment, growth of economic activity, and improvement of the material well-being of citizens.
Social protection and support of the population	Expansion of the social protection system, increasing support for vulnerable groups, improving pensions and social assistance.	Increase in social stability, reduction of poverty, improving the quality of life of citizens, and strengthening social justice.
Attraction of private and foreign investment	Creation of conditions for stimulating domestic and foreign investment in human capital, and modernisation of the economy through partnerships with businesses.	Increase in the level and volume of investments in healthcare and education, modernisation of infrastructure, and increase in economic productivity.
Digitalisation and innovative development	Implementation of digital technologies and innovations in governance and economy, improvement of digital literacy and use of IT in education and healthcare.	Improvement of the efficiency of public administration, access to new technologies, and the development of digital infrastructure in education and healthcare.

Source: compiled by the authors based on Decree No. DP-5590 (2018), Law of the Republic of Uzbekistan "On Education" (2020) and "Strategy of Uzbekistan 2030" (2022)

Thus, investment in human capital development is essential for the dynamics of Uzbekistan's economic performance, social stability and increasing national competitiveness, with the main areas of such investments being sectors with a long-term effect on productivity growth, innovation potential and sustainable development – health care, education, employment, migration processes and social development. The education sector is one of the priority areas of investment in human capital, as education contributes to the formation of knowledge and skills necessary for innovation and technological progress, while the higher the level of education of citizens, the higher the level of their readiness to work in high-tech and knowledge-intensive industries, which also increases the potential for creating a highly skilled labour force (Peng *et al.*, 2020).

The Government of Uzbekistan is developing various mechanisms and tools to promote educational reform and modernisation, including revising existing curricula, improving conditions for students, introducing more modern learning technologies and tools, and upgrading

the qualifications of teaching staff. Reforms in Uzbekistan's education system aim to develop critical thinking, creativity and practical skills among students, and an important role in this process is the renewal of vocational education to enable the training of specialists capable of meeting the requirements of the modern economy (Decree No. DP-5847, 2019).

To realise these objectives, the Government is actively cooperating with international partners and engaging foreign experts to adapt best educational practices to the national specificities, and among the significant results of the reforms is an increase in preschool enrolment: from 27.7% in 2016 to 71.8% in 2022 and 74% in 2023. Similar changes are observed in higher education: enrolment increased from 9% in 2016 to 42% in 2023, and the number of schools increased markedly over this period, from 9,719 to 10,750 and higher education institutions from 77 to 212, confirming the positive changes in Uzbekistan's education system (Lombardozi, 2023). Figure 2 shows the average duration of education in the Republic of Uzbekistan.

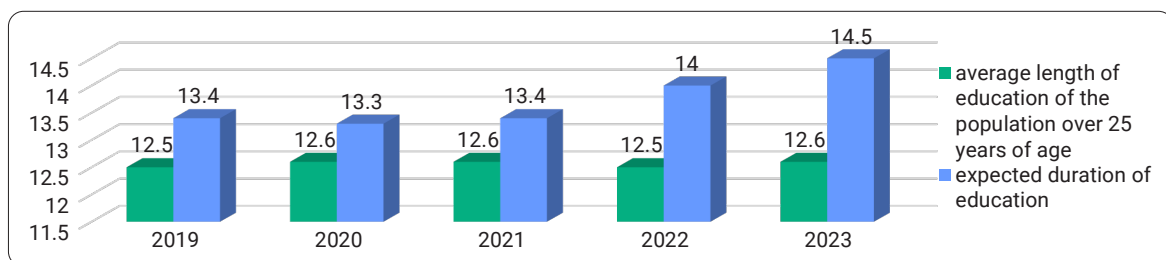


Figure 2. Dynamics of the average duration of education of the population over 25 years old in the Republic of Uzbekistan in 2019-2023

Source: compiled by the authors based on and Law of the Republic of Uzbekistan (2020) and the Statistics Agency under the President of the Republic of Uzbekistan: Demography (2024)

In 2023, the average duration of education in Uzbekistan reached 14.6 years, with 14.4 years for males and 14.8 years for females, which is higher than in 2019, when this criterion was 12.5 years, with males studying for an average of 12.9 years and females for 12.5 years. These indicators show that educational opportunities have increased significantly in recent years while contributing to the improvement of skills and competitiveness of the population.

In Uzbekistan, the creation and development of new higher education institutions and the establishment of branches of international universities are emphasised, helping to integrate the Uzbek educational system into the global educational space. Many of the new higher education institutions are based on the principles of public-private partnership, which attracts investment and improves the quality of educational programmes. Educational reforms have restored part-time and evening forms of education and increased admission quotas to higher

education institutions, making it possible to increase the enrolment of school leavers in higher education from 9% in 2016 to 37% in 2023 (Amoroso *et al.*, 2024). To improve the interrelation between the different levels of education and training of specialists, the Ministry of National Education has integrated academic lyceums and technical schools with higher education institutions and relevant sectoral enterprises, as a result of which 65 academic lyceums are now part of higher education institutions and 187 technical schools are affiliated with related higher education institutions and enterprises, which ensures closer cooperation and integration of educational programmes. The comprehensive approach taken aims to build a strong system of vocational and higher education that can respond effectively to the challenges of the modern economy (Damasceno & Guedes, 2024). The number of higher education institutions in the Republic of Uzbekistan is presented in Figure 3.

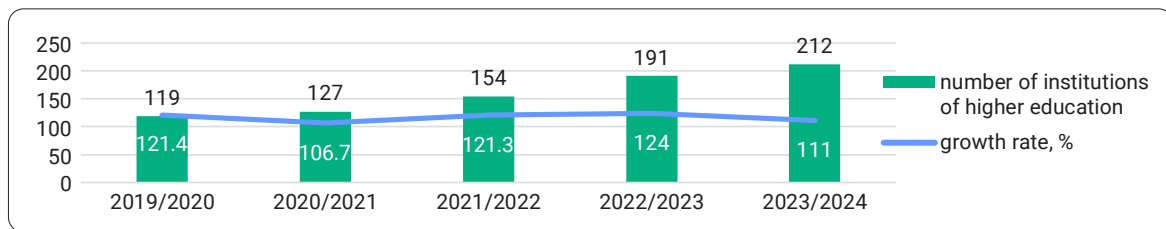


Figure 3. Dynamics of the number of higher education institutions in the Republic of Uzbekistan

Source: compiled by the authors based on SIAT: Number of emigrants (2024)

Thus, various areas of investment in the education sector are integral elements of investment in human capital and require significant time and money expenditures. In addition to education, an important area of investment in human capital is the health care system, investments which are defined as covering the costs of disease prevention, medical care, and improvement of nutrition and living conditions. Financing this sector contributes to the reduction of morbidity and mortality rates, thus increasing the active life span of citizens and improving the efficiency of human capital throughout its life cycle (Vithana *et al.*, 2021). Health can be viewed as a special natural resource of a person, as some of it is passed on genetically and others are formed through personal efforts and support of society, while over time human capital naturally wears out due to the ageing

of the body, but investments in health care help slow down this process, which benefits both individuals and society. The promotion of healthy lifestyles and access to quality healthcare improves the physical and mental well-being of the population, increasing performance and productivity (Dankyi *et al.*, 2022).

Maintenance of public health at an appropriate level is one of the priorities of state policy of any developed economy, as the future of the country directly depends on it. The level of attention of the state to the health sector is primarily reflected in the amount of budget expenditure on this sphere, as financing of health care allows for the development of infrastructure and provision of affordable medical services. The main source of funding for the health care system of the Republic of Uzbekistan is the country's budget (Fig. 4).

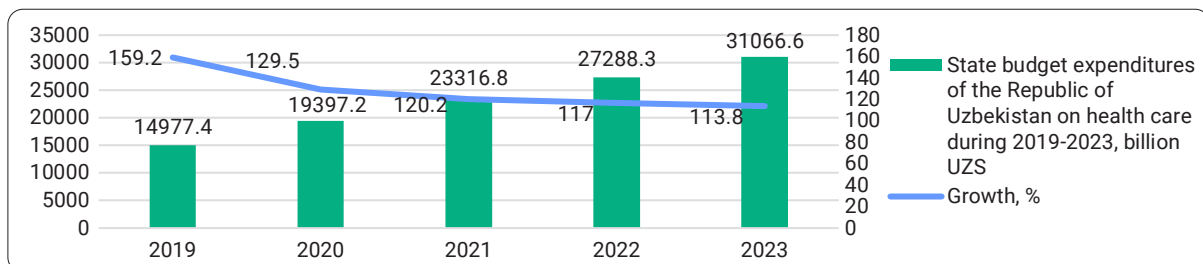


Figure 4. State budget expenditures on healthcare in the Republic of Uzbekistan in 2019-2023

Source: compiled by the authors based on the Statistics Agency under the President of the Republic of Uzbekistan: Demography (2024)

Based on the data presented, it is evident that health expenditures in Uzbekistan have steadily increased over the past five years, reaching 31,066.6 billion soums by 2023. Investments in preventive medicine and improved access to health care have a direct impact on labour productivity: healthy employees take fewer sick days

and work more efficiently, demonstrating that investments in disease prevention help reduce treatment costs and contribute to increased life expectancy and improved quality of life. A statistical criterion that affects the period of labour activity of an individual is life expectancy (Fig. 5).

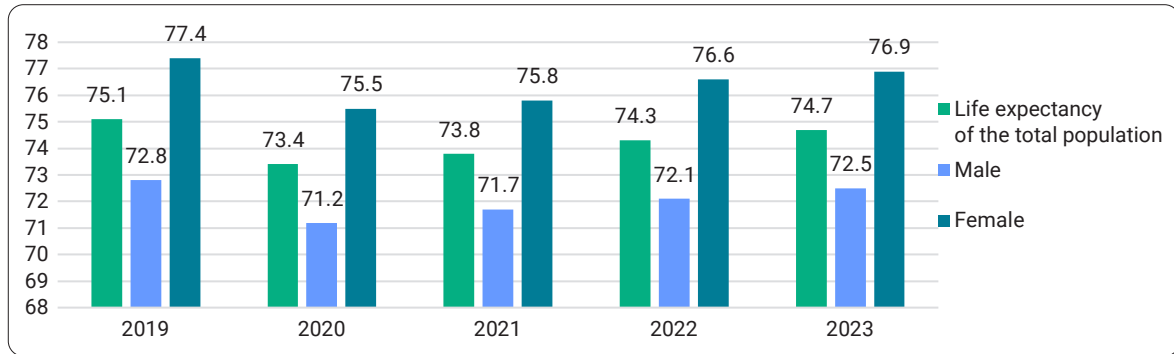


Figure 5. Life expectancy of the population of Uzbekistan, years

Source: compiled by the authors based on SIAT: Number of emigrants (2024)

Health as a key aspect of life necessitates investment in long-term improvement of its quality and duration. Up to 2020, life expectancy in the Republic of Uzbekistan showed positive dynamics, but the COVID-19 pandemic led to an increase in premature deaths, which caused a decline in this criterion, nevertheless, starting in 2021, life expectancy in the country began to increase again, reaching 74.7 years in 2023, which reflects the effectiveness of measures aimed at the rehabilitation and development of the health system. In comparison, developed countries such as Japan and Switzerland have a life expectancy of more than 84 years, due to high investment in medicine, disease prevention and the creation of conditions to maintain an active and healthy lifestyle (Gao *et al.*, 2024). The world's leading countries emphasise preventive medicine as it significantly reduces treatment costs and maintains the quality of life of the population at a high level. In countries with such health indicators, the level of human capital is also significantly higher, as people remain capable of labour and active longer. Consequently, the state of health of citizens can be not only a reflection of the level of social development of a country but also a factor affecting its economic growth. The health of the population is directly related to labour productivity, as healthy people are less susceptible to disease and can remain in the labour force longer (Ravshanov *et al.*, 2024). Therefore, investment in the health care system is an important part of the economic strategy, as supporting the health of the nation leads to the growth of the general welfare and stability of the state.

Migration and job search investments are another area of investment in human capital, as they increase the economic potential of employees by increasing mobility and the market value of their labour services, with the investment taking the form of the costs of moving and adjusting to a new, higher productivity region where workers can access better working conditions and higher wages

(Ismayil-Zada, 2023). This type of investment is similar to investment in education in that both involve time and financial costs, the returns of which are realised over time. The costs associated with both migration and job search represent one of the least apparent forms of human capital investment, as they ensure the future flow of labour services, increasing the economic value of the worker in the new location (Damasceno & Guedes, 2024). In addition, migration enhances the mobility of the labour force, enabling a quick response to changes in demand in high-performing sectors where skilled labour is required, while as information on job vacancies and wage levels, as well as on social and economic conditions in other regions becomes more readily available, such investments enable migrants to find the most advantageous offers, thereby increasing their economic returns (Nicolás-Salas & Lorente, 2024).

Labour migration has a significant impact on the labour market of the Republic of Uzbekistan, as a significant part of the labour force leaves the country in search of higher wages and stable working conditions, which has a twofold effect: on the one hand, the inflow of money from abroad contributes to maintaining the income of migrants' families and the growth of the national economy as a whole, and on the other hand, the departure of highly qualified specialists creates a threat of loss of important human capital, which negatively affects the opportunities for development within the country. Figure 6 shows the dynamics of migration of citizens from Uzbekistan by month from 2019 to 2023.

The number of people travelling abroad from Uzbekistan has varied considerably from period to period, for instance in 2019 and 2021 the number of migrants remained relatively stable throughout the year with slight fluctuations, but in 2022 and 2023 there was a marked increase in the number of people leaving in summer and autumn, with a sharp decline towards the end of the year, peaking in August-September 2022 when the number of migrants

reached a peak of almost 4,800, in 2023 there is also a significant increase in summer, although the peak is lower compared to 2022. Such seasonal dynamics are associated with temporary labour migrations timed to coincide with the agricultural or construction season when the demand

for labour abroad is higher; in addition, year-to-year differences in migration rates may be due to economic and political changes, as well as the effects of the pandemic, which affected people's mobility and employment opportunities in other countries.

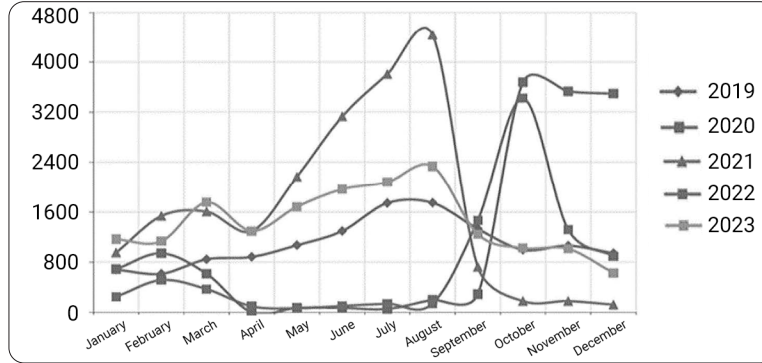


Figure 6. Number of labour migrants from the Republic of Uzbekistan to other countries, people

Source: Statistics Agency under the President of the Republic of Uzbekistan: Demography (2024)

Strategic investments in human capital are essential for national sustainable economic growth and competitiveness, which require time to implement but provide lasting and meaningful economic benefits (Ponomarenko & Pysarchuk, 2024). However, the nature and structure of investments depend on the national, cultural and historical characteristics of the country. Investments in human capital, such as educational programmes, health care and migration programmes, provide significant social, economic and psychological benefits, despite the difficulty of quantifying them, and the expected results of such investments include

an increase in the level of income of the population, growth in labour productivity, increased competitiveness of the national economy and, as a result, an increase in gross domestic product (Cotula, 2020). The dynamics of the aggregate income of the population of the Republic of Uzbekistan are presented in Table 2.

The information presented in the table demonstrates a positive and stable growth in the aggregate income of the population of the Republic of Uzbekistan in both nominal and real terms. Changes in the national economic development are reflected in the dynamics of GDP (Fig. 7).

Table 2. Dynamics of total household income in 2019-2023

Metric	2019	2020	2021	2022	2023
Total household income, billion UZS	365598.3	414968.7	519181.4	633567.4	728826.1
The volume of total income per capita, thsnd. UZS	10887.3	12122.2	14869.8	17772.8	20015.9
The volume of real aggregate income, billion UZS	319216.2	367456.6	468448.4	568527.8	662749.9
The volume of real aggregate income per capita, thsnd. UZS	9506	10734.3	13416.8	15948.3	18201.2
The growth rate of real income of the population, %	106.2	100.5	112.9	109.5	104.6

Source: compiled by the authors based on the Statistics Agency under the President of the Republic of Uzbekistan: Demography (2024)

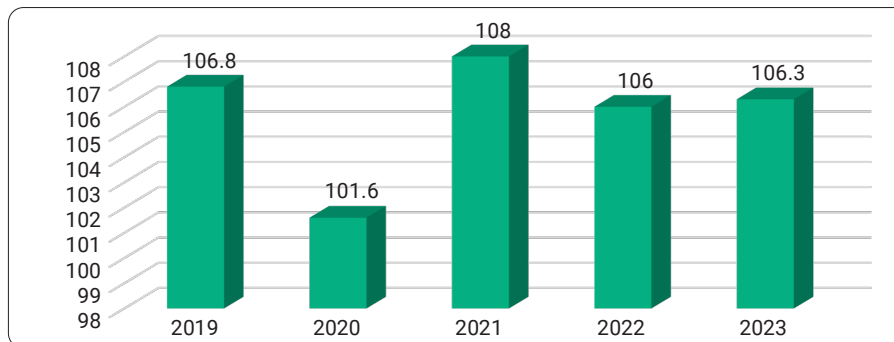


Figure 7. GDP dynamics of the Republic of Uzbekistan during 2019-2023, %

Source: compiled by the authors based on SIAT: Number of emigrants (2024)

The GDP of Uzbekistan was growing during this period, peaking in 2021 and declining in 2020 due to the lockdown caused by the coronavirus pandemic. Thus, investments in human capital development became key for long-term economic growth, benefiting both individuals and the country. These include spending on health, education, employment support, social protection and other areas that contribute to human capital development. To develop strategies of state regulation aimed at stimulating investment in human capital, the following measures are proposed:

1. Investments in priority educational programmes, i.e. implementation of targeted government programmes for training in key sectors such as information technology, engineering, medicine, and biotechnology, require the development of a grant programme for students in these areas with a guarantee of employment, creation of a national network of vocational training centres, which will ensure the training of qualified specialists, especially in in-demand technical specialities, and increase adaptivity of workforce to market demands.

2. The creation of a system of tax incentives for companies investing in human capital, for instance, tax deductions of up to 20-30% of employee training costs can increase the interest of employers in the long-term development of their human resources.

3. The introduction of a state basic health insurance programme will improve access to healthcare and reduce the financial burden on households while funding for preventive medicine and promoting healthy lifestyles will create conditions for improving the health of the population, which in turn will have a positive impact on overall productivity.

4. Creation of innovation and technology clusters such as technological parks and innovation centres by providing tax incentives to companies involved in research and development.

5. Introduction of a system for monitoring and evaluating the effectiveness of investments in human capital, defining clear performance indicators, such as the employment rate of graduates, the share of qualified personnel in strategic sectors and population health indicators, which can enable analysis and adjustment of the effectiveness of investments in human capital.

6. Support for internal labour mobility to ensure an even distribution of skilled professionals across the country, requires an introduction of housing subsidies and special loans for workers moving to regions with high labour demand. Rotation programmes for workers in the public sector would also help to spread experience and skills across regions, which would help to reduce inequalities in labour opportunities.

The proposed measures will stimulate investment in the human capital of the Republic of Uzbekistan, create the basis for sustainable economic growth in the country and overcome existing challenges, including the shortage of qualified personnel and labour outflow, which will positively impact the national competitiveness in the global market.

Discussion

The results of the study confirm that the development and implementation of state regulation strategies to stimulate investment in human capital has a positive impact on economic growth and development of society. The application of tax incentives and other financial incentives activate investment in education and health, which according to the study by N.H. Nik Abdullah *et al.* (2022), contributes to the strengthening of human capital as a strategic resource that enhances the competitiveness of the country. The same conclusions were reached by A.A. Al-Tit *et al.* (2022), who emphasised the importance of developmental practices in enhancing social and human capital and noted that government support contributes to the growth of skills and social and economic inclusion.

I. Alami & A.D. Dixon (2019) confirmed that state regulation in the form of human capital development programmes can help reduce social inequality and improve economic potential through support for education and medicine, which is particularly relevant for the Republic of Uzbekistan, where economic and social realities require an adapted approach to modernizing the system of support for education and health care, which is confirmed by the findings on the positive impact of investment in human capital on economic growth in developing countries. One of the conclusions of the study states that to successfully stimulate investment in human capital, government strategies should incorporate the specifics of national and regional characteristics, while the integration of the best international practices adapted to Uzbek realities, as noted by S. Amoroso *et al.* (2024), can be used by government agencies to implement effective reforms that contribute to human capital growth and economic development.

The results of the study also show that stimulating investment in human capital at the level of public policy can not only increase the educational level of the population but also contribute to social stability and sustainable economic development, which was also noted by M. Fischer-Daly (2019), who also specified that the lack of effective control over the observance of international labour rights can hinder the attraction of investment, which is especially relevant for countries in transition, such as the Republic of Uzbekistan. The author emphasised the importance of clear state mechanisms that support the equitable distribution of resources and rights. In this context, state regulation can strengthen national position at the international level, which is consistent with the findings of C.C. Lee *et al.* (2022) on strengthening the economic resilience of countries in the context of globalisation.

The state support of human capital is also related to increasing the availability and quality of educational programmes, which is confirmed by D. Gándara & A. Rutherford (2020), who argue that university funding programmes improve the accessibility of higher education, although occasionally at the expense of other priorities, such as equal access to education, which challenges the effectiveness of such strategies. Similarly, J. Gao *et al.* (2024) highlighted

the importance of training and human capital mobility to improve competitiveness but noted that the difficulty of transferring skills across sectors can make it difficult for workers to move into more innovative occupations. These tensions emphasise that investment in human capital requires a balanced approach that considers the balance between market needs and the interests of individual workers.

At the same time, not all authors are unanimous in assessing the positive impact of state intervention. For instance, R. Klingler-Vidra & Y. Liu (2020) emphasise that an over-reliance on inclusive innovation policies can cause a concentration of resources in certain sectors, which, while contributing to social capital, can reduce the effectiveness of investments in other key areas. Such an issue is particularly relevant for the Republic of Uzbekistan, where, as noted by L. Lombardozi (2023), the structure of state capitalism and historical factors can influence the allocation of resources and slow down structural transformation.

The discussion of the research results in the context of the impact of government regulation on stimulating investment in human capital reveals a range of both agreed and contradictory views among researchers. L. Ni *et al.* (2023) highlight the importance of regulation related to environmental aspects and the development of green human capital, which they consider important for sustainable economic growth. The researchers stress that such an approach can become a significant factor for industrial modernisation and innovative development, especially in conditions of active human capital growth, although the success of such initiatives depends on the state's ability to balance environmental and economic priorities.

K.K. Nurasheva *et al.* (2024) addressed capital attraction and investment attractiveness in Central Asia and emphasised that the regional appeal to investors often depends on the level of human capital as well as the stability and transparency of government policies. In contrast to these findings, P.E. Ofori *et al.* (2024) demonstrated that in African countries, the insufficient quality of the institutional environment can weaken the positive effects of human capital investments. Thus, these findings highlight the complex relationship between institutional quality and the performance of human capital incentive policies. The results confirm the need to consider both the level of human capital and the effectiveness of public institutions in attracting investment and suggest that in Uzbekistan, the combination of educational and social reforms and increased transparency in public policy can ensure sustainable economic growth (Mukhammedov & Murodov, 2021) while minimising the risks associated with countries with less developed institutional environments.

The findings also demonstrate the importance of a balanced approach to human capital investment as, for instance, H. Peng *et al.* (2020), highlighted the possible negative effect of financial constraints on long-term investment in innovation, which is relevant for emerging economies where limited resources force a prioritisation that often creates contradictions in the implementation of long-term

strategies. Thus, this study shows that while investment in human capital is an important aspect of public policy, its effectiveness depends on a variety of factors, including the quality of the institutional environment and the balance of government support.

Among other studies, there is also a discrepancy in the effectiveness of government regulation to incentivise investment in human capital. T.H. Thien & N.X. Hung (2023) emphasised the importance of strategic management practices to improve the performance of investment in intellectual capital, which is one of the most important components of human capital. They argued that the use of strategic accounting can significantly improve the return on investment, but this requires high-quality infrastructure and supportive conditions from the government. This view correlates with the study by D.V. Tran *et al.* (2024), which highlighted the importance of social capital and government support in enhancing the dynamic capabilities of enterprises. According to the researchers, the combination of open innovation and government support can enhance competitiveness, especially in resource-constrained environments. The results obtained in the study confirmed these conclusions, in particular, the analysis of the national programmes of the Republic of Uzbekistan has demonstrated that the introduction of targeted educational initiatives and the stimulation of investment in health care, backed by state support, significantly increase key indicators of human capital, for instance, the increase in enrolment in higher education in recent years indicates the effectiveness of programmes to modernise the education system. Furthermore, increased public funding for health care has had a positive impact on life expectancy, which reached 74.7 years by 2023.

Conversely, T.P. Schultz (2010) expressed scepticism regarding the universality of such measures and argues that investments in human capital should be consistent with the realities of the economy, and excessive regulation, which limits market flexibility, can hinder innovation and reduce the overall effect of investment in the long term. The author argues that health and education are key human capital factors that require long-term investment, but their return on investment often depends on less regulation and an open economic climate that allows innovation to develop freely. Thus, the research discussed here shows disagreement between approaches to regulating and incentivising investment in human capital. While some scholars see strict government controls as a way to improve investment performance, others emphasise the importance of flexibility and adaptability of regulation to market conditions.

Conclusions

The results of the study confirm that the strategy of state regulation aimed at stimulating investment in human capital is a key factor in ensuring sustainable economic growth and improving social welfare. The analysis of modern approaches to state regulation has shown that the use of various instruments, such as tax incentives, subsidies for

educational and medical institutions, and support for vocational training and educational programmes, contributes to the active attraction of investment in human capital development. The study determined that these measures not only contribute to the growth of the qualification level of the labour force, but also motivate the population to participate in educational processes and master new professional competencies, for instance, the higher education enrolment rate in the Republic of Uzbekistan increased from 9% in 2016 to 42% in 2023, and the number of higher education institutions increased from 77 to 212 during this period.

A key aspect of stimulating investment is support for government programmes in health care and disease prevention, which contributes to improving the health of the population and reducing future healthcare costs, in the Republic of Uzbekistan budget expenditures on health care have increased almost 3.5 times over the past five years, reaching 31,066.6 billion UZS in 2023. Investments in the health of citizens, in turn, directly correlate with the productivity of the labour force and the national investment capacity, which contributes to the strengthening of human capital as the most important resource of the modern economy, life expectancy in the Republic of Uzbekistan, despite a temporary decline in 2020 due to the pandemic, has increased to 74.7 years in 2023, indicating the recovery and development of the health care system.

Additionally, the study determined that a comprehensive approach combining financial and educational support measures prevents the brain drain and increases the internal mobility of labour resources. Such measures can also be used to optimise the distribution of the labour force across industries, which has a positive impact on productivity growth and competitiveness of the economy. In particular, the creation of conditions for the development

of vocational education in the regions, support of state re-training programmes and provision of targeted grants for students ready to work in strategically important industries strengthen the national human resource base. In addition, such initiatives stimulate the development of innovative sectors of the economy and create opportunities for long-term sustainable growth, for instance, preschool enrolment increased from 27.7% in 2016 to 74% in 2023, highlighting the positive changes in the training of skilled personnel from the earliest stage of development. It is also worth noting that continuous monitoring and flexibility in implementation are required to improve the effectiveness of these strategies. The adaptation of international regulatory experience to the specificities of the national economy will enhance the sustainability of ongoing reforms and improve their impact. The main recommendation is that the state should thoroughly research and adopt the best international practices in this area, applying them to the economic and social realities of the Republic of Uzbekistan.

Prospects for further research include a more in-depth analysis of investment efficiency, based on sectoral, regional and age characteristics, as well as a detailed study of the interaction of human capital with digitalisation and innovation. Of particular interest is the study of the mechanisms of adaptation of educational and social systems to changes in global labour markets, which will broaden the understanding of the role of human capital as a driver of sustainable economic growth.

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Conflict of Interest

None.

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Розроблення стратегій державного регулювання для стимулювання інвестицій у людський капітал

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Анотація. Мета проведеного дослідження полягала у виявленні основних проблем і викликів, що виникають у процесі розроблення стратегій державного регулювання для стимулювання інвестицій у людський капітал. У дослідженні застосовано системну методологію аналізу, що включає порівняльний аналіз міжнародного досвіду та національних підходів до державної підтримки та регулювання інвестицій у людський капітал. Основну увагу приділено трьом ключовим напрямом: освітнім, медичним і міграційним програмам. Для аналізу використано офіційні статистичні дані Республіки Узбекистан за 2019-2023 роки, включно з показниками тривалості життя, рівня освіти, обсягів інвестицій в охорону здоров'я та професійну підготовку. Порівняльна оцінка даних і практик дала змогу виявити сильні та слабкі сторони державної політики Узбекистану в галузі інвестицій у людський капітал і сформулювати рекомендації для підвищення її ефективності. Результати проведеного дослідження демонструють, що від обраної стратегії державної підтримки вкладень у людський капітал істотно залежить загальний рівень економічної стійкості країни. Вивчена практика державного регулювання інвестицій у людський капітал на прикладі Республіки Узбекистану дала змогу виявити, що успішний розвиток подібних стратегій залежить від комплексного підходу, що містить фінансування, координацію різних галузей економіки та забезпечення прозорості в реалізації програм. Зроблені в дослідженні висновки підкреслили, що для стимулювання інвестицій у людський капітал необхідне збалансоване поєднання державного регулювання та приватних ініціатив. Ключовими факторами є стає законодавче регулювання, адаптація сучасних методик управління та інвестування в довгострокові програми, спрямовані на розвиток знань, навичок, здоров'я та можливостей населення

Ключові слова: поліпшення рівня життя населення; фінансування системи освіти; соціальний захист населення; охорона здоров'я та якість життя; міграційна політика; ефективність бюджетних витратків