HUMAN CAPITAL DEVELOPMENT AND LONG-TERM ECONOMIC SECURITY: THE ROLES OF EDUCATION, HEALTH, AND PRODUCTIVITY IN UZBEKISTAN

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https://doi.org/10.5281/zenodo.23937838

ABSTRACT

Human capital is an important foundation of long-term economic security because the knowledge, skills, health, and productive abilities of a population influence national competitiveness, employment, income, and resilience to economic shocks. This paper examines how education, health, and productivity contribute to human capital development and economic security, with particular attention to the Republic of Uzbekistan. The study uses a qualitative secondary-data research design based on a review of academic literature and documentary analysis of publications from the World Bank, the World Health Organization (WHO), and the Organisation for Economic Co-operation and Development (OECD). The analysis identifies three interconnected findings. First, educational access has expanded, but learning quality and the development of practical skills remain important challenges. Second, improvements in life expectancy and health services strengthen the potential productive capacity of the population, although non-communicable diseases and unequal access to healthcare continue to create risks. Third, human capital contributes to economic security only when education and health are effectively translated into productive employment, decent working conditions, and higher labour productivity. Evidence from Uzbekistan illustrates this distinction: the country has made progress in poverty reduction and educational development, but informality, regional inequalities, skills mismatches, and limited access to high-skilled employment constrain the economic return on human capital. The paper concludes that coordinated investment in education, healthcare, and productive employment is essential for building a more resilient and inclusive economy.

Keywords: human capital, economic security, education, healthcare, labour productivity, Uzbekistan, sustainable development.

1. INTRODUCTION

Economic security is commonly associated with a country's ability to maintain stable economic development, protect its population from serious economic risks, and preserve the conditions necessary for future prosperity. It includes more than the growth of gross domestic product (GDP). A country may experience rapid economic expansion while remaining vulnerable to unemployment, poverty, inequality, weak institutions, or external shocks. Therefore, long-term economic security depends not only on financial resources, natural wealth, and physical infrastructure but also on the capabilities of its people.

In the modern economy, people are among the most valuable resources a country possesses. Their education, professional skills, health, creativity, and ability to adapt to technological change influence how effectively an economy uses its resources. These characteristics are generally described by the concept of **human capital**. Unlike physical capital, such as machinery, buildings, and equipment, human capital is embodied in individuals. It develops through education, healthcare, professional training, work experience, and lifelong learning.

The importance of human capital has increased as economies have become more knowledge-based and technologically advanced. Automation, digitalisation, artificial intelligence, international competition, and changes in labour demand are transforming the nature of work. In this environment, countries cannot rely only on cheap labour or natural resources to maintain competitiveness. They need workers who can learn continuously, solve problems, use technology, and contribute to innovation. A population with strong educational and health outcomes is therefore better prepared to respond to economic changes.

This issue is particularly important for the Republic of Uzbekistan. The country has a relatively young and growing population, creating both an opportunity and a responsibility for economic development. A large working-age population can support production, entrepreneurship, and domestic demand. However, demographic potential does not automatically generate economic prosperity. If young people do not receive quality education, cannot find suitable employment, or experience health problems that limit their ability to work, the potential economic advantage may not be fully realised.

Uzbekistan has made progress in several areas of human development. According to the World Bank's 2024 Human Capital Country Brief, youth literacy reached 100% in 2022, while life expectancy at birth was 72 years in the same year. At the same time, the brief reported that 32% of children were unable to read and understand a simple text by age ten in 2021. These indicators illustrate an important distinction: access to basic education and literacy does not necessarily mean that students have developed the full range of skills required for a modern labour market (World Bank, 2024).

More recent international assessment results provide additional evidence. In PISA 2025, Uzbekistan's 15-year-old students achieved an average score of 438 in science, compared with the OECD average of 482. Approximately 65% reached at least the baseline level of science proficiency, while around 1% achieved the highest proficiency levels. Although the results show progress compared with the previous assessment, they also indicate that the development of advanced analytical and scientific skills remains an important priority (OECD, 2026).

Health is another essential dimension. A healthy population can participate in education, work more consistently, and remain economically active for longer. However, health challenges can reduce labour supply, increase household expenses, and place pressure on public finances. The WHO's review of Uzbekistan's health system identifies non-communicable diseases, particularly cardiovascular diseases, as major causes of illness and mortality. It also highlights the importance of strengthening primary healthcare, improving the distribution of medical personnel, and addressing continuing health-system challenges (European Observatory on Health Systems and Policies, 2024).

Nevertheless, education and health alone do not guarantee economic security. Their benefits depend on whether individuals can use their abilities in productive employment. If graduates cannot find jobs that match their qualifications, if workers remain in low-productivity activities, or if skilled professionals leave the country, the economic return on investment in human capital may be limited. The World Bank's recent Poverty and Equity Assessment of Uzbekistan highlights this challenge. Although job creation and poverty reduction have been significant, the report identifies concerns about informal employment, the quality of new jobs, labour productivity, and the concentration of high-skilled employment in Tashkent and its surrounding region (World Bank, 2026).

Existing research has established strong theoretical connections between education, health, and economic growth. However, these factors are sometimes examined separately. A discussion of education may focus on school enrolment and academic achievement, while health research may focus on life expectancy and disease prevention. Labour-market research may concentrate on employment and wages. A more integrated perspective is necessary to understand how these dimensions interact and how their combined development contributes to national economic security.

This paper addresses that issue through the following research questions:

1. How does education contribute to human capital development and long-term economic security in Uzbekistan?

2. In what ways does population health influence labour productivity and economic resilience?

3. Why is productivity essential for converting investments in education and health into sustainable economic benefits?

4. What policy priorities could strengthen the relationship between human capital development and economic security in Uzbekistan?

The study is guided by the hypothesis that **investment in education and health strengthens long-term economic security most effectively when it is combined with productive employment opportunities, effective labour-market institutions, and policies that support continuous skills development.**

The central argument of this paper is that human capital should be treated as a strategic component of economic security rather than simply a social-development objective. Education creates capabilities, health protects those capabilities, and productivity transforms them into economic value. The paper first reviews the theoretical and empirical literature, then explains the research methodology, presents findings from secondary data, discusses their implications for Uzbekistan, and concludes with policy recommendations.

2. LITERATURE REVIEW

2.1. The concept and economic importance of human capital

The concept of human capital developed from the idea that people possess productive abilities that can be improved through investment. Schultz (1961) argued that education, training, and healthcare should be understood as forms of investment rather than merely as consumption. These investments improve people's abilities and can generate economic returns over time.

Becker (1964) developed this approach further by explaining how education and training increase individual productivity and influence earnings. In his framework, individuals and societies invest in human capital because the benefits may exceed the costs over a person's working life. For example, a student who acquires professional knowledge may become more productive, obtain better employment, and earn a higher income. At the national level, a better-skilled workforce can support more efficient production and innovation.

The human capital approach also provides an explanation for differences in economic performance between countries. Economies with similar levels of physical investment may achieve different results because their populations have different levels of knowledge, skills, and health. Lucas (1988) incorporated human capital accumulation into economic growth theory and demonstrated the importance of human capital in explaining long-term growth. His approach suggests that the knowledge and skills of individuals can create benefits beyond the individual worker, as learning and knowledge-sharing may improve the productivity of others.

However, human capital should not be measured only by the number of years people spend in education. School attendance and formal qualifications are important, but they do not necessarily indicate whether individuals have acquired useful knowledge. The quality of learning, practical skills, problem-solving abilities, and adaptability are equally important. This distinction is particularly relevant for developing economies, where educational participation may expand faster than the quality of learning or the availability of suitable jobs.

The World Bank's Human Capital Project reflects this broader understanding by considering the contribution of education and health to the productivity of the next generation. Its Human Capital Index

and related indicators emphasise that children need to survive, remain healthy, and receive quality education if they are to reach their productive potential (World Bank, 2024).

2.2. Education as a foundation of human capital

Education is one of the most widely recognised sources of human capital development. It improves literacy, numeracy, technical knowledge, communication, critical thinking, and the ability to adapt to new technologies. These capabilities increase the range of tasks workers can perform and may help businesses introduce more advanced production methods.

The relationship between education and economic development is not limited to individual earnings. A more educated population can contribute to entrepreneurship, technological adoption, better public administration, and stronger participation in economic and civic life. Education can also improve social mobility by allowing individuals from disadvantaged backgrounds to access opportunities that would otherwise remain unavailable.

Nevertheless, the literature highlights a difference between educational quantity and educational quality. A country may increase school enrolment and university graduation rates without achieving equivalent improvements in learning outcomes. When students complete formal education without sufficient practical, analytical, or technical skills, employers may struggle to find workers who meet their needs.

Evidence from Uzbekistan illustrates this challenge. The World Bank's 2024 Human Capital Country Brief reported that 32% of children were experiencing learning poverty in 2021, meaning that they could not read and understand a simple text by the age of ten. PISA 2025 provides a more recent international perspective: Uzbekistan's average science score was 438, below the OECD average of 482. The assessment also showed that approximately 65% of participating students reached at least baseline proficiency in science (OECD, 2026). These findings suggest that expanding access to education must be accompanied by improvements in learning quality.

Another important issue is the connection between education and labour-market demand. Educational institutions may produce graduates in fields where employment opportunities are limited, while employers may face shortages of technical, digital, or professional skills. This mismatch reduces the economic return on educational investment. Therefore, education systems need to cooperate with employers, provide career guidance, expand vocational pathways, and update curricula in response to technological and economic changes.

2.3. Health as an economic resource

Health is another essential component of human capital. A person's knowledge and skills have limited economic value if illness, disability, or poor working conditions prevent that person from using them effectively. Good health improves attendance at school and work, supports concentration, increases the ability to learn, and can extend productive working life.

The economic effects of health operate through several channels. First, healthy children are more likely to attend school and benefit from education. Second, healthy adults can participate more consistently in employment and may be more productive. Third, preventive healthcare can reduce the need for expensive treatment and lower the financial burden on households and public budgets. Finally, a healthier population is generally better able to withstand crises, including epidemics and other public-health emergencies.

The WHO and European Observatory's report on Uzbekistan describes improvements in the country's health system since 2018, including efforts to strengthen primary healthcare, decentralise services, reform

health financing, and introduce digitalisation. At the same time, the report identifies continuing challenges. Non-communicable diseases are major causes of mortality and morbidity, and the distribution of healthcare workers remains uneven. Migration and low salaries also contribute to difficulties in maintaining an adequate health workforce (European Observatory on Health Systems and Policies, 2024).

These findings demonstrate that health policy should not be considered separate from economic policy. Preventing disease, improving access to primary care, strengthening medical staffing, and encouraging healthier lifestyles can protect the productive capacity of the population. In this sense, healthcare spending is not only a social expense but also an investment in national economic resilience.

2.4. Productivity as the link between human capital and economic security

Productivity refers to the amount of output produced using a given quantity of inputs, such as labour, capital, and technology. Labour productivity is often measured as output per worker or output per hour worked. It is an important indicator because sustainable improvements in living standards generally require workers and businesses to produce more value from available resources.

Education and health contribute to productivity, but they do not determine it alone. Workers also need access to modern equipment, reliable infrastructure, effective management, technology, finance, and functioning markets. A highly educated employee working with outdated equipment or in an inefficient organisation may not reach their productive potential.

This means that human capital development must be accompanied by improvements in the economic environment. Businesses need incentives to invest, create formal jobs, adopt new technologies, and organise production efficiently. Labour-market institutions should help workers move between jobs and acquire new skills. If these conditions are weak, the economy may fail to transform educational and health improvements into higher output and incomes.

The World Bank's 2026 Poverty and Equity Assessment identifies the quality of employment and labour productivity as important issues for Uzbekistan. The report notes that a large share of new jobs has been created in construction and trade, while many are informal. It also highlights the concentration of high-skilled employment in Tashkent city and region (World Bank, 2026). This evidence suggests that job creation alone is not sufficient: the structure, quality, and productivity of employment matter.

2.5. Human capital and long-term economic security

Economic security is closely connected to the ability of an economy to maintain stable development and adapt to internal and external shocks. Human capital contributes to this capacity in several ways. A skilled workforce can help industries modernise and diversify. A healthy population can maintain economic activity during periods of uncertainty. Higher productivity can strengthen competitiveness, increase incomes, and expand the tax base available to finance public services.

Human capital also reduces certain structural vulnerabilities. For example, workers with transferable skills may adapt more easily when industries change. A population with stronger education and digital capabilities may be better prepared for technological disruption. Effective healthcare systems can reduce the economic consequences of disease outbreaks and chronic illness. In addition, equal access to education and employment can reduce social exclusion and strengthen public confidence.

However, human capital development can be undermined by unequal opportunities, unemployment, skills mismatch, regional disparities, and the migration of skilled workers. The benefits of investment may also take many years to appear. Consequently, governments must consider human capital as a long-term policy priority rather than expect immediate economic returns.

2.6. Research gap

The reviewed literature establishes that education, health, and productivity are important determinants of economic performance. Nevertheless, there is a need to examine them as interconnected components of economic security in the specific context of Uzbekistan. National indicators show progress in education, health, and poverty reduction, but they also reveal continuing weaknesses in learning outcomes, health-system capacity, employment quality, and the distribution of opportunities.

This paper addresses that gap by bringing together evidence from education, health, and labour-market sources. Rather than estimating a new causal relationship using original survey data, it examines how the available evidence supports or challenges the argument that human capital contributes to long-term economic security only when its three dimensions develop together.

3. METHODOLOGY

3.1. Research design

This paper uses a qualitative secondary-data research design. It combines a focused literature review with documentary analysis of official reports and internationally comparable indicators. A secondary-data approach is appropriate because the research question concerns broad economic and social relationships that can be examined using existing academic studies, national indicators, and publications from international organisations.

The study focuses on the Republic of Uzbekistan. International literature and selected comparative indicators are used to provide theoretical context and assess the country's position. The research does not involve interviews, experiments, or a new survey of individuals. Therefore, the findings represent a synthesis of existing evidence rather than original measurements collected by the author.

3.2. Sources and selection of materials

The analysis uses two main groups of sources.

The first group consists of academic and theoretical literature on human capital, economic growth, and productivity. Key works include Schultz's (1961) discussion of investment in human capital, Becker's (1964) economic analysis of education and training, and Lucas's (1988) model of human capital accumulation and economic growth.

The second group consists of institutional reports and statistical publications. These include:

- The World Bank's 2024 Human Capital Country Brief for Uzbekistan.
- The OECD's PISA 2025 results for Uzbekistan.
- The WHO and European Observatory's 2024 review of Uzbekistan's health system.
- The World Bank's 2026 Poverty and Equity Assessment of Uzbekistan.
- World Bank country and development indicators where relevant.

Sources were selected purposively according to their relevance to the research questions, institutional credibility, availability of methodological information, and focus on Uzbekistan. Greater attention was given to official and internationally comparable data. The analysis uses the most recent relevant figures available in the selected publications, while retaining the original reference years of the indicators.

3.3. Data collection and analysis

The documentary analysis followed three stages. First, the selected materials were reviewed to identify indicators and findings related to education, health, and productivity. Second, the evidence was organised into three analytical categories: human capital formation through education, protection of productive capacity through health, and the conversion of capabilities into economic output through

employment and productivity. Third, the categories were compared to identify connections, recurring challenges, and policy implications for long-term economic security.

The study uses descriptive comparison and thematic synthesis. Descriptive comparison is applied when examining reported indicators, such as PISA performance, life expectancy, and employment conditions. Thematic synthesis is used to connect findings from different sources and identify common issues, including learning quality, healthcare access, informality, and regional inequality.

No regression model, correlation test, or causal statistical estimation is conducted. This is because the paper does not assemble a consistent individual-level or time-series dataset suitable for such analysis. Therefore, the results should be interpreted as evidence-based analytical findings, not as proof that a particular policy caused a specific change in GDP or productivity.

3.4. Ethical considerations and limitations of the method

The study uses publicly available academic and institutional publications and does not collect personal information or involve human participants. As a result, informed consent and participant-level anonymity procedures are not applicable. All sources are acknowledged through in-text citations and the reference list. The analysis aims to represent the original sources accurately and distinguish reported data from the author's interpretation.

The methodology has limitations. Institutional indicators may refer to different years, use different definitions, and cover different population groups. For example, PISA measures the performance of 15-year-old students, while labour-market indicators describe working-age populations. These measures cannot be combined into a single numerical index without additional methodological work. In addition, documentary analysis can identify plausible relationships but cannot independently establish causation. These limitations are considered when interpreting the findings.

4. RESULTS AND FINDINGS

The documentary analysis produced three main findings corresponding to the dimensions of human capital: education, health, and productivity. A fourth finding concerns the interaction of these dimensions and their combined importance for economic security.

4.1. Finding 1: Educational access has improved, but learning quality remains a central challenge

The reviewed sources indicate that Uzbekistan has achieved progress in basic educational participation and literacy. The World Bank's 2024 Human Capital Country Brief reported a youth literacy rate of 100% in 2022. The same brief, however, reported that 32% of children could not read and understand a simple text by age ten in 2021 (World Bank, 2024).

International assessment data provide a more detailed picture of learning outcomes. According to the OECD's PISA 2025 country note, Uzbekistan's 15-year-old students achieved an average score of 438 in science, compared with the OECD average of 482. Approximately 65% of students reached at least Level 2 proficiency in science, while around 1% achieved Level 5 or 6. The assessment also reported an average score of 402 in computational problem-solving, compared with the OECD average of 500 (OECD, 2026).

The PISA results also show a positive change compared with the previous assessment. Uzbekistan's science score increased by 83 points between 2022 and 2025. However, the OECD cautions that the 2025 country note includes science and computational problem-solving results because inconsistencies in some mathematics and reading responses require further investigation. Therefore, the improvement in science should not automatically be interpreted as an equivalent improvement across every subject.

Table 1. Selected education indicators for Uzbekistan

Indicator	Reported value	Reference year
Youth literacy rate	100%	2022
Children experiencing learning poverty	32%	2021
PISA science average score	438 points	2025
OECD average science score	482 points	2025
Students reaching at least baseline science proficiency	65%	2025
PISA computational problem-solving score	402 points	2025

Sources: World Bank (2024); OECD (2026). Figures refer to the years indicated, not necessarily the year of publication.

These indicators show that basic literacy and educational participation should be distinguished from the development of advanced competencies. The evidence also identifies a continuing difference between Uzbekistan's average performance and the OECD average in science and computational problem-solving.

4.2. Finding 2: Health improvements strengthen productive potential, but important health-system risks remain

The reviewed health sources identify improvements in life expectancy and continuing reforms in healthcare provision. The World Bank's 2024 Human Capital Country Brief reported life expectancy at birth of 72 years in 2022, compared with 71 years in 2017. The WHO's country data also show that healthy life expectancy increased between 2000 and 2023, reaching 64.6 years in 2023 (World Bank, 2024; WHO, n.d.).

At the same time, the WHO and European Observatory's 2024 review identifies non-communicable diseases as the main cause of mortality and morbidity in Uzbekistan, with cardiovascular disease being a leading cause of death. The report also identifies uneven distribution of medical personnel, low salaries, and migration as continuing concerns. Reforms have included efforts to strengthen primary care, improve health financing, decentralise services, and introduce digitalisation (European Observatory on Health Systems and Policies, 2024).

Table 2. Selected health indicators and challenges

Indicator or issue	Evidence
Life expectancy at birth	72 years in 2022 (World Bank, 2024)
Healthy life expectancy at birth	64.6 years in 2023 (WHO, n.d.)
Major causes of health burden	Non-communicable diseases, especially cardiovascular disease
Health workforce challenge	Uneven distribution and continuing migration concerns
Reform priorities	Stronger primary care, health financing, and digitalisation

Sources: World Bank (2024); WHO (n.d.); European Observatory on Health Systems and Policies (2024).

The data indicate that improvements in longevity and healthcare reform coexist with challenges in disease prevention, service distribution, and workforce capacity. The distinction between life expectancy and healthy life expectancy is also important: living longer does not necessarily mean that all additional years are spent in good health.

4.3. Finding 3: Employment quality and productivity influence the economic return on human capital

The World Bank's 2026 Poverty and Equity Assessment reports substantial progress in poverty reduction in Uzbekistan. According to the assessment, the national poverty rate declined from 17.0% in 2021 to 5.8% in 2025, while the middle class expanded. However, the report also identifies concerns about the quality of employment and productivity.

The assessment states that approximately two-thirds of new jobs were created in construction and trade and that around 85% of these new jobs were informal. It also reports that real labour productivity turned negative. In addition, high-skilled employment remains concentrated in Tashkent city and region, while opportunities differ across regions (World Bank, 2026).

The same report identifies gender-related barriers to labour-market participation. Among inactive adults in poor and vulnerable households, women make up a large majority, with care responsibilities being a major reason for inactivity. The report also highlights a persistent gender wage gap and the lower likelihood of mothers with very young children being employed.

These findings demonstrate that employment growth and productivity growth are not identical. More people may enter employment without a corresponding increase in the value of output produced per worker. Informal employment, limited access to technology, skills mismatch, and unequal access to high-productivity jobs may restrict the economic return on education and health investment.

4.4. Finding 4: The three dimensions of human capital are interconnected

The evidence from the reviewed sources supports an integrated understanding of human capital. Education develops knowledge and skills, health supports people's ability to acquire and apply those skills, and productive employment provides the conditions through which these capabilities generate economic value.

The relationship can be represented as follows:

Education → Knowledge and Skills
Health → Physical and Mental Capacity
Education + Health → Work Readiness and Capability
Productive Employment + Technology + Effective Institutions → Higher Productivity
Higher Productivity → Stronger Incomes, Competitiveness, and Economic Resilience

This framework is not a statistical model estimated in the present study. It is an analytical representation of the relationships identified in the literature and institutional reports.

Taken together, the findings show that Uzbekistan has made progress in several human development areas, but important constraints remain. The most significant issues are learning quality, healthcare capacity, employment informality, uneven regional opportunities, and the limited conversion of skills into productive work.

5. DISCUSSION

The findings provide an answer to the main research question: **human capital contributes to long-term economic security when education and health create strong individual capabilities and the economy provides opportunities to use those capabilities productively.** The evidence suggests that progress in only one dimension is insufficient.

5.1. Education must focus on skills and learning outcomes

The education findings support the argument that the quality of learning is as important as access to education. Uzbekistan's youth literacy rate is high, and its PISA science performance improved between 2022 and 2025. However, the remaining gap between Uzbekistan's average science score and the OECD average indicates that further improvements are necessary.

This result is consistent with the human capital theories of Schultz (1961) and Becker (1964). If education is an investment that improves productive abilities, the economic value of that investment depends on what individuals actually learn. Years spent in school or university cannot fully represent human capital if graduates lack the skills required for modern employment.

For Uzbekistan, this means that education policy should place greater emphasis on foundational literacy, numeracy, science, digital competence, critical thinking, and practical problem-solving. Teacher development is equally important because the quality of instruction influences whether students can translate attendance into actual learning. Vocational and higher education institutions should also cooperate with employers to ensure that curricula reflect changing labour-market needs.

The PISA 2025 findings should be interpreted carefully. They show improvement in science, but they do not prove that all dimensions of educational quality have improved equally. The OECD specifically notes limitations in the mathematics and reading data for Uzbekistan. This is a reminder that policymakers should use multiple indicators rather than rely on a single international ranking.

5.2. Health is an investment in economic resilience

The health findings demonstrate that population health is directly connected to economic security. Improvements in life expectancy and healthy life expectancy indicate progress, but the burden of non-communicable diseases and uneven distribution of medical personnel remain important risks.

From an economic perspective, illness can reduce the number of hours people are able to work, interrupt education, increase household expenditure, and lower productivity. Chronic diseases may also create long-term costs for public healthcare systems. These effects can be particularly serious for low-income households, which may have fewer resources to manage medical expenses or periods without employment.

The WHO and European Observatory's findings suggest that strengthening primary healthcare and improving the distribution of medical workers should remain priorities. Preventive healthcare is especially important because reducing the incidence of avoidable disease can protect both individual well-being and the productive capacity of the population.

Healthcare policy should also recognise the relationship between health and education. Children who experience poor health may have difficulties attending school or concentrating in lessons. Adults with untreated health conditions may struggle to participate consistently in employment. Therefore, investment in health can improve the effectiveness of educational investment as well.

5.3. Productivity determines whether human capital produces economic value

The productivity findings are particularly important for Uzbekistan's long-term economic security. The World Bank's 2026 assessment reports progress in poverty reduction and job creation, but it also

identifies informal employment, weak labour-productivity performance, and regional concentration of high-skilled jobs.

This evidence highlights a key distinction: a country can create more jobs without creating enough high-productivity jobs. If workers are concentrated in low-value-added activities, have limited access to technology, or work in informal conditions, their skills may not be fully utilised.

Lucas's (1988) theory helps explain why human capital can support long-term growth, but the economic environment determines how effectively this potential is realised. Workers need access to capital, technology, infrastructure, and well-managed firms. Businesses must also have incentives to invest in innovation and training. Without these complementary conditions, improvements in education and health may not translate into equivalent improvements in output.

For Uzbekistan, improving productivity requires policies that support private-sector development, formal employment, technological adoption, management quality, and access to finance. It also requires better links between education providers and employers. Skills development should be connected to real opportunities rather than treated as an objective separate from the labour market.

5.4. Human capital development and inequality

The findings also show that human capital development is closely connected to equal access to opportunity. When high-quality education, healthcare, and skilled employment are concentrated in particular regions or among certain population groups, the country cannot use the full potential of its population.

The World Bank's 2026 assessment highlights the concentration of high-skilled jobs in Tashkent city and region, as well as barriers affecting women's participation in employment. These patterns matter for economic security because they limit the number of people who can contribute to productive activity.

For example, a qualified woman may be unable to enter or remain in employment if affordable childcare is unavailable. Similarly, a young person in a remote district may have the necessary ability but lack access to quality vocational training, transport, or digital infrastructure. In both cases, the problem is not necessarily an absence of individual potential; it is the absence of conditions that allow that potential to be used.

Therefore, human capital policy should include regional development, accessible childcare, inclusive education, career guidance, and support for labour-market participation. Improving equality of opportunity is not only a social objective. It can also increase the effective supply of skills available to the economy.

5.5. Policy implications for Uzbekistan

Based on the findings, several policy priorities can be identified.

First, improve the quality of basic education. Foundational literacy, numeracy, science, and digital skills should receive sustained attention. Teacher training, evidence-based assessment, modern learning materials, and support for disadvantaged schools can help improve learning outcomes.

Second, strengthen the connection between education and employment. Vocational education, university programmes, and professional training should be developed in cooperation with employers. Work-based learning, internships, apprenticeships, and career guidance can help reduce skills mismatch.

Third, invest in preventive and primary healthcare. Strong primary healthcare can help identify health problems earlier, reduce avoidable illness, and protect the productive capacity of the population. Greater attention should be given to non-communicable disease prevention and the regional distribution of medical personnel.

Fourth, improve the quality of employment. Policies should encourage formal job creation, private-sector development, technological modernisation, and better working conditions. Employment indicators should be assessed not only by the number of jobs created but also by productivity, wages, security, and opportunities for professional development.

Fifth, reduce regional and gender barriers. Expanding access to quality education, transport, digital infrastructure, childcare, and employment services can help more people participate in productive economic activity.

Sixth, promote lifelong learning. Technological change means that skills acquired at the beginning of a person's career may become outdated. Flexible training, adult education, and opportunities to update digital and professional skills are therefore essential.

These priorities should be coordinated. Improving schools without creating suitable employment may increase graduate unemployment or encourage skilled migration. Expanding employment without improving education may leave businesses unable to find qualified workers. Improving healthcare without addressing access and prevention may limit the economic return on health spending. The strongest results are likely when all three dimensions develop together.

5.6. Limitations and directions for future research

This study has several limitations. First, it relies on secondary sources rather than original survey or interview data. Second, the indicators used in the analysis refer to different years and populations, which limits direct comparison. Third, the documentary approach identifies relationships and policy patterns but does not estimate the independent causal effect of education or health on labour productivity or GDP.

Future research could address these limitations by constructing a longer time-series dataset for Uzbekistan and examining the relationship between education expenditure, health indicators, labour productivity, and economic growth. Regional-level studies could also identify differences in educational quality, healthcare access, and employment opportunities between Tashkent and other regions. Further research could investigate the effects of vocational training, digital skills programmes, and women's labour-force participation on productivity.

A mixed-methods study combining statistical analysis with interviews involving employers, graduates, educators, and healthcare professionals would provide additional insight into the reasons why skills are sometimes not fully utilised in the labour market.

6. CONCLUSION

Human capital is a fundamental element of long-term economic security because it determines the capabilities of a population and influences how effectively those capabilities contribute to economic development. This paper examined the roles of education, health, and productivity in strengthening economic security, with particular attention to the Republic of Uzbekistan.

The analysis demonstrates that education develops the knowledge and skills required for modern economic activity. Uzbekistan has achieved important progress in literacy and has shown improvement in science performance in the PISA assessment. Nevertheless, learning quality, advanced competencies, and the connection between education and labour-market demand remain important priorities.

Health protects the ability of individuals to learn, work, and participate in economic life. Improvements in life expectancy and healthcare reform are positive developments, but non-communicable diseases, uneven healthcare access, and shortages or unequal distribution of medical personnel continue to create challenges. Strengthening preventive and primary healthcare is therefore important not only for social well-being but also for economic resilience.

Productivity connects these investments to measurable economic outcomes. Education and health can create a capable workforce, but their full economic value depends on the availability of productive jobs, modern technology, effective management, and opportunities for professional development. Uzbekistan's experience shows why job quantity must be considered alongside job quality, formality, and productivity.

The main conclusion is that education, health, and productivity should not be treated as separate policy areas. They form an interconnected system. Education creates capabilities, health protects them, and productive employment transforms them into economic value. Weakness in any one of these areas can reduce the benefits of investment in the others.

For Uzbekistan, a long-term human capital strategy should therefore focus on improving learning outcomes, strengthening healthcare, developing labour-market-relevant skills, supporting formal and productive employment, and reducing regional and gender inequalities. Such an approach can help the country use its demographic potential more effectively, increase competitiveness, and become more resilient to future economic and technological changes.

Ultimately, the economic security of a country depends not only on the resources it possesses today but also on the knowledge, health, and productive potential of the people who will shape its future.

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