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HUMAN CAPITAL AS A FACTOR OF SOCIO-ECONOMIC DEVELOPMENT OF THE STATE: THE MAIN TRENDS OF THE SLOVAK REPUBLIC

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ABSTRACT

The development of human capital is a crucial factor in the socio-economic growth of a country. As a result of russia's armed aggression against Ukraine, European countries, in particular those bordering Ukraine (including the Slovak Republic), may experience changes in quantitative and qualitative demographic characteristics due to the increase in the number of refugees. Migration processes are only gaining momentum over time, which may have a certain impact on the human capital indicators in the EU countries. In order to be able to track these processes, it is important to have an awareness of the existing state and tendencies of human capital dynamics in European countries. That is why the authors of the article analysed the state and trends of human capital development on the example of the Slovak Republic, using both integral assessments of international institutions and organisations and indicators of national statistics of Slovakia. The study proved the importance and necessity of investing in science and education and the direct correlation between the amount of investment in human capital and the socio-economic development of the country.

Systematic use of the proposed analysis and provided recommendations will make it possible to significantly increase the quality indicators of human capital, which will have a positive impact on the potential development of the country.

Keywords: human capital, investment in human capital, national economy, education, health care, state policy of human capital development

JEL Classification: E22, J24, O10, O15

INTRODUCTION

The development of human capital is a crucial factor in the socio-economic growth of a country; therefore, the state must stimulate and promote the development of human capital, which is its main resource. Individual states of the world and Europe have quite significant accumulations of human capital: it forms up to 70% national wealth of developed countries. The state can promote the development of human capital through various measures, for example, funding educational programs, raising wages, developing the health care system, supporting scientific research, etc. However, if the state does not pay enough attention to the development of human capital, this can result in a decline in the labour force quality and low competitiveness of the country in the international market. Today, the problem of increasing the efficient use of productive forces, which are realized in modern conditions in the form of human capital, is not only important but is also put forward as a priority objective in the structure of socio-economic research. Such studies are actualized in today's complex socio-economic conditions, when pandemics, environmental disasters, and military conflicts threaten human existence and areas of human capital formation and development (educational sphere, health care sphere), regardless of the country or region of the world. Quite a significant part of the human capital accumulated in many countries of the world during the last decades may be lost in the conditions of such threats.

As a result of russia's armed aggression against Ukraine, in European countries, in particular, those that border Ukraine (which includes the Slovak Republic), due to the in-

crease in the number of refugees from its territory, changes in quantitative and qualitative demographic characteristics and labour force can already be expected at the earliest, which in a certain way can affect the indicators of the state of their human capital. In order to be able to monitor these processes, it is necessary to have an idea of the current state and trends of the dynamics of human capital in European countries.

LITERATURE REVIEW

General aspects of the theory of human capital are developed in the publications of such famous scientists as Becker G. (1964), Mincer J. (1958), Bourdieu P. (1994), Coleman J. (1998), Thurow L. (1970), Fysher S (1998), Shultz T. (1968), Shmalenzy R. (1998) and others.

The foundations of the theory of human capital were laid by representatives of the classical direction of economic science, who at one time paid considerable attention to this problem and initiated a scientific analysis of human abilities to work, in particular, the formation and reproduction of such abilities, as well as their effective use. It is believed that one of the first scientists who tried to define the essence of human capital was the physiocrat, William Petty. Other well-known representatives of the classical direction of economic science are Adam Smith and David Ricardo. A. Smith believed (Smith, A., 2007) that the growth of labour productivity (of a specific employee, or of employees in general at the scale of society) depends primarily on increasing dexterity and skill. A. Smith noted that the acquisition of certain abilities (dexterity and skills) by an employee requires appropriate costs. According to A. Smith, the abilities of an employee, as properties of a certain person, become part of the wealth of the society to which this person belongs. The mentioned author believed that the skill of the worker, as well as the latest machines and tools of production, are able to reduce or facilitate work: they require certain costs, but later compensate them and provide profit. D. Ricardo, one of the founders of the labour theory of value (Ricardo, D., 2007), believed that the only source of the value of goods, which forms the basis of the income of various classes of society, is the labour of an employee. According to D. Ricardo, the productivity of an employee depends primarily on the creative abilities of a person, and only then on the characteristics and capabilities of machines.

Gary is considered the direct founder of the theory of human capital Stanley Becker (American economist, laureate of the Swedish Central Bank Prize for Economic Sciences in honor of Alfred Nobel in 1992) and Theodore William Schultz (American economist, laureate of the Nobel Prize in Economics in 1979). Concepts by G. Becker and T. Schultz appeared in the economic literature almost at the same time: in the works "Educational capital formation" (Schultz, T., 1960) and "Investments in human capital" (Schultz, T., 1961), "Investments in human capital" (Becker G., 1962), "Human capital: theoretical and empirical analysis" (Becker, G., 1964). Proponents of the theory of human capital believe that thanks to the scientific work of T. Shultz, the theory of human capital has become an independent section of economic analysis, and the merit of H. Becker is considered to be the development of the basic theoretical model of human capital. The founders of the theory of human capital (as well as the vast majority of their followers) single out and investigate two key phenomena: human capital itself and investments in human capital. Human capital, in their opinion, represents the knowledge and skills of a person acquired by him throughout his life in the process of studying, working, and improving his qualifications. All expenses for obtaining the education and qualifications of a person are considered by the proponents of the theory of human capital to be investments in human capital.

Justifying his own concept of human capital, T. Schultz assumed that capital is any asset (material or human) that has the ability to generate income. On this basis, T. Schultz defines human capital as everything that can be "a source of future pleasures or earnings, or both together" (Schultz, T., 1960). One of the key factors (sources and forms) of human capital, according to T. Schultz, is education: thanks to the education a person receives, the possibility of adequate income appears. At the scale of society, education is considered a key factor in the growth of the social well-being of the nation and the state.

In H. Becker's concept, human capital is considered more broadly: all individual characteristics of a person (and their development and improvement) are recognized as a special form of capital. G. Becker claimed that "human capital is formed at the expense of investments in people, among which one can name education, on-the-job training, spending on health care, migration, searching for information about prices and incomes" (Becker, G., 2003). G. Becker included in investments in a person (in addition to expenses for general and professional education): expenses for raising children, health care, searching for useful information, changing jobs, and others that contribute to the development of a person's productive power (as well as his cultural and intellectual growth). According to H. Becker, investments in human capital not only help to increase the income of an individual but also lead to an increase in labour productivity in society and in the state economy. The same education, for example, in addition to the formation of professional knowledge and skills, also develops entrepreneurial talents, reduces resistance to innovations, simplifies the perception of changes; training and

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advanced training in production (accumulation of production experience) contributes to a quick and painless transition to new technologies (Zuev, A., Myasnikova, L., 2002). G. Becker divided general and special investments in a person. Investments related to special training are aimed at the employee's acquisition of knowledge and skills that are of interest only to the firm where they were obtained. Investments in general training provide the employee with knowledge and skills that can be applied to many other firms. G. Becker showed that the general training is indirectly paid for by the workers themselves, when they, seeking to improve their qualifications, agree to a lower wage during the training period and profit from it in the future (Becker, G., 2003). It is clear that general and special investments in a person can be made both at the expense of the employee and at the expense of employer companies.

The properties of a person, which collectively form human capital, are reflected in the research of modern scientists. Thus, according to Y. Yadgarov (2004), the qualitative characteristics of the workforce, a person's ability to work, his skills, knowledge, and skills can be considered as human capital. According to the research of O. Borodina (2003), human resources can potentially turn into human capital, provided that they bring income, that is, if a person is able to occupy himself in the process of production, organization of his work, sale of his workers opportunities O. Grishnova (2001; 2014) distinguishes personal human capital, human capital of an enterprise, human capital at the macroeconomic level (individual country). It defines human capital as " a certain stock of health, knowledge, skills, abilities, motivation formed and developed as a result of investments and accumulated by a person, which is purposefully used in one or another sphere of economic activity, contributes to the growth of labour productivity and, thanks to this, affects the growth the income of its owner, the profit of the enterprise and the national income" (Grishnova, O., 2014). Therefore, the accumulation of human capital, in addition to increasing the income of its owners, contributes to the increase of national income.

In the work "Smart Money", Schweke (2004) spoke eloquently about the special role of human capital in the development of the national economy. He noted that the countries of the world should invest money primarily in human capital. In his opinion, investments in health care, education and professional training can positively affect not only labour productivity, but also significantly reduce social problems (such as crime, poverty, alcoholism, drug addiction, etc.), which are "suffocating" with a heavy burden" economy of almost all countries of the world.

Scopus electronic database of scientific periodicals show that the constant growth of scientists' interest in the problems of human capital formation and the determination of its positive impact on the socio-economic development of the economy of an individual state in a certain way on the Elsevier publishing platform. Currently, 31 thousand 465 scientific articles are recorded in the specified database, which to one degree or another relate to the problems of human capital (the term " human capital " is used in the title, abstract or keywords). Only in the period 2011-2021, the annual number of such articles more than doubled: from 1,092 units in 2011 to 2,489 units in 2021. 2019-2023 research focus: the contribution of human capital, (Bezverkhyi, K. at. al., 2023; Sun, Y. at. al., 2020; Nováková,R. at. al., 2019; Jinli Zeng, Jie Zhang, 2022; Šrámka, M.,2022.) knowledge and social capital to "differences in total factor productivity and economic growth between European sub-national regions" (Puskarov, P., 2022); legal mechanisms that promote the development of firm-specific human capital in the knowledge economy (Lee, J.-A., Lin, LY-H., 2022; Zakharova, O. at al., 2014); specific model of formation and development of human capital of immigrants (Adda, J., Dustmann, C., Görlach, J.-S., 2022); expansion of the structure of investments in human capital due to investments in learning foreign languages (Huber, M., Sommerfeld, A.-M., Uebelmesser, S., 2022); the impact of human capital on labor income in the countries of the European Union and the United Kingdom of Great Britain (Çelik, O., 2022; Shirinyan, L., Shirinyan, A., 2019; Susanna G. Campbell, Murat Üngör, 2020); components of human capital development and their influence on the state of competitive development in the conditions of crisis and post-war reconstruction (Kozhyna, A. at al. 2022; Zachosova, N. at al., 2020; Max Gillman, 2021.); influence potential human capital , knowledge about human capital and skills human capital on efficiency organizations in the industry hospitality (Aman-Ullah, A., Mehmood, W., Amin, S., Abbas, YA, 2022); a technique for measuring the influence of human capital on economic growth (Eftimoski, D., 2022; Plaksiuk, O at al., 2023); a technique for measuring the level of human capital to solve specific problems in the field of education and health care that middle-income countries face (Demirgüç-Kunt, A., Torre, I. , 2022; Plaksiuk, O at al., 2022; Zakharova, O. at al., 2020). However, no articles were found in the Scopus electronic database of scientific periodicals on the Elsevier publishing platform for 2019-2022, in title, abstract or keywords in which the term "human capital of Slovakia" appears.

AIMS AND OBJECTIVES

The research aims to define the essence of the concept of "human capital" and to determine the current state and trends of human capital development in the Slovak Republic in the period 2010-2022.

The main tasks of this study are:

- to clarify the essence of the basic concepts of human capital theory;
- to assess the current state and trends of human capital development in the Slovak Republic, using both integral assessments of international institutions and organisations and indicators of national statistics of Slovakia;
- to improve the methodology of assessment and analysis of the state and dynamics of human capital in the context of the effectiveness of investments in human capital.

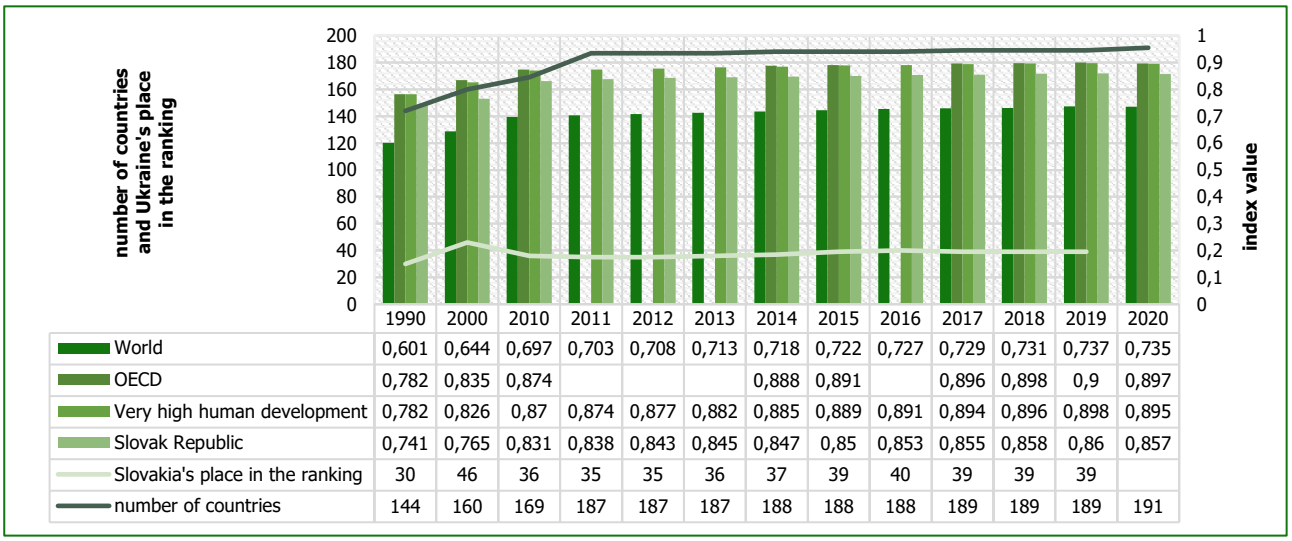
METHODS

To analyze the main quantitative and qualitative parameters of the human capital of the Slovak Republic, we used the data of the integral assessments of the human capital United Nations Development Program and World Bank, as well as official data of national statistics. We analyzed the following indicators: economic activity and employment of the population, including taking into account the level of education; the number of employees and their distribution by types of economy and by classifier of professions; the volume of investments in education, science and innovation. In order to find out the relationship between investments in human capital and the national income of the state, the authors compared the dynamics of GDP and the dynamics of investments in education, science and innovation in Slovakia.

To achieve the goal, the work uses theoretical research methods, economic-statistical methods, and methods of empirical data analysis. As a method of theoretical research, a systematic approach was used to determine the essence of the categories "human capital" and "investment in human capital". Among the economic and statistical methods of empirical data analysis, the following methods were used: absolute, relative and average values, analysis of dynamic series and structural shifts - when analyzing economic activity, employment, the level of education of the population and investment in science and education; trend and graphic methods - when determining the impact of investments in human capital on the economic development of the country.

RESULTS

The level and trends of human capital development in the Slovak Republic can be determined primarily in comparison with other states. Figure 1 shows the dynamics of values Human Development Index on average for the countries of the world, OECD countries, as well as in Slovakia for the period 1990-2020 according to UNDP data.



	1990	2000	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
World	0,601	0,644	0,697	0,703	0,708	0,713	0,718	0,722	0,727	0,729	0,731	0,737	0,735
OECD	0,782	0,835	0,874				0,888	0,891		0,896	0,898	0,9	0,897
Very high human development	0,782	0,826	0,87	0,874	0,877	0,882	0,885	0,889	0,891	0,894	0,896	0,898	0,895
Slovak Republic	0,741	0,765	0,831	0,838	0,843	0,845	0,847	0,85	0,853	0,855	0,858	0,86	0,857
Slovakia's place in the ranking	30	46	36	35	35	36	37	39	40	39	39	39	
number of countries	144	160	169	187	187	187	188	188	188	189	189	189	191

Figure 1. The meaning of the Human Development Average index for the countries of the world, OECD countries, as well as for the Slovak Republic, according to UNDP data, 1990-2020. *(Source: [https://hdr.undp.org/content/human-development-report-2020])*

According to UNDP, the value of the Human Development Index in Slovakia during 1990-2020 had positive dynamics and constantly grew: in 1990, the value of the index was 0.741, and in 2019 - 0.860: the growth was 116.1%. However, during this period, Slovakia worsened its position in the Human World Ranking Development Index and moved from 30 in 1990 to 39 in 2019. Despite this, according to the results of 2019, the Slovak Republic (with an index value of 0.86) is in the

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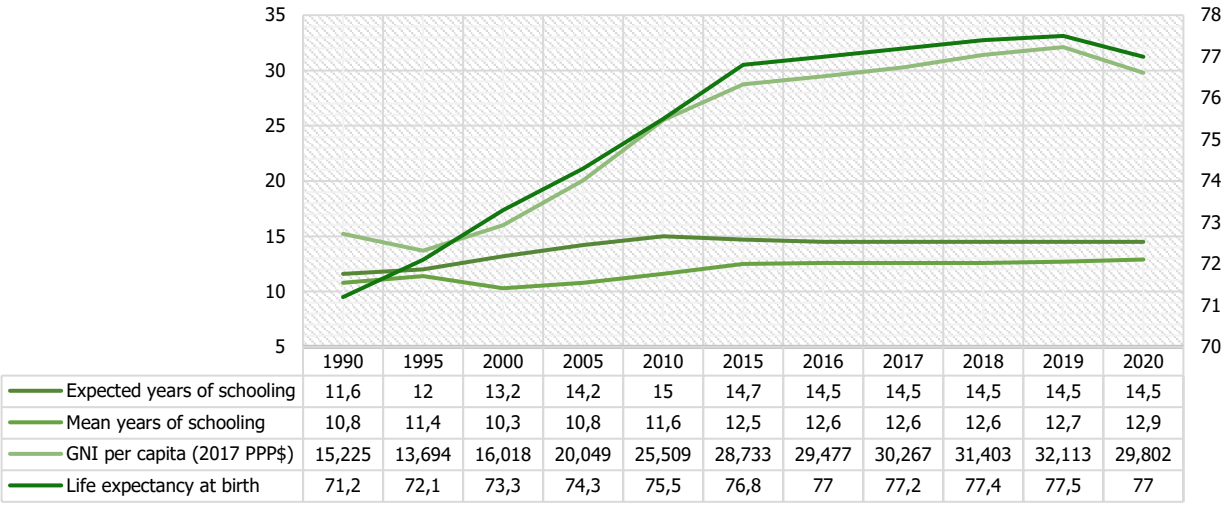
group of countries with a very high level of human potential development (from 0.800 and above). During the period from 1990 to 2019, the global average value of Human Development the Index increased from 0.601 to 0.737, and the OECD countries increased from 0.782 to 0.9. Thus, in the period from 1990 to 2020, the level of the human potential development index of Slovakia exceeded the world average level but was inferior to the average level of the index of OECD countries. Trends in the values of the main components of the Human Development Index of the Slovak Republic are presented in Figure 2 (UNDP, 2020).



	1990	1995	2000	2005	2010	2015	2016	2017	2018	2019	2020
Expected years of schooling	11,6	12	13,2	14,2	15	14,7	14,5	14,5	14,5	14,5	14,5
Mean years of schooling	10,8	11,4	10,3	10,8	11,6	12,5	12,6	12,6	12,6	12,7	12,9
GNI per capita (2017 PPP$)	15,225	13,694	16,018	20,049	25,509	28,733	29,477	30,267	31,403	32,113	29,802
Life expectancy at birth	71,2	72,1	73,3	74,3	75,5	76,8	77	77,2	77,4	77,5	77

Figure 2. Trends in Human Components Development Index of the Slovak Republic, 1990-2020. *(Source: https://hdr.undp.org/content/human-development-report-2022)*

According to the World Bank, in the Human Rating Capital According to the 2020 Index, the Slovak Republic took 44th place among 174 countries of the world. Taking into account the peculiarities of the methodology of the human capital index and the economic content of its components, the following can be stated: a child born in 2020 in Slovakia has a chance to acquire only 66% of productivity compared to the standard, i.e. 66% of that volume, before reaching adulthood (18 years of age) human capital, which could be obtained in case of "full education and full health" (World Bank, 2022) or improving the current performance of the national education and health sector. The current state of education and health care in the Slovak Republic reduces the productivity of the country's next generation of workers (carriers of human capital) who are born today: during the next 18 years, the formation of the skills of these workers will depend on the current opportunities (shortcomings) in the field of education and face the current risks for health, which will lead to a loss of their productivity by 34% (Prodanova, L., 2020). Human is a kind of benchmark Capital Index according to the results of 2020 in Singapore, where a child born in 2020 acquires 88% of productivity before reaching adulthood. The value of Slovakia's index is lower than the average for Europe and Central Asia, as well as in countries with a high level of income. For the period from 2020 to 2020, the value of the Human Capital Index of Slovakia decreased from 0.68 to 0.66. A similar (to Slovakia) level of human capital development (determined by the World Bank), as of 2020 reached: Turkey, Chile, Bahrain, China (index value - 0.65), as well as the United Arab Emirates (0.67) and Serbia (0.68) (World Bank, 2022).

In order to determine the quantitative parameters of the human capital of the Slovak Republic, we will analyze the indicators of economic activity and employment of the population. Human application of professional knowledge and highly productive work skills as capital is possible only in the process of economic activity. The process of application (realization) is also preceded by the processes of formation and accumulation of human capital when the potential opportunities of a person for productive economic activity are accumulated. The unemployed, who are not involved in economic activity and do not receive income, cannot turn accumulated knowledge and skills into human capital. At the level of the national economy, human capital is conventionally a set of individual capitals. In reality, this is the total number of people who use the acquired professional knowledge and acquired work skills to earn income. It is on this basis that we use indicators of economic activity and population employment to quantify the human capital of the national economy (as the number of people participating in economic activity).

Table 1 presents information on the number of economically active and employed population of the Slovak Republic in the period 2010-2022 according to national statistics. Given the fact that one of the key factors (sources and forms) of human capital is education, the data is presented taking into account the corresponding level of education received (by economically active or employed persons).

In order to identify the main trends in changes in the number of economically active and working population of the Slovak Republic, chain indices of annual changes in the values of indicators for 2011-2022 and basic indices of changes in the values of indicators were developed in 2022 relative to 2010 is calculated. The results of these calculations are shown in Table 2.

During 2010–2022, the number of economically active population in Slovakia increased from 2,706.5 to 2,774.3 thousand people. Among such a population, the number of people with a 3rd degree higher education has increased significantly (by 379.7%): from 7.9 thousand people in 2010 to 30.0 thousand people in 2022. The share of such persons in the total number of economically active population in 2022 is 1.08%, while in 2010 it was 0.29%. Also, the number of those with a complete secondary professional education (with a high school certificate) has increased significantly. The number of these persons in 2022 reached 156.3 thousand persons, which exceeded the value of the corresponding indicator in 2010 by 79.7%. At the end of the studied period, persons with complete secondary professional education accounted for the total number of economically active population. Also, a very high share of the economically active population is occupied by persons with a 2nd level university education: 15.50% – in 2010 and 25.6% – in 2022. For the years 2010-2022, there is a positive trend in the country to increase the level of education among the population, as evidenced by the data in Tables 1 and 2.

Table 1. Economic activity and employment of the population of the Slovak Republic, including by level of education, 2010-2020.
(Source: http://datacube.statistics.sk/)

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Economically active population aged 15-64, thousand people													
Economically active population, total	*2706.5*	*2680.0*	*2706.5*	*2715.3*	*2721.8*	*2738.3*	*2758.1*	*2754.7*	*2746.3*	*2741.4*	*2712.7*	*2748.2*	*2774.3*
including with:													
basic education	163.7	157.1	158.2	158.5	154.4	158.4	154.5	167.6	155.8	156.6	126.7	110.9	119.3
secondary professional without graduation	989.8	945.5	892.3	849.2	812.1	778.0	764.1	729.0	690.7	647.3	615.7	592.9	600.2
complete vocational high school with a high school certificate	100.8	118.6	124.2	104.8	165.2	175.3	168.5	183.1	184.7	184.1	172.1	168.6	156.3
complete secondary general education	113.4	117.2	117.3	118.8	108.0	105.4	114.6	116.3	117.6	110.1	111.7	113.1	115.3
complete secondary professional education	922.2	884.1	875.1	929.9	893.0	910.1	916.4	887.8	890.4	897.7	921.6	939.6	915.3
higher professional education	17.9	35.5	35.4	28.0	26.4	21.8	21.9	21.9	24.5	22.8	21.6	18.8	20.9
university - 1st level	49.1	57.6	67.7	70.6	88.6	80.5	70.3	74.0	83.5	84.4	85.6	96.1	105.2
university - 2nd level	419.6	419.4	421.2	447.8	457.9	489.2	531.7	555.3	572.4	612.5	636.1	679.8	711.1
university - 3rd level	7.9	11.3	11.4	10.5	16.0	19.3	16.2	19.5	26.3	26.1	21.5	27.9	30.0
without school education	0.3	0.5	0.2	0.2	0.3	0.3	0.1	0.1	0.3	0.3	0.2	0.5	0.7
Number of employed populations aged 15-64, thousand people													
Employed population, total	*2,317.5*	*2,315.3*	*2,329.0*	*2,329.3*	*2,363.0*	*2,424.0*	*2,492.1*	*2,530.7*	*2,566.7*	*2,583.7*	*2,531.3*	*2560.6*	*2603.9*
including with:													
basic education	91.4	90.7	87.8	91.5	85.9	97.4	105.0	117.0	107.8	106.7	87.0	63.4	70.9
secondary professional without graduation	712.9	710.6	701.8	692.3	678.7	671.8	677.9	662.1	638.4	606.2	567.7	542.5	553.4
complete vocational high school with a high school certificate	81.7	104.3	112.2	91.8	146.1	155.8	150.3	167.4	174.6	174.9	161.6	157.9	146.8
complete secondary general education	98.6	99.9	98.5	100.1	91.6	92.9	103.0	105.4	108.9	104.7	103.8	107.6	109.7
complete secondary professional education	828.1	795.8	784.1	829.4	809.7	831.6	851.6	835.5	852.0	864.2	874.2	890.6	876.7
higher professional education	16.0	33.5	33.8	25.8	24.6	20.8	21.0	21.5	23.9	22.2	19.7	17.9	20.1
university - 1st level	43.9	53.1	61.5	63.2	80.4	74.3	64.4	70.3	81.0	81.7	80.1	91.4	101.6
university - 2nd level	398.2	395.8	393.1	417.7	431.0	460.1	503.2	532.1	554.4	597.4	616.1	661.6	695.5
university - 3rd level	7.7	10.8	10.9	9.9	15.0	19.1	15.8	19.4	25.6	25.7	21.1	27.3	29.0
without school education	0.2	0.2	0.1	0.1	0.1	0.3	0.1	0.1	0.2	0.1	0.1	0.4	0.3
Employment rate, percentages													
Employment level, total	*58.8*	*59.3*	*59.7*	*59.9*	*61.0*	*62.7*	*64.9*	*66.2*	*67.6*	*68.4*	*67.5*	*69.4*	*71.3*
including with:													
basic education	14.5	15.2	15.3	16.2	15.8	18.0	19.8	21.4	20.6	20.2	17.9	13.4	15.3
secondary professional without graduation	59.7	60.3	61.1	62.5	63.7	65.9	69.0	70.8	71.5	72.2	70.5	71.6	73.0
complete vocational high school with a high school certificate	71.8	73.7	78.3	78.3	76.1	74.8	76.0	77.3	80.7	82.1	80.3	79.9	80.2
complete secondary general education	39.0	40.1	40.8	41.7	40.1	42.4	47.0	49.6	50.9	51.1	48.7	50.8	53.4
complete secondary professional education	70.8	70.7	71.1	71.2	73.3	74.6	76.1	77.1	79.0	80.0	78.7	80.8	82.4
higher professional education	67.5	79.6	73.4	71.8	70.0	70.7	78.7	82.9	83.2	83.0	78.1	79.9	84.9
university - 1st level	50.7	48.2	48.8	50.2	55.8	56.6	52.5	55.9	59.0	58.7	59.5	63.2	67.4
university - 2nd level	83.6	82.9	81.5	80.8	81.1	81.0	82.0	82.7	83.4	84.8	83.7	89.7	90.6
university - 3rd level	83.7	83.6	86.6	79.4	81.0	85.0	85.8	85.5	86.2	85.4	89.3	91.7	91.3
without school education	1.2	1.1	1.1	1.0	1.0	3.9	1.0	0.9	1.3	1.3	1.2	3.8	3.1

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Therefore, human capital is not only the accumulation of knowledge but also its practical use, in the process of economic development, the ability to apply it effectively to obtain the desired result. For Slovakia, this is of great practical importance, because one thing is the number of people who have received special education (vocational-technical, secondary special or higher), and another is how many of them implement the acquired knowledge in practice. "Between human capital and production, material and immaterial, there is a deep internal dependence and interaction: production determines the need for specialists of various levels, from workers and engineers to managers, and these specialists in the process of work and production realize their knowledge, skills, and accordingly, turn them into real human capital" (Chukhno, A., et al. Yukhimenko, P., Leonenko, P., 2007).

Table 2. Indexes of the dynamics of economic activity and population employment indicators of the Slovak Republic, including by level of education, 2010-2022. *(Source: calculated from http://datacube.statistics.sk/*

Year	Chain indexes, %												Base index 2022/2010
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Economically active population, total	99.0	101.0	100.3	100.2	100.6	100.7	99.9	99.7	99.8	99.0	101.3	100.9	102.5
including with:													
basic education	96.0	100.7	100.2	97.4	102.6	97.5	108.5	93.0	100.5	80.9	87.5	107.6	72.9
secondary professional without graduation	95.5	94.4	95.2	95.6	95.8	98.2	95.4	94.7	93.7	95.1	96.3	101.2	62.0
complete vocational high school with a high school certificate	117.7	104.7	84.4	157.6	106.1	96.1	108.7	100.9	99.7	93.5	98.0	92.7	155.1
complete secondary general education	103.4	100.1	101.3	90.9	97.6	108.7	101.5	101.1	93.6	101.5	101.3	101.9	101.7
complete secondary professional education	95.9	99.0	106.3	96.0	101.9	100.7	96.9	100.3	100.8	102.7	102.0	97.4	99.3
higher professional education	198.3	99.7	79.1	94.3	82.6	100.5	100.0	111.9	93.1	94.7	87.0	111.2	116.8
university - 1st level	117.3	117.5	104.3	125.5	90.9	87.3	105.3	112.8	101.1	101.4	112.3	109.5	214.3
university - 2nd level	100.0	100.4	106.3	102.3	106.8	108.7	104.4	103.1	107.0	103.9	106.9	104.6	169.5
university - 3rd level	143.0	100.9	92.1	152.4	120.6	83.9	120.4	134.9	99.2	82.4	129.8	107.5	379.7
without school education	166.7	40.0	100.0	150.0	100.0	33.3	100.0	300.0	100.0	66.7	250.0	140.0	233.3
Number of employed populations aged 15-64													
Employed population, total	99.9	100.6	100.0	101.4	102.6	102.8	101.5	101.4	100.7	98.0	101.2	101.7	112.4
including with:													
basic education	99.2	96.8	104.2	93.9	113.4	107.8	111.4	92.1	99.0	81.5	72.9	111.8	77.6
secondary professional without graduation	99.7	98.8	98.6	98.0	99.0	100.9	97.7	96.4	95.0	93.6	95.6	102.0	77.6
complete vocational high school with a high school certificate	104.3	104.3	104.3	104.3	104.3	104.3	104.3	104.3	104.3	104.3	97.7	93.0	179.7
complete secondary general education	101.3	98.6	101.6	91.5	101.4	110.9	102.3	103.3	96.1	99.1	103.7	102.0	111.3
complete secondary professional education	96.1	98.5	105.8	97.6	102.7	102.4	98.1	102.0	101.4	101.2	101.9	98.4	105.9
higher professional education	209.4	100.9	76.3	95.3	84.6	101.0	102.4	111.2	92.9	88.7	90.9	112.3	125.6
university - 1st level	121.0	115.8	102.8	127.2	92.4	86.7	109.2	115.2	100.9	98.0	114.1	111.2	231.4
university - 2nd level	99.4	99.3	106.3	103.2	106.8	109.4	105.7	104.2	107.8	103.1	107.4	105.1	174.7
university - 3rd level	140.3	100.9	90.8	151.5	127.3	82.7	122.8	132.0	100.4	82.1	129.4	106.2	376.6
without school education	100.0	50.0	100.0	100.0	300.0	33.3	100.0	200.0	50.0	100.0	400.0	75.0	150.0
Employment rate, percentages													
Employment level, total	100.9	100.7	100.3	101.8	102.8	103.5	102.0	102.1	101.2	98.7	102.8	102.7	121.3
including with:													
basic education	104.8	100.7	105.9	97.5	113.9	110.0	108.1	96.3	98.1	88.6	74.9	114.2	105.5
secondary professional without graduation	101.0	101.3	102.3	101.9	103.5	104.7	102.6	101.0	101.0	97.6	101.6	102.0	122.3
complete vocational high school with a high school certificate	102.6	106.2	100.0	97.2	98.3	101.6	101.7	104.4	101.7	97.8	99.5	100.4	111.7
complete secondary general education	102.8	101.7	102.2	96.2	105.7	110.8	105.5	102.6	100.4	95.3	104.3	105.1	136.9
complete secondary professional education	99.9	100.6	100.1	102.9	101.8	102.0	101.3	102.5	101.3	98.4	102.7	102.0	116.4
higher professional education	117.9	92.2	97.8	97.5	101.0	111.3	105.3	100.4	99.8	94.1	102.3	106.3	125.8
university - 1st level	95.1	101.2	102.9	111.2	101.4	92.8	106.5	105.5	99.5	101.4	106.2	106.6	132.9
university - 2nd level	99.2	98.3	99.1	100.4	99.9	101.2	100.9	100.8	101.7	98.7	107.2	101.0	108.4
university - 3rd level	99.9	103.6	91.7	102.0	104.9	100.9	99.7	100.8	99.1	104.6	102.7	99.6	109.1
without school education	91.7	100.0	90.9	100.0	390.0	25.6	90.0	144.4	100.0	92.3	316.7	81.6	258.3

The dynamics of the data in Tables 1 and 2 also reflect significant changes in the employment structure of the Slovak population depending on the level of education. In general, over the 10 years under study, the total number of employed persons with education increased from 2317.5 thousand people in 2010 to 2603.9 people in 2022. Such changes occurred due to the growth of the employed population with higher education: the number of employed people with 1 degree of higher education increased by 131.4 % during the studied period; the number of employed people with a 2nd-degree education increased by 74.7%; the number of those with the 3rd degree of higher education increased by 276.6%. On the other hand, the number of employed persons with basic education and a professional degree (without graduation) has

significantly decreased. The rather high employment rate of the working-age population (almost 71.3% in 2020) indicates the intensive use of human capital in Slovakia.

Trends in the field of social and labour relations in Slovakia indicate that the share of people employed in occupations requiring a high level of qualification has recently increased and continues to increase (Tables 3 and 4).

Table 3. The number of workers in Slovakia by profession classifier, 2010-2022. *(Source: http://datacube.statistics.sk/)*

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total, thousands of people	*2317.5*	*2315.3*	*2329.0*	*2329.3*	*2363.0*	*2424.0*	*2492.1*	*2530.7*	*2566.7*	*2583.7*	*2531.3*	*2560.6*	*2603.9*
including													
1. Legislators, managers	121.9	120.9	100.8	94.8	103.3	116.7	111.9	112.1	112.6	127.9	137.0	149.00	148.00
2. Specialists	277.0	267.6	259.8	264.3	283.2	284.8	292.6	313.9	321.7	348.9	368.2	384.90	411.50
3. Technicians and professionals	445.5	437.0	406.5	380.7	368.1	372.3	380.5	383.3	402.3	406.0	403.3	429.80	438.10
4. Administrative staff	150.9	156.9	187.8	203.8	201.6	210.1	225.5	232.5	236.7	245.5	245.8	268.00	259.20
5. Service and trade workers	378.1	382.8	402.4	453.6	453.5	450.8	461.8	460.8	486.2	475.7	447.9	422.90	435.40
6. Qualified agricultural, forestry and fishery workers	16.8	17.4	24.7	25.9	26.5	24.1	26.0	22.7	23.6	28.3	20.8	22.00	25.70
7. Skilled workers and craftsmen	398.3	403.7	410.1	391.7	381.8	381.5	395.7	397.8	397.1	407.9	379.2	383.50	384.70
8. Machine builders and locksmiths	310.0	315.9	337.9	321.1	341.6	362.8	369.4	376.9	370.7	350.9	349.2	336.00	337.50
9. Helpers and unskilled workers	210.0	204.0	189.8	181.5	191.6	208.7	217.7	220.2	201.7	179.4	168.1	148.80	147.60
10. Members of the armed forces	9.0	9.2	9.3	11.9	11.8	12.4	11.1	10.7	14.2	13.3	11.8	14.60	15.20

Only in the period 2010-2022, the number of workers in the category of "legislators, managers" increased by 22.4%, "specialists" - by 53.8%, and "administrative staff" - by 65.2%. On the other hand, the shares of people employed in professions that require medium and low levels of qualification are decreasing: for example, the number of people employed in the "helpers and unskilled workers" category decreased by 27.6% during the studied period. Among other things, this situation in Slovakia (as well as in other developed countries) is a consequence of the fact that the diversification of production and the deepening of the division of labour cause the growth of highly specialized requirements for employees.

Table 4. Indexes of the dynamics of the values of indicators of the number of employees in Slovakia according to the classifier of professions, 2010-2020. *(Source: calculated from http://datacube.statistics.sk/*

Year	Chain indexes, %												Base index 2022/2010
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Total, thousands of people	*99.9*	*100.6*	*100.0*	*101.4*	*102.6*	*102.8*	*101.5*	*101.4*	*100.7*	*98.0*	*101.2*	*101.7*	*112.5*
1 Legislators, managers	99.2	83.4	94.0	109.0	113.0	95.9	100.2	100.4	113.6	107.1	108.8	99.3	122.4
2 Specialists	96.6	97.1	101.7	107.2	100.6	102.7	107.3	102.5	108.5	105.5	104.5	106.9	153.8
3 Technicians and professionals	98.1	93.0	93.7	96.7	101.1	102.2	100.7	105.0	100.9	99.3	106.6	101.9	100.3
4 Administrative staff	104.0	119.7	108.5	98.9	104.2	107.3	103.1	101.8	103.7	100.1	109.0	96.7	165.2
5 Service and trade workers	101.2	105.1	112.7	100.0	99.4	102.4	99.8	105.5	97.8	94.2	94.4	103.0	113.7
6. Qualified agricultural, forestry and fishery workers	103.6	142.0	104.9	102.3	90.9	107.9	87.3	104.0	119.9	73.5	105.8	116.8	147.7
7 Skilled workers and craftsmen	101.4	101.6	95.5	97.5	99.9	103.7	100.5	99.8	102.7	93.0	101.1	100.3	95.3
8 Machine builders and locksmiths	101.9	107.0	95.0	106.4	106.2	101.8	102.0	98.4	94.7	99.5	96.2	100.4	106.8
9 Helpers and unskilled workers	97.1	93.0	95.6	105.6	108.9	104.3	101.1	91.6	88.9	93.7	88.5	99.2	72.4
10 Members of the armed forces	102.2	101.1	128.0	99.2	105.1	89.5	96.4	132.7	93.7	88.7	123.7	104.1	165.2

In the countries of the European Union (as well as in the vast majority of developed countries of the world), the service sector is developing at a rapid pace and the number of people employed in this sector is growing: the specific share of people employed in the service sector in the overall structure of employment is approaching 70%. The highest value of this indicator in Europe is characteristic of the Netherlands (76.6%), Great Britain (76.4%), Sweden (72.5%), Belgium (73.3%), and in the USA this indicator is equal to 78.6%. At the same time, the share of people employed in sectors of the economy dominated by intellectual work is growing rapidly: it employs 25% to 33% of the economically active population. This share is formed, first of all, "...scientific and highly qualified engineering and technical workers who are engaged in the development of concepts, creation of new knowledge, products, processes, methods, systems in civil and military fields, as well as businessmen" (Sobolevskaya, A., Popov, A., 2009).

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The data in Tables 5 and 6 reflect the distribution of workers according to types of economic activity in the country and the dynamics of such distribution in the period 2010-2022.

Table 5. The number of employees by type of economic activity in the Slovak Republic, 2010–2022. *(Source: http://datacube.statistics.sk/*

Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total, thousands of people,	*2317.5*	*2315.3*	*2329.0*	*2393.3*	*2363.0*	*2424.0*	*2492.1*	*2530.7*	*2566.7*	*2583.7*	*2531.3*	*2560.6*	*2603.9*
including:													
Agriculture, forestry and fisheries	75.0	71.3	75.4	77.1	82.7	77.1	72.0	68.6	58.9	72.0	65.3	63.2	66.1
Extraction of minerals	13.9	11.6	12.7	11.5	9.6	12.0	11.0	12.6	12.0	8.8	7.6	6.9	7.2
Industrial production	530.0	560.7	570.3	539.5	550.4	598.3	610.3	623.6	629.4	635.9	633.9	636.5	621.8
Supply of electricity, gas, steam and cold air	27.0	26.4	24.3	23.5	26.6	25.0	29.7	32.3	30.9	29.4	30.9	33.6	26.8
Water supply, drainage, waste management and recovery measures	31.1	28.2	26.1	27.1	27.6	26.2	28.2	27.8	24.7	22.6	23.6	21.5	22.2
Construction	258.3	241.0	240.7	232.9	223.3	213.6	229.4	244.2	240.5	235.9	229.1	239.9	254.9
Wholesale and retail trade; repair of motor vehicles and motorcycles	306.3	298.2	289.9	299.2	284.2	296.9	310.5	294.5	312.8	306.5	307.2	313.1	315.2
Transportation and storage	145.4	150.3	157.0	148.5	152.0	161.4	163.6	161.4	175.0	174.3	161.0	150.9	159.6
Housing and food provision	103.6	99.1	97.2	112.6	119.2	114.8	113.9	105.4	110.7	107.9	94.6	84.0	90.3
Information and communication	55.9	56.5	61.1	51.7	56.6	65.5	67.0	66.8	67.6	76.6	92.9	105.4	107.9
Financial and insurance activities	47.8	51.9	51.9	52.4	50.9	39.4	46.8	51.9	51.2	54.7	54.5	57.0	62.9
Real estate activity	13.8	10.6	16.0	18.4	14.8	13.3	16.2	16.1	16.4	15.1	16.0	17.6	19.0
Professional, scientific and technical activity	75.4	76.3	72.1	70.7	76.5	73.0	79.0	87.8	78.8	90.7	83.8	85.1	97.7
Administrative and support services	59.5	60.5	61.5	64.2	60.9	64.6	59.9	64.5	63.2	59.9	55.6	53.2	50.1
Public administration and defence; compulsory social insurance	189.0	190.2	184.8	200.4	211.0	217.3	222.4	224.3	229.4	216.8	219.1	215.6	209.6
Education	165.0	161.7	157.4	163.6	166.9	175.2	177.0	184.1	186.9	200.0	193.6	212.9	223.7
Health care and social work	157.1	157.5	161.3	164.1	175.6	181.0	181.5	191.6	201.0	198.1	191.5	195.3	195.3
Arts, entertainment and recreation	26.8	26.3	28.2	30.6	37.7	34.7	34.1	36.5	36.8	36.7	34.1	31.0	33.4
Other activities	31.2	29.4	35.0	35.6	31.8	32.4	36.5	34.5	36.3	37.7	32.9	32.7	36.5

Table 6. Indices of the dynamics of the number of employees by type of economic activity in the Slovak Republic, 2010–2022. *(Source: calculated from http://datacube.statistics.sk/)*

Year	Chain indexes, %												Base index 2022/2010
	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022	
Total, thousands of people,	*99.9*	*100.6*	*102.8*	*98.7*	*102.6*	*102.8*	*101.5*	*101.4*	*100.7*	*98.0*	*101.2*	*101.7*	*112.4*
including:													
Agriculture, forestry and fisheries	95.1	105.8	102.3	107.3	93.2	93.4	95.3	85.9	122.2	90.7	96.8	104.6	88.1
Extraction of minerals	83.5	109.5	90.6	83.5	125.0	91.7	114.5	95.2	73.3	86.4	90.8	104.3	51.8
Industrial production	105.8	101.7	94.6	102.0	108.7	102.0	102.2	100.9	101.0	99.7	100.4	97.7	117.3
Supply of electricity, gas, steam and cold air	97.8	92.0	96.7	113.2	94.0	118.8	108.8	95.7	95.1	105.1	108.7	79.8	99.3
Water supply, drainage, waste management and recovery measures	90.7	92.6	103.8	101.8	94.9	107.6	98.6	88.8	91.5	104.4	91.1	103.3	71.4
Construction	93.3	99.9	96.8	95.9	95.7	107.4	106.5	98.5	98.1	97.1	104.7	106.3	98.7
Wholesale and retail trade; repair of motor vehicles and motorcycles	97.4	97.2	103.2	95.0	104.5	104.6	94.8	106.2	98.0	100.2	101.9	100.7	102.9
Transportation and storage	103.4	104.5	94.6	102.4	106.2	101.4	98.7	108.4	99.6	92.4	93.7	105.8	109.8
Housing and food provision	95.7	98.1	115.8	105.9	96.3	99.2	92.5	105.0	97.5	87.7	88.8	107.5	87.2
Information and communication	101.1	108.1	84.6	109.5	115.7	102.3	99.7	101.2	113.3	121.3	113.5	102.4	193.0
Financial and insurance activities	108.6	100.0	101.0	97.1	77.4	118.8	110.9	98.7	106.8	99.6	104.6	110.4	131.6
Real estate activity	76.8	150.9	115.0	80.4	89.9	121.8	99.4	101.9	92.1	106.0	110.0	108.0	137.7
Professional, scientific and technical activity	101.2	94.5	98.1	108.2	95.4	108.2	111.1	89.7	115.1	92.4	101.6	114.8	129.6
Administrative and support services	101.7	101.7	104.4	94.9	106.1	92.7	107.7	98.0	94.8	92.8	95.7	94.2	84.2
Public administration and defence; compulsory social insurance	100.6	97.2	108.4	105.3	103.0	102.3	100.9	102.3	94.5	101.1	98.4	97.2	110.9
Education	98.0	97.3	103.9	102.0	105.0	101.0	104.0	101.5	107.0	96.8	110.0	105.1	135.6
Health care and social work	100.3	102.4	101.7	107.0	103.1	100.3	105.6	104.9	98.6	96.7	102.0	100.0	124.3
Arts, entertainment and recreation	98.1	107.2	108.5	123.2	92.0	98.3	107.0	100.8	99.7	92.9	90.9	107.7	124.6
Other activities	94.2	119.0	101.7	89.3	101.9	112.7	94.5	105.2	103.9	87.3	99.4	111.6	117.0

During the period 2010-2022, the number of people working in such economic activities as: "Agriculture, forestry and fishing" (-11.9%), "Mining" (-48.2%), "Water supply" decreased in Slovakia, drainage, waste management and recovery measures" (-28.6%), "Construction" (-1.3%), "Provision of housing and food" (-12.8%). At the same time, in such a highly

intellectual and innovative branch of Slovakia's economy as "Information and Communication", on the contrary, there is a significant increase in employees: during 2010-2022, their number increased by 93%.

Investments (in education, health care, social protection, etc.) are necessary for the development and accumulation of human capital. According to the World Bank, the Slovak Republic spends 5.3% of GDP on health care, spending on education is 3.9% of GDP, and spending on social assistance is 1.5% of GDP (World Bank, 2020). If we compare the level of Slovakia's mentioned expenses with the average values of similar indicators for the region of Europe and Central Asia, Slovakia's healthcare expenses are higher than the regional average (4.9% of GDP), education expenses are lower (4 .6% of GDP), spending on social assistance is lower (1.8% of GDP) than the regional average. For comparison, we also present the average values of similar indicators of high-income countries, which include Slovakia: health care costs - 5.3% of GDP, education costs - 4.5% of GDP, and social assistance costs - 1.7% per cent of GDP.

Consider Slovakia's state investments in science and education. As shown by the data on the implementation of the budget of the Slovak Republic (table 7), investment in educational projects has had unstable dynamics in recent years. Table 7 shows only some budget items of expenses of the Ministry of Education, Science, Research and Sports of Slovakia, which directly relate to investments in the development of innovations and human capital.

Table 7. Investments in education, science and innovation in Slovakia, 2011-2022. *(Source: https://www.minedu.sk/zaverecny-ucet-kapitoly-msvvas-sr-za-rok)*

N	Division of costs for programs	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
Total expenses by section, million euros		*2323.3*	*2108.5*	*1278.5*	*1358.8*	*1655.0*	*1150.0*	*1233.4*	*1265.9*	*1388.7*	*1579.8*	*1 690.9*	*3464.4*
1	Higher education and science, social support of university students	432.74	452.75	458.02	450.33	452.73	459.78	489.99	534.49	576.69	637.99	634.91	611.07
1.1	University of Science and Technology	-	145.05	145.58	144.17	148.64	163.08	160.81	164.37	170.26	181.87	185.12	189.52
2	National program of education and training of youth	1314.68	136.12	433.09	437.35	462.08	462.87	468.96	474.62	516.68	554.94	607.51	2369.2
2.1	Improving the qualifications of pedagogical and professional workers in the career system	-	3.8	3.7	6.5	6.82	11.16	14.46	4.45	6.83	4.76	6.36	4.5
3	Interdepartmental programs and subprograms for which the department and participants are responsible:												
3.1	Operational program of research and innovation - MŠVVaŠ SR	331.75	137.53	167.94	169.81	111.04	58.97	51.16	26.89	8.65	66.97	62.59	97.93
4	Subprograms that the section decides as a participant in the interdepartmental program												
4.1	The program "Human Resources 2014-2020 - MŠVVaŠ SR	-	-	-	-	-	0.80	13.40	36.12	55.18	68.36	95.92	109.2

Solving the problem of financial support for innovative development is an important step towards reviving the national economic system and creating the conditions necessary for the functional development of professional skills in the form of human capital. Currently, in Slovakia, as in the vast majority of Western European countries, the financing of scientific and scientific and technical works has growing dynamics. In particular, in 2018, in Slovakia, allocations directed to the financing of scientific and scientific and technical works amounted to EUR 1,265.89 million, which is 1.42% of GDP.

In 2020 (even with a 2.09% decrease in GDP relative to the previous year), the share of allocations to education and science increased to 1.72%. The trend line is shown in Figure 3. It indicates positive dynamics in the future in terms of GDP and investment in human capital development by the state. However, it is appropriate to note that these figures are almost half as low as in Germany (2.84% of GDP). We have an even bigger gap in the funding indicators of the scientific sphere compared to Finland (3.78% of GDP), Sweden (3.37%), and Denmark (3.09% of GDP). One cannot fail to mention the situation in those countries where there is a dynamic increase in attention to the problems of science and technological development. Thus, in the Czech Republic, the amount of appropriations for the relevant purposes increased during the last years from 1.35% to 1.85% of GDP, and in Estonia - more than 2.5 times, reaching the level of 2.38% of GDP.

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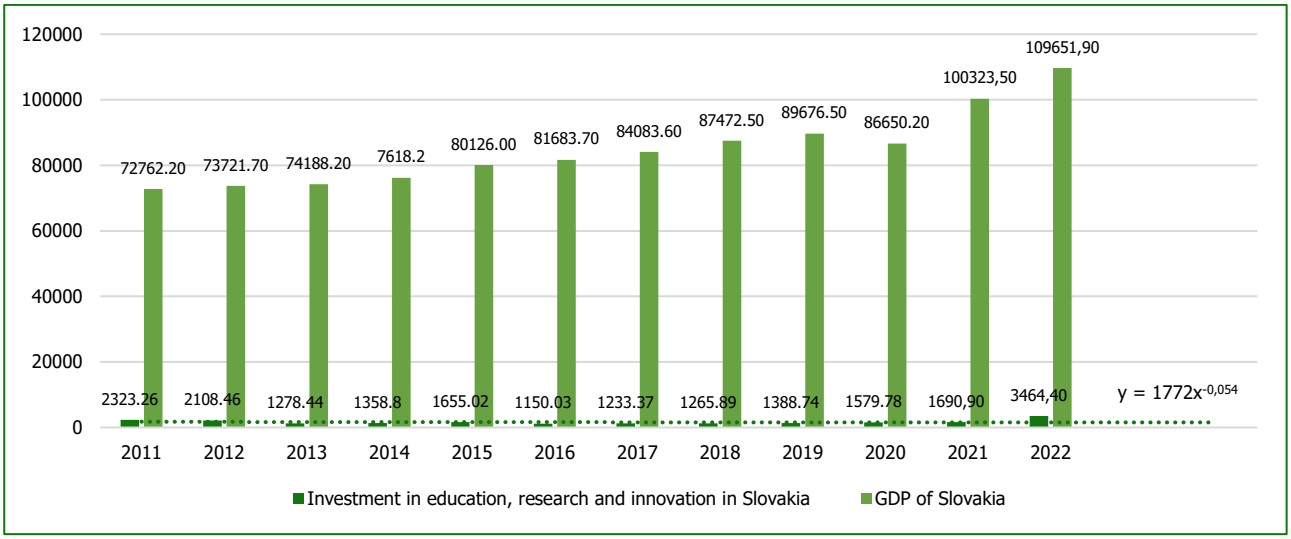

Figure 3. Relationship between GDP and investment in education, research and innovation of Slovakia, 2011-2022, EUR million. *(Source: https://www.minedu.sk/zaverecny-ucet-kapitoly-msvvas-sr-za-rok, calculated from http://datacube.statistics.sk/)*

If we evaluate financing from an income point of view, then taking into account the calculated indicators and the upward trend line, we can say with confidence that investments in human capital in the country have a positive effect on economic development, in particular, this is indicated by the growth of GDP over the last three years by almost 25%. Taking into account the stated facts, the difference in the GDP of the countries of Western Europe and Slovakia, insufficient financing of the scientific sphere is observed and as a result - significant threats to the socio-economic development of the state. However, it should be taken into account that the percentage of expenses for the implementation of scientific and scientific and technical works in the GDP of Slovakia is higher than in such countries as Bulgaria (0.57%), Latvia (0.7%), Romania (0.5%).

In March 2017, the Ministry of Education, Science, Research and Sports of the Slovak Republic published the National Education Development Program "Let's Teach Slovakia", which became the starting point for the implementation of the fundamental reform of the national education system, the basis for the formation of the initial provisions of the National Education Development Program of Slovakia for 2018-2027 years (National education and training development program "Learning Slovakia"). According to the draft of the Program, one of the key issues is "the development of close links between training and the needs of the labour market in highly qualified specialists". In particular, the document states that "...society's needs for qualified labour are constantly developing, to which education, both secondary and higher, must respond. Therefore, it is important to support the development of students' competencies and knowledge, which will provide them with flexibility in the labour market".

Priority will be given to vocationally oriented bachelor's programs. In addition, most degree programs will include the opportunity to receive credit for internships and internships at companies, extracurricular activities, or volunteer work related to actual work. In order for educational institutions, students, and employers to be interested in professionally oriented bachelor's programs, the necessary motivation will be created for all involved. The provision of such programs will have a greater impact on the financing system. Employers will be given the opportunity to influence the content and scope of enterprise-based training and will be motivated to provide training in the work environment. Students will be sufficiently and transparently informed about the needs of the labour market and the possibilities of educational institutions to prepare them in accordance with these needs. A graduate employment mapping system will be created for universities to inform those interested in graduate employment in the labour market and to provide relevant information and data for educational policy formation as well as feedback. For the labour market and employers, information about the job offer, its availability and quality are collected. The Ministry of Education will formulate indicative expectations for universities and intentions that will be financially supported in the long-term plan for the development of higher education. The project will be based on the perspective of socio-economic needs of individual training programs, provided by relevant ministries and employers' associations, or a specialized forecasting institution." (National education and training development program "Learning Slovakia").

Human capital assets are growing more and more. They often become the most effective producers of this capital, because they train personnel in accordance with current and prospective production needs, and also have reliable information about prospective directions of capital investments in education and professional training. However, businesses have a pragmatic

approach: they invest in human capital only as long as the investment brings economic returns. Moral benefits, the integrated social effect of these investments is mainly public good, in the development of which the state is interested, not a specific enterprise. That is why in the civilized world, the state uses economic methods to encourage enterprises to invest in human capital (Dolishniy, M., Zlupko, S., 1994). By investing in their employees, employers increase labour productivity, reduce working time costs, and strengthen the competitiveness of their enterprises. Funds are invested in the organization of professional training and advanced training, in preventive measures to improve the health of employees, and in general, in improving the quality of working life.

The worsening situation with the human capital formation process has a negative impact on the level of skilled personnel in the country's economy and impedes the improvement of its structure. In order to prevent the above threats, a number of measures should be taken, namely, in view of preserving and developing labour knowledge and skills in the field of high technology, a flexible and consistent policy should be pursued for the location of industrially complex and mentally rich industries in Slovakia. Scientific and technical progress requires significant costs associated with updating knowledge. Such a policy should be aimed at the real, not declarative, formation of an innovative model of development of the state's economy. In addition to raising current revenues, it can create powerful shifts in the large-scale development of the intellectual human capital of the country. In order to correct the discrepancy between the professional and qualification structure of labour supply and demand for it, it is necessary to implement a set of measures simultaneously in two related areas: on the one hand, overcoming the crisis in the channels of matching labour skills and knowledge needed at the workplace with the offer of the education and professional system preparation; on the other hand, restoration of large-scale professional and qualification orientation of the population with the help of more advanced methods of information and propaganda. Mitigation of the polarization of labour inequality by improving the system of incentives for a certain type of labour activity. In this direction, the state should promote the increase of professional mobility and constructive competition in local labour markets by means of tax, antimonopoly and licensing policies. The transition to a new level of economic development in modern conditions is, first of all, the result of increased innovative activity and the introduction of innovations in production. Given that the country's economy has no alternative to the innovative path of development, it can be argued that this option will directly affect the dynamic development of jobs. That is, we are talking about the constant introduction of innovations (technical, technological, and organisational). This, in turn, prompts the adoption of appropriate managerial decisions regarding the rationalization of the process of reproduction of human capital.

DISCUSSION

The vast majority of studies devoted to the diagnosis, analysis, and evaluation of quantitative and qualitative parameters of the human capital of any country are based on special methods of measuring these parameters using their own specially developed evaluation indicators. We agree with the expediency of using these indicators, but it is also necessary to take into account modern specialized analytical studies of human capital. International institutions and organizations, in particular the UN, the World Bank, and the World Economic Forum, take an active part in studying this problem. Therefore, in our research, we use the data of integral assessments of human capital, which are presented in the following documents: the report "Human Development Report", which is prepared and published annually by the United Nations Development Program (UNDP, 2020); research "The Human Capital Index", published by World Bank (World Bank, 2020). Harmonized national statistical data (with the use of appropriate methodology and specially developed evaluation indicators), which are presented in these documents, make it possible to conduct a comparative analysis of the achievements of different countries and regions of the world in the development of human capital. Using data from United's analytical reports Nations Development Program and World Bank, we analyzed the level and trends of human capital development in the Republic of Slovakia in comparison with other countries. Reports from the United Nations Development Program and World Bank for 2020 do not yet reflect changes in the state of human capital due to the Covid-19 pandemic. It is clear that the 2020 reports also do not take into account the risks and consequences for the human capital of the world, its individual regions and states, related to military conflicts that broke out in various parts of the world in 2022 (in addition to those that already existed), in particular in Ukraine (in the centre of Europe, due to russia's aggression against Ukraine).

To analyze the main quantitative and some qualitative parameters of the human capital of the Slovak Republic, official data of national statistics were used. The indicators of economic activity and employment of the population, including taking into account the level of education; the number of employees and their distribution by economic types and by the classifier of professions; volumes of investments in education, science and innovation. In order to clarify the relationship between investment in human capital and the national income of the state and to confirm once again the value of the concepts of Becker and Schultz, we compared the dynamics of GDP and the dynamics of investments in education, science and innovation in Slovakia.

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CONCLUSIONS

In the conducted study, the essence of the main concepts of the theory of human capital was clarified, in particular, it was established that the conception of human capital plays a crucial role in modern scientific research and economic analysis. The application of this concept opens up new opportunities to study the following important issues socio-economic development, economic growth, population employment, the place and the role of education and health care in social reproduction.

The assessment of the current state and trends in the development of human capital in the Slovak Republic using the proposed methodology indicates that the country belongs to the group of countries with a high level of income, as well as with significant savings and a high level of human capital development. Such conclusions are based on the results of the analysis of United's integrated human capital assessments Nations Development Program and World Bank, as well as data of national statistics of the Slovak Republic. According to the results of 2020, Slovakia is in 39th place among 189 countries in the world on the Human Rating Development Index and on 44th place among 174 countries in the world on the Human Rating Capital Index.

As part of further research, it is recommended to pay attention to the impact of crisis situations on the development of human capital, in particular, on the possibilities of reproduction of human capital at both the macroeconomic and regional, microeconomic and personal levels.

Slovakia's place in the world, like any other country, determines the level of development of science, education, and culture. How the state will actually invest in the creation of new human capital, thereby obtaining the right to receive future profits from its use, determines its future. With the aim of further intensive development of Slovakia's human capital, it is advisable to implement the following measures: gradually bring the level of funding for human development (expenditure on science, education, health care, social protection) to the level of a group of countries with a high level of income and human capital development; to develop a targeted program for stimulating economic activity, employment and professional development; to develop and implement a mechanism for activating people's creative potential.

ADDITIONAL INFORMATION

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ЛЮДСЬКИЙ КАПІТАЛ ЯК ФАКТОР СОЦІАЛЬНО-ЕКОНОМІЧНОГО РОЗВИТКУ ДЕРЖАВИ: ОСНОВНІ ТЕНДЕНЦІЇ СЛОВАЦЬКОЇ РЕСПУБЛІКИ

Розвиток людського капіталу є вирішальним фактором соціально-економічного зростання країни. Унаслідок збройної агресії Росії проти України європейські країни, зокрема ті, що межують з Україною (включно зі Словацькою Республікою), можуть зазнати змін кількісних та якісних демографічних змін у зв'язку зі збільшенням кількості біженців. Міграційні процеси з часом лише набирають обертів, що може мати певний вплив на показники людського капіталу в країнах ЄС. Для того щоб мати можливість відстежувати ці процеси, важливо мати уявлення про існуючий стан і тенденції динаміки людського капіталу в європейських країнах. Саме тому автори статті проаналізували стан і тенденції розвитку людського капіталу на прикладі Словацької Республіки, використовуючи інтегральні оцінки міжнародних інституцій та організацій і показники національної статистики Словаччини. Дослідження довело важливість і необхідність інвестування в науку та освіту й пряму кореляцію між обсягом інвестицій у людський капітал і соціально-економічним розвитком країни.

Ключові слова: людський капітал, інвестиції в людський капітал, національна економіка, освіта, охорона здоров'я, державна політика розвитку людського капіталу

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