KEY DIMENSIONS OF HUMAN CAPITAL AS AN IMPORTANT FACTOR IN ENHANCING ECONOMIC DEVELOPMENT: CASE OF THE REPUBLIC OF MOLDOVA

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Abstract

Over time, human capital has always been a topic of strategic importance for the development of countries around the world. People are the basic resources for economic growth. Various authors have attempted to identify the key factors that determine the formation of effective human capital. The human capital ecosystem can be formed by knowledge, skills, health, but also by attitude, involvement, and creativity. The level of development of countries depends on the capacity and training of human capital. The authors aim to identify the elements that contribute to the formation of efficient human capital, how it has evolved over time, and what are currently the key factors in a world increasingly dictated by artificial intelligence, to the disadvantage of human intelligence. In present research we applied primarily logical and historical methods, as well as dialectical ascents from the abstract to the concrete, including general scientific methods of analysis and synthesis. Based on main results, can be concluded that Republic of Moldova, being a developing country with a fragile economy, needs a human factor prepared for all the challenges it faces in the context of EU integration, but also a war at the border. The demographic crisis, the migration process, studies that do not correspond to the labor market, and the lack of talent represent the shortcomings of human capital in the Republic of Moldova, and this creates a series of problems for the national economy. It is imperative to identify the main determining factors in the growth of human capital potential, both using the example of other countries and the situation in the Republic of Moldova.

Keywords: human capital, skills, knowledge, development

JEL Code: J24, I25

Introduction

Throughout the evolution of the world, at the center of all changes has been the human being. Human beings were and are the basic resources that moved and metamorphosed everything that is today in global society. The economy of the world's states has depended on various types of resources, but the basis of economic growth has always been the human factor, as an essential engine in increasing prosperity, competitiveness and progress. Awareness of the importance of the human factor for the economy is not an option, but a necessity. Knowledge, skills and know-how, being expressed by the term human capital, represent a more important component than natural resources or even technology, because the latter is also created by human creativity and talent. It is worth mentioning that improving living conditions depends directly on access to quality education, efficient healthcare and available new opportunities. This allows them to have a well-paid job, to withstand various unpredictable situations, risks, conflicts or climate change. Even if there are situations when people must change their place of residence through the migration process, a well-prepared human factor will adapt much more easily to all the changes and challenges that arise. This article examines main key factors that shape an effective human resource at national level, focusing on Moldova - a country that must prioritize its human capital due to limited economic and natural resources, including ongoing regional conflict affecting its economy.

1 The components of human capital and its role in economic development. Theoretical framework

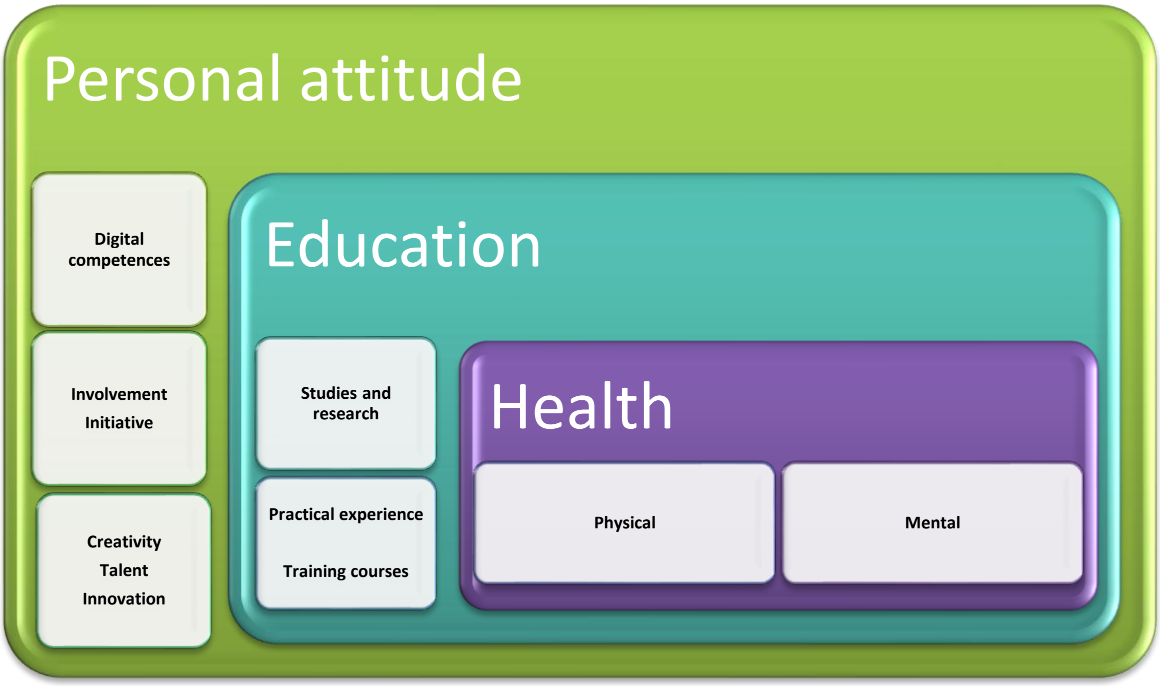
According to World Bank (WB, 2025), human capital represents the knowledge, skills and health that people develop throughout their lives, thanks to which individuals and communities can reach their maximum potential. In 2025, the World Bank estimated that human capital constitutes 64% of the wealth of countries: men contribute 62% of this wealth, and women only 38%, the reason being modest participation in economic activities.

It is essential to define the concept of human capital and to emphasize its significance in the economic development of the nations. According to the theories proposed by the great economist Adam Smith, in his book *The Wealth of Nations* (1776), the basis of the prosperity of states is efficient work, specialized and productive human capital. (Butler, 2011) He was among the first scholars to argue that education, knowledge and skills are the main source of increased productivity and competitiveness. Later, the University of Chicago with its illustrious scholars Jacob Mincer or Gary Becker explained why human capital the main source of the well-being of states is. Jacob Mincer mentioned throughout his research the importance of investments in education and training courses in increasing the income of the population. Years of schooling and work experience contribute to increasing productivity and innovation as they serve as sources in the economic growth of states. Mincer explains that human capital is a key factor in explaining wage differences and labor market dynamics, being both a personal investment and an essential component for economic development. (Mincer, 1994) Becker believes that education, on-the-job training, healthcare, vitamin consumption and obtaining information about the economic system contribute to increasing the efficiency and productivity of the human factor. From his perspective, improving people's physical and mental abilities increases the prospects for real income. This explains the major difference between the incomes of the population. There is a direct correlation between the abilities of the human factor and its economic well-being. (Becker, 1962) Later, economist Paul Romer argues that human capital generates long-term economic growth through the accumulation of knowledge, integrating this idea into endogenous models of economic growth. (Romer, 1990) Later, the concept of human capital is approached through various specific conceptualizations. For example, Robert Gibbons, an economist and professor at the Massachusetts Institute of Technology (MIT), theorized in 2004, together with Michael Waldman, a new concept of human capital focused on task-specificity (task-specific human capital). According to this theory, human capital must correspond to the concrete requirements of a particular task, and the skills developed can be transferred between different companies that require these skills. So their idea is that there must be a task-specific human capital that affects the dynamics of wages, promotions and employee turnover within companies. This perspective adds an important dimension to the understanding of how skills and abilities are developed and used in the modern economy. (Gibbons, 2004) Thus, the role of human capital as an essential factor in the performance of companies, but also on the labor market that will be further demonstrated.

1.1 Structure and components of human capital

Human capital represents the totality of knowledge, skills, competencies, attitudes and personal traits that contribute to a person's ability to be capable or skilled in various activities that pursue economic growth and well-being. It is important to identify the factors that form human capital, as it is a complex concept that includes several specific elements. The authors have identified several basic traits, which are separated into several categories. (Fig. 1)

Fig. 1: The structure of human factors



Source: author's own elaboration

Thus, human capital is a conglomerate of factors that can be measured by life expectancy at birth, by the physical and mental health of people in a society, country, region, with the continuous involvement of studies, education, continuous training, but also of the personal attitude, creativity and talent of everyone. These elements are the key to success in creating an intelligent, innovative human factor, adaptable to all changes occurring due to the ever-changing global situation, ready to generate profit for companies, implicitly economic growth and prosperity.

The World Bank comes with a specific approach regarding the importance of the human factor in the development of national economies. According to the World Bank (WB, 2024), human capital represents knowledge, skills and good health, which allows people to reach their potential and stimulates economic growth. In several studies conducted by World Bank experts, it is analyzed how the human factor evolves in four stages of the life cycle: childhood, school period, youth and adulthood. The figures show the direct connection between the potential of the human factor and the level of development of the country to which it belongs. In Table 1, we have selected three countries with different levels of development: Afghanistan, the Czech Republic and the Republic of Moldova, elucidating the fact that the economic situation of the country depends on the quality and investments in human capital at different stages of development. Human capital is divided into two categories: physical capital, which includes health elements such as: life expectancy at birth, access to vaccines, infant mortality and intellectual capital: access to education at all stages, literacy rate and participation in various training programs. (Tab.1)

Tab.1: Human capital by country

Indicator/ Country/ Category	**Afghanistan** *Low Income*	**Czech Republic** *High Income*	**Republic of Moldova** *Upper Middle Income*
		EARLY CHILDHOOD	
Neonatal mortality rate	The neonatal mortality rate is 35 per 1,000 live births (2022), compared to 40 in 2017	The neonatal mortality rate is 1 per 1,000 live births (2022), compared to 2 in 2017	The neonatal mortality rate is 10 per 1,000 live births (2022), compared to 11 in 2017
Participation rate in organized learning	-	In 2020, 96% of children one year younger than the official primary school entry age participated in an organized learning program, compared to 94% in 2015.	In 2021, 100% of children one year younger than the official primary school entry age participated in an organized learning program, compared to 98% in 2016
DTP vaccination rate, third dose	In 2023, 60% of infants received the third dose of the diphtheria, tetanus and pertussis vaccine, compared to 67% in 2018.	In 2023, 94% of infants received the third dose of the diphtheria, tetanus and pertussis vaccine, compared to 97% in 2018.	In 2023, 87% of infants received the third dose of the diphtheria, tetanus and pertussis vaccine, compared to 93% in 2018
		SCHOOL AGE	
Child mortality rate	The mortality rate for children ages 5-14 is 10 per 1,000 children aged 5 (2022), compared to 7 in 2017	The mortality rate for children aged 5-14 is 1 per 1,000 children aged 5 (2022)	The mortality rate for children ages 5-14 is 2 per 1,000 children aged 5 (2022), compared to 3 in 2017.
Learning poverty	-	In 2021, 14% of children could not read and understand a simple text, by age 10, compared to 13% in 2016.	-
Primary school completion rate	The primary school completion rate is 86% (by the official entrance age of the last grade) (2019), compared to 83% in 2016.	The primary school completion rate is 98% (by the official entrance age of the last grade) (2021)	Primary school completion rate. The primary school completion rate is 108% (by the official entrance age of the last grade) (2022), compared to 107% in 2017
		YOUTH	
Youth not in employment, education or training	In 2021, 44% of youth (ages 15-24) were not in employment, education or training, compared to 43% in 2017.	In 2022, 8% of youth (ages 15-24) were not in employment, education or training, compared to 6% in 2017	In 2023, 13% of youth (ages 15-24) were not in employment, education or training, compared to 17% in 2018.
Upper secondary school completion rate	-	The upper secondary completion rate is 90% (at ages 3-5 years above the intended age for the last grade of that level) (2023)	-
		ADULTS	
Life expectancy at birth	Life expectancy at birth is 63 years (2022).	Life expectancy at birth is 79 years (2022).	Life expectancy at birth is 69 years (2022).

Female labor force participation rate.	Female labor force participation as a percentage of the female working-age population (ages 25+) is 4% (2023), compared to 20% in 2018.	Female labor force participation as a percentage of the female working-age population (ages 25+) is 55% (2023), compared to 56% in 2018.	Female labor force participation as a percentage of the female working-age population (ages 25+) is 78% (2023), compared to 71% in 2017
Adult unemployment rate	Unemployed adults as a share of the adult labor force (ages 25+) is 12% (2023), compared to 9% in 2018	Unemployed adults as a share of the adult labor force (ages 25+) is 2% (2023).	Unemployed adults as a share of the adult labor force (ages 25+) is 1% (2023).

Source: compiled by authors, based on World Bank Country brief and data.

https://humancapital.worldbank.org/en/country-briefs

Analyzing the data from table 1, we can note that there is a direct link between human capital indicators and the level of development of the country. According to World Bank statistics (2023), in Afghanistan life expectancy at birth is only 63 years, while in the Czech Republic it is 79 years. The vaccination rate is much lower in Afghanistan (60%), compared to the Republic of Moldova (87%) and the Czech Republic (94%), while the rate of mortality at birth is significantly higher, 10 children per 1000 in Afghanistan compared to other countries. These elements speak about living conditions, access to health and medical services and ultimately determine the physical health of the existing human capital, which has a direct impact on the formation of a healthy and fit human factor. Analyzing the level of education and access to education, the best results are recorded in the Czech Republic, an EU member state with a high level of development, and at the opposite pole is Afghanistan, where the unemployment rate is 12% among adults, the involvement of women in activities is only 4%, which shows the lack of gender equality and their exclusion from fundamental human rights. At the same time, only 84% of children go to school, and 44% of young people know nothing about vocational training, while in developed countries this percentage does not exceed 8-12%. Thus, the direct impact of health and the level of education of human capital on the prosperity of national economies is clearly identified.

1.2 Human capital in the Republic of Moldova. Challenges in the labor market

The Republic of Moldova is a young state formed 34 years ago, which throughout its evolution has faced a series of challenges and issues. Given that it is a state without natural resources, strongly dependent on external factors, the only source that allows it to develop is human capital. Additionally, Moldova has faced a sustained decline in population size, driven by a complex interplay of factors, including mass external migration, declining birth rates, evolving reproductive behaviors, and demographic ageing. These dynamics pose significant challenges for maintaining a sustainable demographic balance and addressing these changes' far-reaching economic and social implications. A key driver of this negative trend is external migration, which disproportionately impacts young people and individuals of reproductive age groups that are critical to the country's demographic and economic foundation. In the context of economic globalization, the outmigration of young individuals seeking improved economic and social opportunities leads to a continued decline in birth rates and creates a substantial deficit in skilled labor. This shortage of specialized human capital undermines the development of competitive economic sectors, stifling innovation, limiting productivity, and slowing economic growth. These challenges exert additional pressure on Moldova's already strained social and economic systems. The exodus of young people further accelerates population ageing, resulting in a predominantly elderly population increasingly reliant on social protection and healthcare systems. These systems, already under considerable strain, face intensified challenges due to the diminishing base of young contributors. This dynamic exacerbates fiscal pressures, as reduced contributions to social funds make it increasingly difficult to support the growing elderly population. Consequently, addressing the dual challenges of demographic ageing and external migration requires urgent and comprehensive public policy interventions (INCE, 2024).

Tab.2: Main demographic indicators, 2019–2024

Year	Population at the beginning of the year	Live-births	Deaths	Population decline	Natural increase	Migration increase
2019	2684772	32423	36411	-41097	-3988	-37109
2020	2643675	30834	40717	-17087	-9883	-7204
2021	2626588	29320	45464	-61588	-16144	-45414
2022	2565030	27018	36196	-72752	-9178	-63574
2023	2492278	24033	33733	-68991	-9700	-59291
2024	2423287	23600	33500	-261485	-48893	-212592
2025	2381300					

Source: calculated based on NBS data

The combination of several factors such as low number of births and a high number of deaths has led to a sustained negative natural growth rate. At the beginning of 2019, Moldova's population stood at 2,684.8 thousand; by 2024, it had declined to 2,423.3 thousand.

Of this decline, natural change accounted for a reduction of 48.9 thousand people, while net migration led to a population decrease of 212.6 thousand. During the COVID-19 pandemic, Moldova experienced relatively limited mobility compared to pre- and post-pandemic periods; however, the rise in the number of deaths has played a significant role in the population decline. Between 2022 and 2023, the combined effects of negative net migration and falling birth rates resulted in a population reduction of 141.7 thousand people that represented the steepest decline recorded in the past two decades. Developing demographic resilience through strategic planning and investment in human capital is essential to address these challenges. Additionally it is necessary to improve business climate, create attractive job opportunities, and invest in education and skills development. So, including demographic data in policymaking across sectors is key to sustainable development of Moldova.

According to the Human Development Index reports (HDR, 2024; HDR, 2025), even though there has been constant progress in both the health and education sectors, the challenges in preparing human capital remain quite serious. Even though the literacy rate is 100%, the number of expected years of schooling has increased, indicating a growing investment in youth education and better access to it, there is still a significant mismatch between available skills and demand on the labor market, brain drain and low labor productivity, aggravated by emigration. International organizations such as the World Bank, the United Nations or the European Union support initiatives to improve human capital by promoting formal education, digital learning and initiatives to create decent jobs in the country, especially it is seen since the Republic of Moldova has already received the status of an EU candidate country since 2022. Other challenges and constraints are related to the emigration of qualified, trained labor in search of better opportunities abroad, which leads to a lack of well-trained human resources, reducing the economic potential in the country. Another aspect is the lack of skills necessary for labor market requirements, or their mismatch with company demand, resulting in inadequate employment of the labor force, and this aspect contributes to major imbalances in the national economy. In this context, the authors aim to examine and identify the main issues and challenges present in the labor market regarding human capital across various regions of Moldova. Further, three regions have been selected for the analysis: the northern region (Balti), the central region (Ungheni), and the southern region (Cahul). Several interviews were conducted with representatives of the National Employment Agency (ANOFM), addressing topics regarding the current situation on the national labor market, as well as the types of human factor skills needed by Moldovan employers. (Tab. 3)

Tab 3. Questionnaire results from three Moldovan regions

Question/City	Balti	Chisinau	Cahul
How do you assess the current employment situation in your region, including sectors with increasing or decreasing employment?	Now, employers in the territory, from various branches, are requesting both qualified and unqualified labor. The labor shortage is also characterized by the vacancies declared and registered at the ANOFM - vacancies in all fields. Regarding the category of people addressed to the ANOFM, their number has been decreasing recently. People do not have the qualification requested by employers. People often refuse the proposed offer for various reasons: low salaries, which do not correspond to the standard of living, the work regime, the unwillingness to work in the proposed field.	Chisinau, as an economic center, continues to be an engine of employment, offering many opportunities, especially in services and trade, and to a growing extent for unskilled or semi-skilled workers. However, the growth is not uniform: sectors with more technical requirements or more precise specializations are facing staff shortages. The general trend seems to be towards restructuring: agriculture is losing importance, while services and certain branches of industry/transport are increasing their demand. To support this transition, policies are needed that target adapted vocational training, stimulate investment in deficit sectors, and measures to retain the workforce in the country.	The current employment situation on the local market is average, namely: Increase in employment in the sector where vacancies for unskilled workers are required. Decrease in employment in the medical sector, due to the lack of qualified specialists.
What are the biggest challenges you face in identifying the real needs of the labor market?	-Labor migration abroad, in search of a more decent income. -Aging population (about 80.0% of those registered with unemployed status at the ANOFM of Bălți municipality in 2025 are people over 45 years old, who encounter difficulties in employment for various reasons); -Reduction of staff numbers at enterprises; -Informal work.	Lack of up-to-date and reliable data: -Delays or gaps in reporting data from employers or other relevant institutions. -Many jobs are not officially registered (informal work), which distorts the real picture of demand. Fragmented data: information is collected by several institutions (ANOFM, NBS, ministries, private organizations) and is not always integrated. 2. High degree of informal employment: Estimates show that over 20% of employed people work in the informal sector (especially in	A primary factor affecting the identification of actual needs in the local labor market (south of Moldova) is the prevalence of low wages and positions that may be considered less desirable.

		agriculture, construction, small services) 3. Continuous migration of the labor force. 4. Weak involvement of employees in forecasting. 5. Lack of correlation between market demand and educational offers.	
What skills do you consider essential for employees in these key sectors?	Competencies in specialized fields, as well as the ability to apply theoretical knowledge in practical settings.	Effective communication Teamwork Adaptability / flexibility Critical thinking and problem solving Basic digital skills Professional ethics / responsibility	There is typically limited investment in employee skill development in sectors that experience high workforce turnover.

Source: based on data collected from questionnaires administered in three regions of Moldova

From the table above, we conclude that the Republic of Moldova continues to face a series of challenges on the labor market. It may be explained by such factors as migration of human capital, lack of skills necessary for the labor market, low financial motivation, studies that do not correspond to the demand for professions, informal sector with a large share in the national economy, are present to the same extent in all regions of the country. In this context, there is a need for continuous involvement from both state institutions, but also the academic environment together with the private one, to realize the importance of investments in human capital, as an essential source in increasing national well-being and prosperity. This creates a cycle where unprepared workers weaken the Moldovan national economy.

Conclusion

The Republic of Moldova is a developing country with limited natural resources and a fragile economy based on human capital that is the essential driver of economic development. Despite improvements in health and education, Moldova faces significant challenges: a mismatch between education and labor market needs, emigration of skilled workers, low labor productivity, and a high share of informal employment. Additionally, insufficient skills or inadequate training among workers frequently lead to underemployment and significant economic inequality. These issues weaken the national economy and highlight the urgent need for coordinated efforts from state institutions, academia, and the private sector for continuous investments in human capital. Only by addressing these challenges and fostering the development of knowledge, skills, innovation and adaptability can Moldova enhance its economic prosperity and successfully navigate the demands of EU integration and regional instability.

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