



# Management of Human Capital Development in the Era of the Digital Economy

Anastasiia Samoilovych<sup>1</sup>, Olha Popelo<sup>1\*</sup>, Iryna Kychko<sup>2</sup>, Oleksandr Samoilovych<sup>1</sup>, Ivan Olyfirenko<sup>1</sup>



<sup>1</sup> Department of Management and Civil Service, Chernihiv Polytechnic National University, 14035 Chernihiv, Ukraine

<sup>2</sup> Department of Personnel Management and Labor Economics, Chernihiv Polytechnic National University, 14035 Chernihiv, Ukraine

\* Correspondence: Olha Popelo ([o.popelo@stu.cn.ua](mailto:o.popelo@stu.cn.ua))

Received: 06-21-2022

Revised: 08-10-2022

Accepted: 08-20-2022

**Citation:** A. Samoilovych, O. Popelo, I. Kychko, O. Samoilovych, and I. Olyfirenko, "Management of Human Capital Development in the Era of the Digital Economy," *J. Intell Manag. Decis.*, vol. 1, no. 1, pp. 56-66, 2022. <https://doi.org/10.56578/jimd010107>.



© 2022 by the authors. Licensee Acadlore Publishing Services Limited, Hong Kong. This article can be downloaded for free, and reused and quoted with a citation of the original published version, under the CC BY 4.0 license.

**Abstract:** The purpose of the article is to study the peculiarities of managing the development of human capital in the conditions of digitalization. In the course of the study, the method of measuring the human potential index, developed by the UN - the Human Development Index, including taking into account socio-economic inequality, the Gender Inequality Index and the multidimensional poverty index, was applied as basic indicators that reflect the level of development of human capital, which is especially important in the conditions of digitalization of society. The article discusses the concept of human potential, its components, methods of determination. The dynamics of changes in the human development index of Ukraine and its components during 1990-2020 were analyzed. A comparative analysis of the values of the human development index, the human development index taking into account socio-economic inequality, the gender inequality index of Ukraine and other countries was carried out. The importance of the development of human potential in the context of the development of the information society and the digital economy is proven, the specifics of working conditions, requirements for the workforce are given. The factors affecting the development of human potential in the conditions of the digital economy are considered, and ways of solving the identified problems are proposed like creating conditions for development of the population, to ensure a positive balance of reproduction of the population and migration, development of social infrastructure, access of the population to quality medical, educational, and social services, etc.

**Keywords:** Human potential, Human capital, information society, Digital economy, Digitalization

## 1. Introduction

Human capital is a key source of competitive advantages of both the region and the state, because it is people who implement strategic development programs and ensure the functioning of all spheres of society. The development of the human potential of the region takes on special importance in the era of the digital economy and is an integral part of strategic programs. According to the assessment of the McKinsey & Company consulting company, human capital makes up two-thirds of the average person's wealth.

The development of the information society and the digital economy makes adjustments in all spheres of social life, affecting in particular the development of human capital, changing the nature of relations between different population groups, labor requirements, attitudes to knowledge and information, etc.

Wide scientific interest and importance of the category of human potential led to the emergence of a number of definitions of this concept. Thus, among the first, a significant contribution to the development of these categories was made by V. Petty, A. Smith, A. Marshall, K. Marks, T. Schultz, H. Becker, J. Kendrick, and others. The category of human potential entered scientific circulation with the adoption by the UNDP of the concept of human development, which was laid out in the Human Development Report for 1990 and declared that the true wealth of

a nation is its people. The main goal of development is to create a favorable environment for a long, healthy and creative life of people [1].

Many scientific studies by leading foreign and domestic scientists are devoted to the processes of managing the development of human capital, including in the conditions of digitalization of the economy. Among them should be noted: Alhemaury et al. [2]; Alolayyan et al. [3]; Balueva et al. [4]; Bhattacharya et al. [5]; Gad and Yousif [6]; Hamadamin and Atan [7]; Khan et al. [8]; Kucharčíková and Mičiak [9]; Mykhailov et al. [10]; Naz and Muhammad [11]; Piontek F. and Piontek P. [12]; Tulchynska et al. [13]; Garafonova et al. [14]; Tvaronavičienė et al. [15] and other.

Naz and Muhammad [11] analyze the impact of human capital development based on knowledge management on the effectiveness of higher educational institutions. Scholars have found that knowledge creation, knowledge storage, and knowledge sharing improve human capital, while they find that the need for knowledge does not affect human capital. The practical significance of the authors' scientific work [6] lies in the verification of the knowledge management model for universities. The results of the study made it possible to identify the most influential factors and their connection with knowledge management processes. Scientists included 6 main factors in the model: leadership, organizational culture, organizational structure, human resources, information technology, measurement and control. The authors claim that the proposed model will enable university administrations to identify areas for improvement so that the knowledge management process is more effective, which should ultimately lead to the creation of human capital that meets modern needs.

Within the framework of the study of Alhemaury et al. [2], scientists analyzed the relationship between organizational innovations and the development of human capital. According to the results of the research, it is proven that organizational innovation practices affect the development of human capital both directly and indirectly through innovation management. In the study of Tvaronavičienė et al. [15], taking into account the existing approaches to the assessment of the quality of life and similar concepts in the management of human capital, the authors proposed an index of the quality of life of young people. The scientists substantiate the practical feasibility of the developed methodology due to the benefit for the development of national and regional programs and strategies for the development of human capital due to the increase in the level of satisfaction of material, spiritual and cultural needs of youth.

Alolayyan et al. [3] investigate the impact of strategic human resource management on the development of human capital through the mediation of employee commitment. The study found that strategic human resource management practices had a direct positive impact on employee engagement and human capital development. Khan et al. [8] prove that human capital is an important competitive asset in today's global market. The practical significance of the scientific work lies in the presentation of the results of the study of the knowledge management system and the relationship between transformational leadership and the development of human capital.

Mykhailov et al. [10] have researched that agricultural holdings apply innovative approaches to the development of human capital for high productivity, and even create their own universities. It was analyzed that other enterprises develop human capital according to organizational, economic and legal factors. According to the results of the study, the authors justified the need for a systematic selection of approaches to the development of human capital at different levels of management. The practical significance of Hamadamin et al. research [7] lies in the analysis of the impact of the practice of strategic human resource management on the achievement of competitive advantages that will be sustainable, with an assessment of the mediating role of human capital development. The authors concluded that strategic personnel management has a positive effect on the development of human capital and the commitment of employees to institutions.

Balueva et al. [4] claim that human capital and its components determine the value of a company's intellectual and labor resources. The authors proposed an indicative management methodology based on flexibility and adaptability, which makes it particularly effective for managing such a complex concept as human capital. Piontek et al. [12] proves that science and education are strategic categories and determine the quality of human capital, and the nature of science and education in a strategic dimension cannot be determined only by the short-term needs of the market, nor by research groups that are highly specialized and guided by their own determinants and priorities.

Kucharčíková et al. [9] explores the possibilities of applying different approaches to human capital management, which lead to requirements for improving the efficiency, productivity, competitiveness and sustainability of the transport enterprise in the conditions of the Slovak Republic. The authors analyzed the increase in the value of human capital through training, as well as how effectively companies use human capital. According to the results of the study of Bhattacharya [5], it is proven that the implementation of effective human resources strategies creates opportunities for the success of the organization. The authors argue that Strategic Human Capital Development and Management in Emerging Economies is a comprehensive reference source for recent scholarship on the intersection of globalization, organizational behavior, and human capital management in the context of developing economies.

Despite the large number of studies, the specifics of the development of human potential in the era of the digital economy require a more detailed consideration in both theoretical and practical aspects.

The purpose of the article is to study the peculiarities of managing the development of human capital in the conditions of digitalization. In the course of the study, the method of measuring the human potential index, developed by the UN - the Human Development Index, including taking into account socio-economic inequality, the Gender Inequality Index and the Multidimensional Poverty Index, was applied.

As a result of the study, the authors came to the conclusion that the transformations associated with the development of the digital economy covered most spheres of society and became the driving force of many systemic changes.

## 2. Methodology

In the course of the study, the method of measuring the human potential index developed by the UN was applied - the Human Development Index (HDI), as well as the HDI taking into account socio-economic inequality (SEI), the Gender Inequality Index (GII) and the Multidimensional Poverty Index (MPI).

The Human Development Index (HDI) is a summary indicator for assessing long-term progress in three main areas of human development: Long and healthy lives, access to knowledge and a decent standard of living. HDI is the geometric mean of the normalized indices for each of the three components [16] and is measured according to the following formula:

$$HDI = \sqrt[3]{Ilife \times Ieduc \times Iinc}, \quad (1)$$

where, *Ilife* - life expectancy index;

*Ieduc* - education index;

*Iinc* - GNI index.

Life expectancy and health are measured by average life expectancy. The level of knowledge is measured by the average duration of schooling of the adult population, that is, the average number of years of schooling in the lifetime of people aged 25 and older; and access to learning and knowledge by the expected years of schooling for first-graders, i.e. the total number of years of schooling that a child reaching school age can expect if the prevailing patterns of age-based enrollment rates remain unchanged over the child's lifetime. The standard of living is measured by gross national income (GNI) per capita in dollars of constant purchasing power, converted by conversion factors to purchasing power parity.

To ensure the best possible comparison by country, the HDI relies primarily on international data from the UN Population Division (data on life expectancy), the UN Statistical Institute for Education, Science and Culture (data on the average number of years of education and expected years of education) and the World Bank (data on GNI per capita).

HDI taking into account socio-economic inequality (SEI) is an index of human development that takes into account the inequality of all three components of HDI, by "calculating" the average value of each component according to its level of inequality. The "loss" in human development due to inequality is the difference between HDI and SEI, which can be expressed as a percentage. SEI is calculated according to the formula:

$$SEI = \sqrt[3]{Ilife * \times Ieduc * \times Iinc *}, \quad (2)$$

where, *Ilife \** - life expectancy index adjusted for inequality;

*Ieduc \** - education index adjusted for inequality;

*Iinc \** - GNI index adjusted for inequality.

The Gender Inequality Index (GII) reflects gender inequality in the following indicators: reproductive health, empowerment and economic activity. Reproductive health is measured by maternal mortality and teenage births; empowerment - by the share of seats in parliament held by women, as well as by the number of secondary and higher education diplomas by each gender; economic activity is measured by the level of participation of women and men in the labor market. GII is calculated according to the following formula:

$$GII = \frac{HDI_w}{HDI_m}, \quad (3)$$

where, *HDI<sub>w</sub>* - index of human development of women;

*HDI<sub>m</sub>* - index of human development of men.

The Multidimensional Poverty Index (MPI) identifies several intersecting hardships that affect people across three dimensions: health, education, and living standards. The health and education domains are based on two

indicators each, while the standard of living is based on six indicators. All the indicators needed to determine the MPI of a specific country are taken from the survey data of one household. Indicators are weighted to determine a poverty score, and poverty scores are calculated for each person in the survey. A poverty score of 33.3 percent (one-third weighted) is used to distinguish between poor and non-poor. Individuals with a poverty score greater than or equal to 20 percent but less than 33.3 percent are considered vulnerable or multidimensionally poor. Ultimately, individuals with a poverty score greater than or equal to 50 percent live in conditions of extreme multidimensional poverty. HDI, SEI and GII are basic indexes that evaluate key indicators of development of society and that can be used for further research of human capital.

### 3. Results

The concept of human potential reflects the relationship between investment in human capital and labor productivity. Some scientists define human capital as a certain stock of health, knowledge, skills, abilities, motivation and other productive properties, formed or developed as a result of investments and accumulated by people (man), which is purposefully used in labor activities and thereby affects income growth (earnings) of its owner and national income.

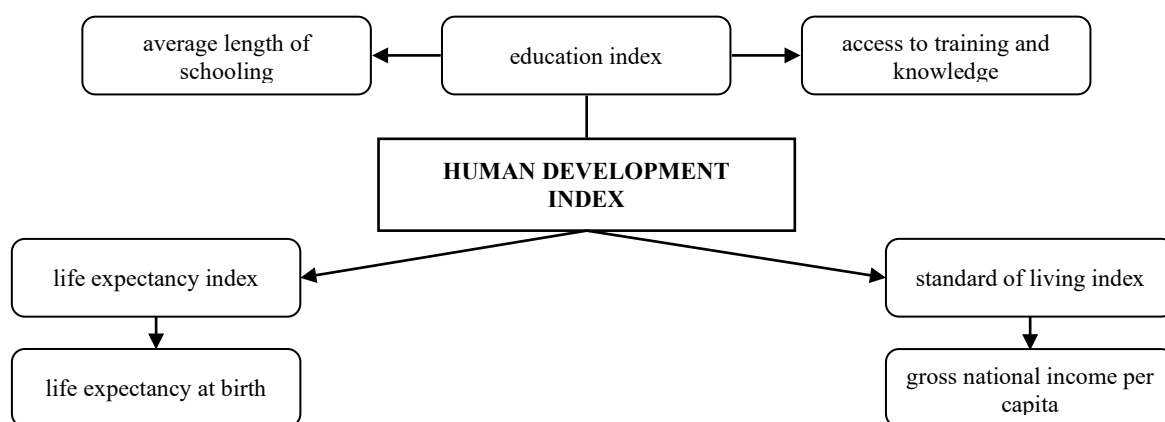
Scientists define human potential as the collective ability of society to master and understand the world, to accumulate knowledge, to create on this basis intellectual products and a system of obtaining, processing, using, reproducing and transmitting information, or as the collective ability of a certain person of a community (people, territorial community, labor collective enterprises, etc.) and an individual to economic and social activity and development.

There is also such a definition of the concept of human potential, namely, a set of socio-demographic, socio-economic, activity and socio-cultural potentials. The category of human potential is somewhat specified, defining it as a set of existing or natural abilities for intellectual, creative, mental, economic, cultural activity for the purpose of individual and social development.

In our opinion, the most accurate definition of the concept of human potential is the definition, which consists in the fact that human potential is the present or future human abilities that can be used in any sphere of socially useful activity to achieve a set goal. In our opinion, the concepts of human capital and human potential are interrelated, since human potential is a set of certain capabilities that can be transformed into a certain amount of knowledge and skills (i.e., human capital) to ensure competitive advantages.

Human potential characterizes such human qualities as: the level of education, creativity, mobility, the ability to adapt to socio-economic changes in society, etc. The level of a country's human potential is measured using the human development index, which is calculated on the basis of the life expectancy index, the educational index and the GDP per capita index based on national currency parities. According to the definition of the UN, the Human Development Index is a combined index that measures the average size of achievements in three main dimensions of human development: health and longevity, knowledge and a decent standard of living [17] (Figure 1).

Since 1990, the average world HDI has increased by 18%, which reflects global trends in terms of life expectancy, education development, and income growth, although this trend is characterized by unevenness and great variability for different countries [18]. As can be seen from Figure 1, the HDI and its components of Ukraine during the last 30 years shows an upward trend, which indicates the positive effect of the transformations taking place in society, and also reflects the aspirations and efforts of Ukraine to be a developed country with a high level of quality of life (Table 1 and Figure 2).

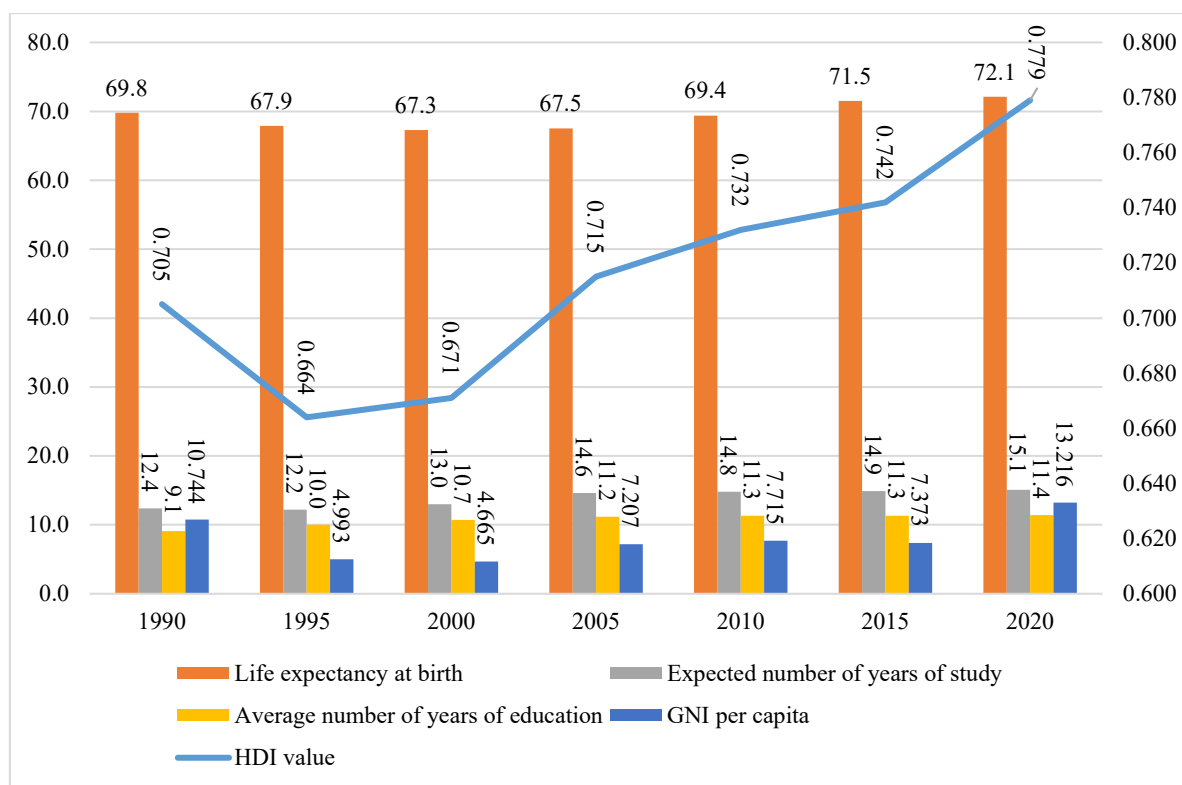


**Figure 1.** Components of the human development index

**Table 1.** Dynamics of values of the Human Development Index of Ukraine and its components, 1990-2020

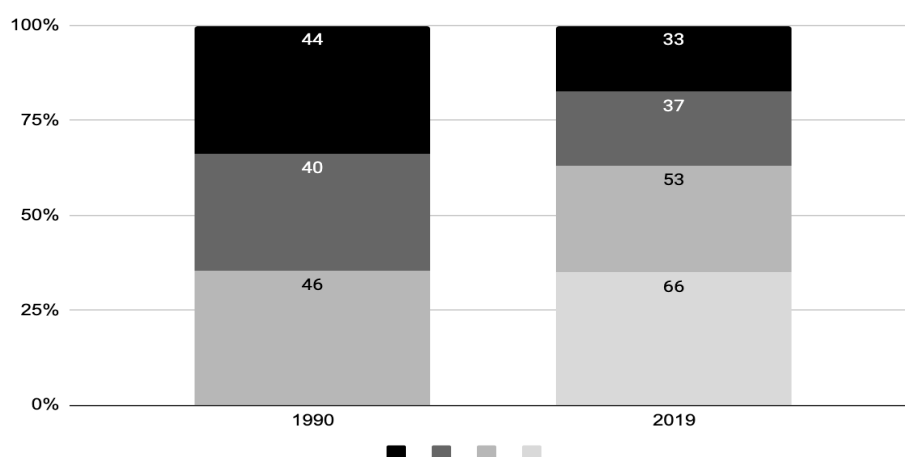
Year	HDI value	Life expectancy at birth, years	Expected number of years of study	Average number of years of education	GNI per capita, USD
1990	0.705	69.8	12.4	9.1	10.744
1995	0.664	67.9	12.2	10.0	4.993
2000	0.671	67.3	13.0	10.7	4.665
2005	0.715	67.5	14.6	11.2	7.207
2010	0.732	69.4	14.8	11.3	7.715
2015	0.742	71.5	14.9	11.3	7.373
2020	0.779	72.1	15.1	11.4	13.216

Source: formed by the authors on the basis of data from the Human Development Report [15-18]



**Figure 2.** Dynamics of the values of the Human Development Index of Ukraine and its components, 1990-2020

Source: formed by the authors on the basis of data from the Human Development Report [15-18]



**Figure 3.** Distribution of world countries by HDI value, 2019

Source: formed by the authors on the basis of data from the Human Development Report [15-18]

It is worth noting that during 1990-2020, there was an increase in all components of the human development index, namely: an increase in life expectancy at birth from 69.8 years in 1990 to 72.1 years in 2020; expected years of education and average years of education from 12.4 years and 9.1 years in 1990 to 15.1 years and 11.4 years in 2020, respectively; as well as an increase in GNI per capita from USD 10,744 in 1990 to USD 13,216. US in 2020, despite a significant decline during 1995-2000 to less than USD 5,000.

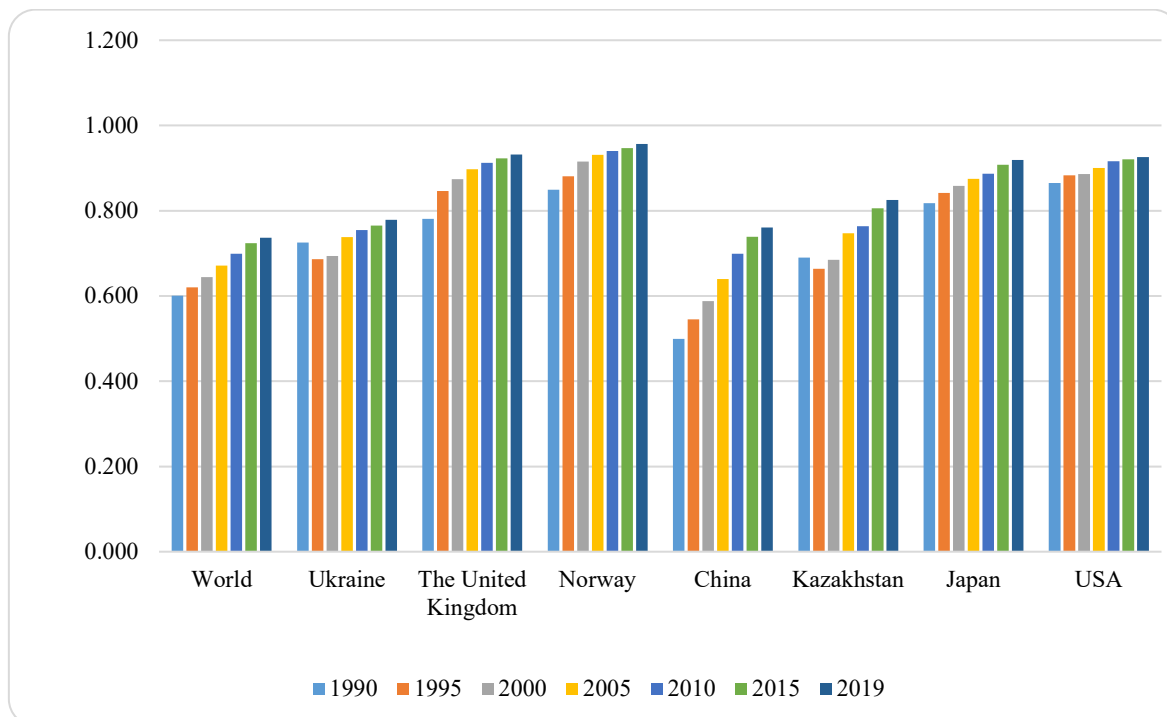
All countries of the world are divided into four groups depending on the value of the human development index, namely: countries with a very high level of human development (above 0.800), high level (0.700 - 0.799), medium level of human development (0.550 - 0.699) and countries with low level of development (less than 0.550) (Figure 3). As shown in Figure 3, during 1990 - 2019, the share of countries with a low level of development decreased from 44 to 33, the share of countries with an average level of development decreased from 40 to 37, the remaining countries (46) belonged to countries with a high level of development in 1990, in 2019 53 countries with a high level of development have already become, another 66 countries belong to countries with a very high level of development. Ukraine belongs to the countries with a high level of development (Figure 4).

As can be seen in Figure 3, most of the world's countries belong to countries with a very high and high level of development - 34.9% and 28.0%, respectively, 19.6% of countries belong to countries with an average level of development, 17.5% - to countries with a low level of development of human potential.

As can be seen in Figure 4, the HDI value of Ukraine during 1990-2019 is slightly higher than the world average, despite a certain decrease in the 1990s. Such countries with a high standard of living and development as Norway, the United Kingdom, Japan and the USA have a slightly higher level of the index human development. Despite a fairly developed economy, China has sufficiently lower HDI indicators compared to both Ukraine and the world average during 1990-2019.

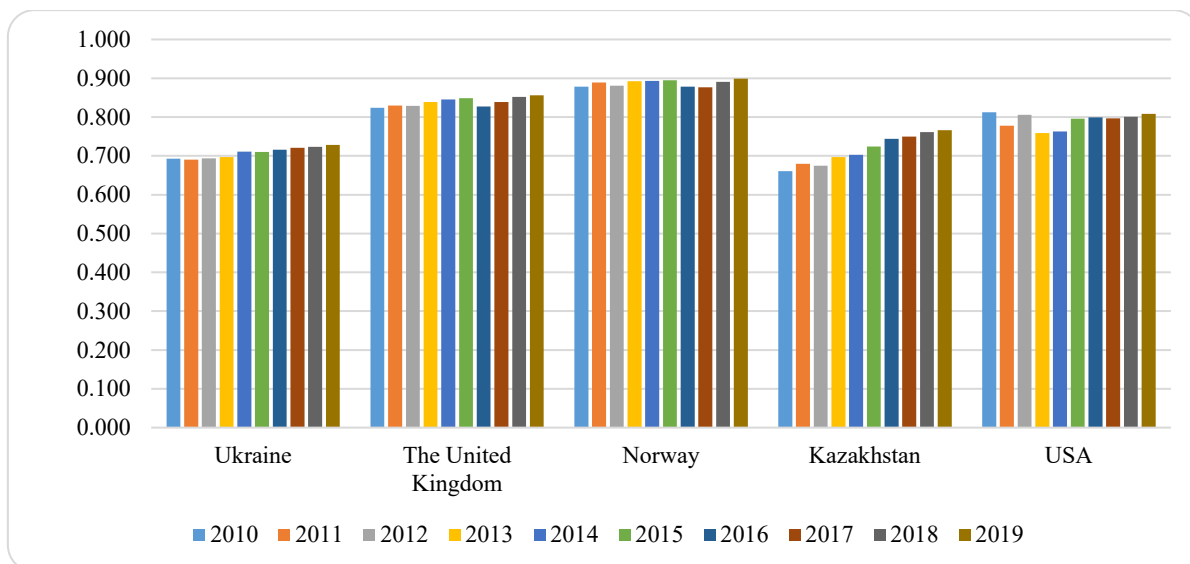
The index of human development taking into account socio-economic inequality takes into account the inequality of all three components of the HDI, thus differing from the value of the HDI. Despite the differences in the values of HDI and SEI, the general trend remains - countries with developed economies (United Kingdom, Norway, USA) have a slightly higher index of SEI, countries such as Ukraine and Kazakhstan - somewhat lower (Figure 5).

As noted above, the Gender Inequality Index reflects gender inequality across indicators such as: reproductive health, empowerment and economic activity. As shown in Figure 6, the level of gender inequality is approximately the same in each of the analyzed countries. Considering this, it can be concluded that the value of the gender inequality index depends more on cultural and historical conditions and traditions than on the level of economic development of the country.



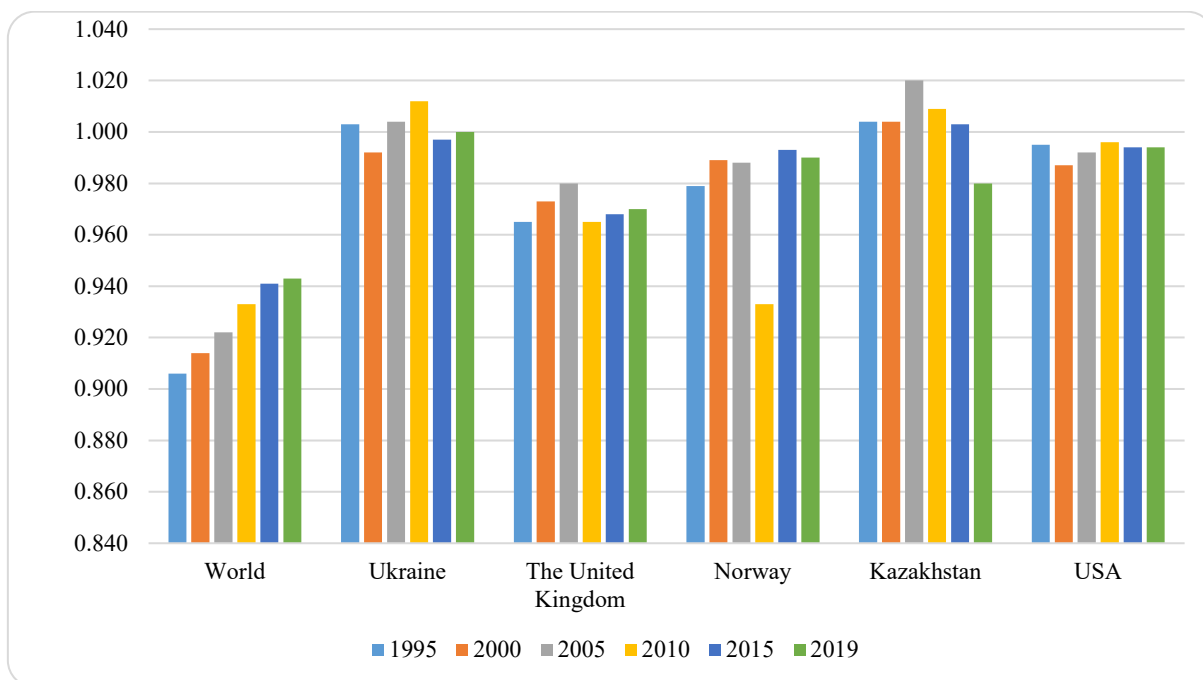
**Figure 4.** Comparison of the values of the Human Development Index of Ukraine and other countries during 1990-2019

Source: formed by the authors on the basis of data from the Human Development Report [15-18]



**Figure 5.** Comparison of the values of the Human Development Index taking into account the socio-economic inequality of Ukraine and other countries during 2010-2019

Source: formed by the authors on the basis of data from the Human Development Report [15-18]



**Figure 6.** Comparison of the values of the Gender Inequality Index of Ukraine and other countries during 2010-2019

Source: formed by the authors on the basis of data from the Human Development Report [15-18]

As mentioned above, the development of the information society makes certain adjustments in all spheres of society's life; transition to anthropocentrism, increasing the role of knowledge and information in the process of creating added value, turning them into the main means of work. Therefore, creating conditions for revealing and developing human potential is the main task of any society. Currently, the development of human potential in Ukraine is primarily based on achieving a decent level of income, which is a source for continuous education and self-education, and qualitative improvement of the health care system.

The development of the digital economy changes the requirements for the population of the country, in particular the region, as the main source of labor force, bringing them to a qualitatively new level, since the application of laws and regularities that were relevant for the industrial type of society is impossible in the conditions of the digital economy. Among the main requirements, we consider it necessary to highlight the following:



- fundamental changes in the requirements for training and training of employees, namely: directing training to the development of independent thinking skills, rather than rote learning and the development of dogmatic thinking. Bureaucratization, standardization and formal evaluation methods are impossible in the conditions of the digital economy and information society and do not reflect the completeness of the competences of the received education in general, as well as the competence of an individual employee in particular;

- willingness and ability to work in the conditions of innovative forms of employment - remote work, outsourcing, freelance, etc. At the same time, this requirement is relevant for both employers and employees. As a rule, employers prefer employees who perform their duties on a full-time basis in the office. Creative / intellectual work, characteristic of the information society, cannot be confined to the office and strictly defined time frames. Employees engaged in such work, as a rule, can perform it in a convenient place and at a convenient time. The use of the Internet allows you to work for companies located in other countries and unite people around the world. In turn, such employees must have a high level of responsibility and self-organization;

- mastering interdisciplinary knowledge and new professions allows the same employees to perform various tasks and work on various projects, constantly raising their professional level. And since in the conditions of the information society new professions appear every 3-5 years, the education received once cannot guarantee employment in the same field even after 10-15 years, therefore, in order to be able to work, a person must master new professions and specialties constantly during his professional life. Taking into account the constant development and changes in the conditions of the external environment, it can be concluded that in addition to the received education, the average representative of the digital age will receive new knowledge and master a new specialty every 2-4 years with the help of self-education, distance courses, seminars, etc.;

- high level of information literacy: skills in searching for relevant information, its analysis and use. It is also important in the conditions of a large amount of information available to a person to observe information hygiene, to learn to understand the received information, to separate facts from fiction, to learn to refrain from "consuming" information for a certain time;

- technological literacy: as digitalization spreads rapidly across different fields and technological change happens very quickly, existing formal curricula may not keep up with the changing demand for skills. As a result, digital skills gaps are prevalent and can hinder effective innovation and adoption of new technologies. For example, according to the WEF, 55% of companies that took part in the Future of Jobs survey identified skills gaps in the local labor market as the biggest obstacle to the adoption of new technologies;

- quick adaptation to constantly changing conditions, the ability to navigate the information flow;

- the presence of a wide range of moral and psychological qualities that allow you to effectively communicate with other people and groups of people, comply with ethical and legal norms, cope with stress, and maintain mental and psychological balance.

The question of how skills for the wider digital economy in general, and digital skills in particular, is an ongoing challenge for governments, businesses and the workforce around the world. All stakeholders will have to play an active role and take responsibility to ensure a win-win scenario for digital transformation. Businesses will have to increasingly support their existing workforce through reskilling and upskilling and increasingly value these actions as investments and be prepared for them both morally and financially. Workers will have to take on even greater responsibility for lifelong learning. Governments will have to create or adapt favorable conditions to meet these efforts, constantly adapting existing curricula and programs, shortening the duration of education, in particular higher education, in order to simultaneously train not a large number of high-quality specialists in a certain field of knowledge, but a large number of people, who have a wide range of basic knowledge and skills, ready to independently continue their education, adjusting it in accordance with the requirements of the labor market and their professional needs. In this context, the success of the digital transition will also require proactive investments in the development of specialists who will train new specialists. tasks and related skill needs.

According to the McKinsey Global Institute, some occupations may be fully automated. However, in 60% of all professions, at least 30% of activities are technically automated. Such automation of parts of the work does not necessarily mean a reduction in the amount of work that needs to be done, and therefore does not necessarily mean a reduction in the number of people employed to do the work; but it may mean that jobs will become more complex, with additional tasks that are more difficult to automate, as well as tasks that involve the use of technology itself. Similarly, according to the WEF, by 2025, humans and machines are expected to spend the same amount of time on current tasks. This is expected to eventually affect not only the information and data processing and information retrieval and communication tasks performed in the organization, not only with repetitive tasks on production lines, but also those tasks that are currently still completely human, including communication and interaction; coordination, development, management and consulting; and reasoning and decision making.

Many of today's tasks will be enhanced by technology. This means that businesses will increasingly require workers to have skills that enable them to perform non-standard tasks that technology complements rather than replaces. In the education sector, the rise of technology-based self-paced learning and blended learning approaches is impacting skill requirements for software, learning platforms and resources, as well as relevant teaching skills.



There will also be a demand for new tasks, including in new professions that will increasingly require conceptually new professional training and education. Careers such as artificial intelligence and machine learning specialists, process automation experts, information security analysts, user experience and human interaction designers, software and data science developers, and robotics engineers will be increasingly in demand as technology advances, which they are working on.

Technical digital skills alone will not allow you to take full advantage of digitalization, as businesses are increasingly looking for a combination of such (technical) skills and subject matter. As a result, the number of cross-professional (hybrid) workplaces and (hybrid) specializations will increase. Many of these changes are driven by the digital revolution, which is blurring not only professional but also industry boundaries (Accenture 2016). Examples of hybrid occupations include pharmaceutical marketing professionals, who must be fluent in medical concepts, research methodology for drug trials, as well as data analysis and digital marketing; or business and economic journalists, who should have specialized expertise in economics and statistics, as well as writing, interviewing and data visualization skills, and be comfortable with social media [19].

In the field of culture and media, the profession of TV reporter now has little to do with the teams of the past consisting of a reporter, a sound engineer, a cameraman and a network engineer: as of 2018, it was common for the same person to be responsible for the technical process, as well as for editing written texts that will be posted on the Internet, followed by social media supervision.

Today, programming skills are needed not only by programmers, but also by artists and designers, engineers and scientists. Possession of such a hybrid skill set will require not only strong initial specialization in both technical and hard knowledge, but also lifelong skill development into technology and subject knowledge that does not yet exist.

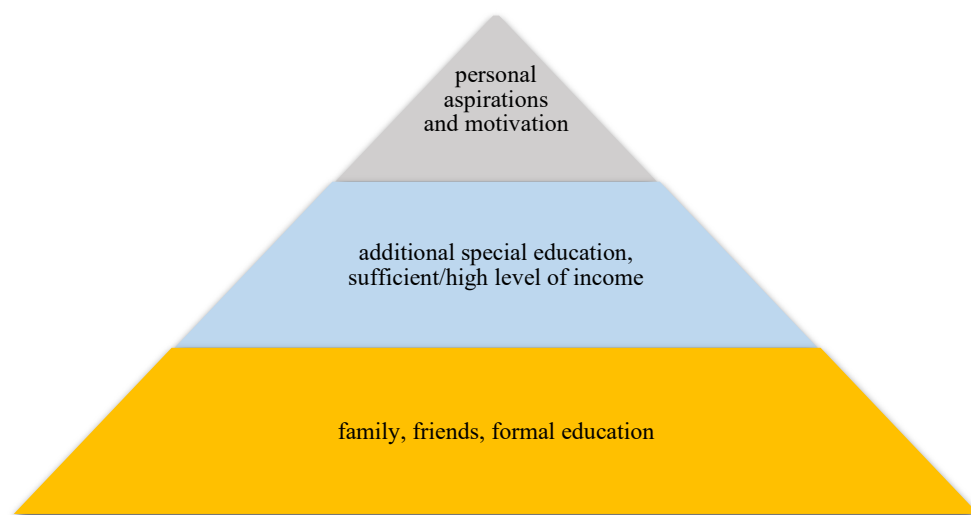
In order to increase the adaptive capacity for continuous improvement of skills throughout the life cycle, digital skills will need to be complemented by a range of non-cognitive social and emotional skills or core work skills, often defined as soft skills that are often acquired in early childhood and school.

Research by scientists shows that interpersonal skills such as coordination, learning and social perception will become more in demand by 2030. It is the right mix of digital, hard technical and core employability skills that will provide workers with secure employment prospects in the future as they can move easily between jobs, occupations and sectors. Overall, people will remain an integral part of the Fourth Industrial Revolution, as it is their creativity and ideas that will drive change. It is people who will design and program robots and cobots (joint robots) and work together with them. Education, science and knowledge are the key productive forces of the digital economy.

Considering the fundamental role of human potential in the conditions of the digital economy, we consider it necessary to highlight the main factors that influence its development, namely:

- family and friends;
- formal education;
- additional special education, which a person receives from time to time throughout his life, to improve his professional level and acquire new skills;
- sufficient/high level of income;
- personal aspirations and motivation.

Thus, these factors can be divided into basic (which serve as the basis for further development and do not depend on a person) and derivatives (which develop due to the main factors and depend on a person) (Figure 7).



**Figure 7.** Factors affecting the development of the human potential of an individual

Some scientists also identify such factors that influence the formation of human potential, such as:

- birth rate;
- availability of social infrastructure: sufficient number of kindergartens, schools, clubs, their territorial and financial availability;
- popularization of secondary special and professional education, their technology and provision with modern equipment;
- the value of higher education both among graduates and among employers;
- availability of new/additional professional knowledge, popularization of self-education;
- the level of balance of supply and demand in the labor market;
- standard of living and satisfaction with it;
- tax burden on individuals and legal entities;
- availability of medical services for the population;
- level of crime;
- migration balance;
- ecology.

#### 4. Conclusions

A country's population is its greatest wealth. Therefore, creating conditions for its development is one of the most important tasks of the state. The development of the information society and the digital economy makes adjustments in all spheres of society's life, affecting in particular the development of human potential. The formation and development of Ukraine's human potential is influenced by such factors as: the birth rate, social infrastructure, education level, the situation on the labor market, the standard of living and well-being of the population, the balance of migration, the level of mortality, crime, etc. During 1990-2020, there was an increase in all components of the human development index - an increase in life expectancy at birth, expected years of education and average years of education, an increase in GNI per capita that shows positive trend.

Considering the current standard of living in Ukraine, it can be concluded that the transformations associated with the development of the digital economy have covered most spheres of society and have become the driving force of many systemic changes. Therefore, for further development, it is necessary to ensure a positive balance of reproduction of the population and migration, development of social infrastructure, access of the population to quality medical, educational, and social services, provision of conditions for the development of small and medium-sized businesses, reduction of tax pressure on individuals and legal entities, adaptation of legislation, in including of labor to the conditions of the digital economy, legalization of innovative forms and types of employment, creation of conditions for the development of foreign economic activity of both enterprises and individual entrepreneurs, development of financial and banking infrastructure.

The perspective of further research consists in the analysis of the Human Development Index by the regions of Ukraine and the identification of leader and outsider regions, providing recommendations for overcoming the regional asymmetry of development.

#### Data Availability

The data supporting our research results are included within the article or supplementary material.

#### Conflict of Interest

The authors declare that they have no conflicts of interest.

#### References

- [1] "Human capital at work: The value of experience," *McKinsey and Company*, 2022.
- [2] Z. H. S. Alhemairy, W. F. W. Yusoff, and N. Al-Qershi, "The Effect of organizational innovation practices on human capital development: The mediating role of innovation management," *Acad. Strateg. Manage. J.*, vol. 20, no. 2, pp. 1-8, 2021.
- [3] M. N. Alolayyan, M. S. Alyahya, and D. A. Omari, "Strategic human resource management practices and human capital development: The role of employee commitment," *Probl. Perspect. Manage.*, vol. 19, no. 2, pp. 157-169, 2021. [https://doi.org/10.21511/ppm.19\(2\).2021.13](https://doi.org/10.21511/ppm.19(2).2021.13).
- [4] Balueva, T. Oklander, I. Petryk, T. Pozhuieva, I. Taranenko, and L. Garmider, "Indicative method of human capital management in the planning of the strategic development of the company," *Int J. Inn Tec. Exploring Eng.*, vol. 8, no. 11, pp. 2077-2081, 2019. <https://doi.org/10.35940/ijitee.K1959.0981119>.

- [5] Bhattacharya, "Strategic human capital development and management in emerging economies," In Strategic Human Capital Development and Management in Emerging Economies, Management & Leadership, pp. 1-32, 2017. <https://doi.org/10.4018/978-1-5225-1974-4>.
- [6] S. Gad and N. B. A. Yousif, "Public management in the education sphere: Prospects for realizing human capital in the development of knowledge management technologies," *Administratie si. Manage. Public.*, vol. 37, pp. 151-172, 2021. <https://doi.org/10.24818/amp/2021.37-10>.
- [7] H. H. Hamadamin and T. Atan, "The impact of strategic human resource management practices on competitive advantage sustainability: The mediation of human capital development and employee commitment," *Sustain.*, vol. 11, no. 201, Article ID: 5782, 2019. <https://doi.org/10.3390/su11205782>.
- [8] M. S. Khan, D. Chongcharoen, and P. Jankaweekun, "Transformational leadership, mediating effect of knowledge management system and moderating effect of training in human capital development: SEM-SMART PLS approach," *Int J. Sci. Technol. Res.*, vol. 9, no. 4, pp. 929-942, 2020.
- [9] Kucharčíková and M. Mičiak, "Human capital management in transport enterprises with the acceptance of sustainable development in the Slovak Republic," *Sustain.*, vol. 10, no. 719, pp. 2530-2530, 2018. <https://doi.org/10.3390/su10072530>.
- [10] Mykhailov, L. Mykhailova, T. Kyrchenko, H. Y. Yin, and Z. P. Huo, "Innovative approaches in the management of human capital development in the context of rural population's life quality improvement," *Int J. Qual. Res.*, vol. 14, no. 4, pp. 1291-1302, 2020. <https://doi.org/10.24874/IJQR14.04-20>.
- [11] F. Naz and G. Muhammad, "Knowledge management based human capital development improves higher educational institutes' performance," *Int J. Knowl-Based Dev.*, vol. 12, no. 2, pp. 118-140, 2021. <https://doi.org/10.1504/IJKBDev.2021.121715>.
- [12] F. Piontek and B. Piontek, "Theoretical foundations of human capital education in economic growth and development management," *Probl. Ekorozw.*, vol. 14, no. 1, pp. 167-173, 2019.
- [13] Popelo, I. Kychko, S. Tulchynska, Z. Zhygalkevych, and O. Treitiak, "The impact of digitalization on the forms change of employment and the labor market in the context of the information economy development," *IJCSNS Int J. Comput. Sci. Net.*, vol. 21, no. 5, pp. 160-167, 2021. <https://doi.org/10.22937/IJCSNS.2021.21.5.23>.
- [14] Samoilovych, O. Garafonova, O. Popelo, V. Marhasova, and Y. Lazarenko, "World experience and Ukrainian realities of digital transformation of regions in the context of the information economy development," *Financ. Credit Act. Probl. Theor. Pract.*, vol. 3, no. 38, pp. 316-325, 2021. <https://doi.org/https://doi.org/10.18371/fcaptp.v3i38.237462>.
- [15] M. Tvaronavičienė, N. Mazur, H. Mishchuk, and Y. Bilan, "Quality of life of the youth: assessment methodology development and empirical study in human capital management," *Econ. Res. Ekon. Istraz.*, vol. 35, no. 1, pp. 1088-1105, 2021. <https://doi.org/10.1080/1331677X.2021.1956361>.
- [16] "Human Development Index (HDI)," Human Development Index, 2022, <https://hdr.undp.org/data-center/human-development-index#/indicies/HDI>, Accessed on: July 5, 2022.
- [17] "Human development report 2020," Human Development Report, 2020, <https://hdr.undp.org/content/human-development-report-2020>, Accessed on: July 5, 2022.
- [18] "Human development report 2010," Human Development Report, 2010, <https://hdr.undp.org/content/human-development-report-2010>, Accessed on: July 5, 2022.
- [19] "Changing demand for skills in digital economies and societies literature review and case studies from low-and middle-income countries," International Labour Organization, 2022, [https://www.ilo.org/wcmsp5/groups/public/---ed\\_emp/---ifp\\_skills/documents/publication/wcms\\_831372.pdf](https://www.ilo.org/wcmsp5/groups/public/---ed_emp/---ifp_skills/documents/publication/wcms_831372.pdf), Accessed on: July 7, 2022.