

ISCKMC 2022**International Scientific Congress «KNOWLEDGE, MAN AND CIVILIZATION»****DEVELOPMENT OF HUMAN CAPITAL IN THE ERA OF
DIGITAL TRANSFORMATION**

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Abstract

The formation and development of human capital is one of the main directions for the transition to a new digital paradigm. The digitization of personnel is one of the directions of digital revolution, which is aimed to build a system based on digital technologies. The introduction of digital technologies in human resource management is an integral part of the formation and updating of the knowledge layer aimed to develop highly qualified personnel with the appropriate skills and knowledge. The paper considers the main positions of the development of human capital in a global context, as well as the trends and tendencies in the development of human capital in the era of digital transformation in the context of the main directions outlined by the authors. As a result of the study the authors developed a model of a digital platform for human resource management, which can be tested in various industry structures.

2357-1330 © 2022 Published by European Publisher.

Keywords: Digital platform, digital platform for human capital management, digitalization, digital revolution, human capital, human capital management

1. Introduction

The digital revolution is an era of global transformation of economies, industries and companies, regardless of the scale of functioning and resource provision. In this context, the modification of the competitive environment implies a change in existing business models, that is, the collapse of traditional value chains. As a result, new value networks are emerging in their place, in which organizations develop products and services in collaboration with customers and partners. The result of this process is a new logic of digital entrepreneurship, which opens up a certain range of opportunities for companies and organizations, as well as changes the concept of developing business models in the provision of digital approaches to the organization of work, namely human resource management (Kurbanov et al., 2016).

Companies are paying more attention to increasing employee engagement and performance by developing digital platforms for building creative teams. Organizations implement human resource management solutions in order to develop a strategy to attract qualified, results-oriented employees and ensure proper internal communications. Human resource management of a company involves the organization of the work process, the creation of communication networks and the development of mechanisms to ensure labor productivity (Khubulova et al., 2019).

The size of the global human resource management market is estimated at \$16.01 billion in 2020 and is expected to grow by 11.7 % over the long term. Advances in IT, coupled with the introduction of predictive analytics into the human resource management process, are expected to drive growth. The digital transformation of human resource management methods allows performing traditional HR activities in a shorter time and at the lowest cost. This contributes to the effective management of human resources, the alignment of the organizational strategy with the individual goals of employees and the effective development of the organization (Kraevsky & Polonsky, 2001).

As a consequence, the proliferation of data analytics, machine learning, the Internet of Things (IoT) and artificial intelligence (AI) will drive the growth of the market. Numerous human resource management providers create innovative solutions that incorporate the latest technology into systems in order to improve organizational performance. Solution providers develop software interfaces that are then integrated into digital workspaces, allowing employers and employees to access information and data anywhere in the world (Slepakov et al., 2019).

2. Problem Statement

Organizations around the world are focused on the creation of a digital workplace that is highly productive, agile and mobile and includes digital technologies. As a consequence, there is an integration from legacy systems to digital human resource management, which plays an important role in the centralization of personnel management data in an organization, which ensures the availability of information and data.

3. Research Questions

- i. The subject of the study is the development of human capital in a global context.

- ii. Trends and tendencies in the development of human capital in the era of digital transformation are determined as the main directions.
- iii. Development of a model of a digital platform for human resource management is one of the most important tasks of this study.

4. Purpose of the Study

The purpose of the study is to consider the main positions of the development of human capital in a global context, as well as to identify trends and development tendencies in the digital age.

5. Research Methods

In the study, a consistent analysis of high-tech industries in the world and their influence in the context of globalization is carried out. The comparative analysis and synthesis, scientific search, analogies, selection of the most valuable material from the original source were used. The authors took formal-logical, as well as statistical and experimental estimates, as the basis for conclusions. The results of the study revealed that the processes of accumulation, development and management of human resources are at the stage of digitization and form a new paradigm of human capital in a global context. When considering the value orientations that potentially arise as a result of testing digital technologies, it is necessary to note that in order to improve the dynamics of human development, we should determine the competencies and skills that are presented to a person in the era of digital transformation. In this context, the authors analyze both qualitative and quantitative characteristics in parallel with global trends and tendencies, which in turn made it possible to structure information and draw conclusions.

6. Findings

In a global context, it is necessary to note that the development of digital technologies determines new trends and tendencies in the sectoral development of countries, which also affects the development of human capital. One of the barriers to digitization is the differences in the assessment of the level of human capital development in different countries, which is a consequence of socio-economic development (Klochkova & Sadovnikova, 2019).

According to the World Bank, over the past decade, the level of human capital has grown in most countries. Table 1 presents the results of the Global Human Capital Index – 2020 in a comparative parallel with the results of the Global Human Capital Index – 2010, which probably reflect the main trends in various dimensions of human capital. The study was based on such indicators as: the global human capital index, real Gross Domestic Product (GDP) per capita and the position that the country occupies in world economic development.

Table 1. Main indicators of the Human Capital Index – 2010 and the Human Capital Index – 2020

Region	Economic indicators for 2020			Economic indicators for 2010		
	Global index human capital – 2020	Real GDP per capita	Position in the economic development	Global index human capital – 2020	Real GDP per capita	Position in the economic development

East Asia and the Pacific	0.59	23.376	31	0.71	43.977	12
Europe and Central Asia	0.69	35.278	48	0.71	39.479	41
Latin America and the Caribbean	0.56	15.572	26	0.58	18.444	13
Middle East and North Africa	0.57	28.437	18	0.60	34.202	14
Northern America	0.75	55.857	2	0.75	55.857	2
South Asia	0.48	6.605	7			
Sub-Saharan Africa	0.40	5.125	42	0.42	6.586	21
Average indicator	0.56	21.403	174	0.62	30.243	103

Source: World Bank Survey 2020

Every fourth country that experienced the increase in the index had grown by more than 5 points. This means that in these countries the productivity of future workers has approached the border by 5 % points – significant progress. Over time, there is a convergence of the Human Capital Index, that is, in countries where at the beginning of the study there were low indicators of economic development and the values of the Human Capital Index, dynamic growth is observed, in contrast to countries where the Human Capital Index was higher, even after taking into account the initial GDP per capita.



Figure 1. Changes in the human capital index, 2010–2020

According to Figure 01, the countries that have achieved this include Macau Special Administrative Region of the People's Republic of China, Albania, the Russian Federation, Côte d'Ivoire and Azerbaijan. These improvements are explained by many factors: the improvement in the quality of life of the population as defined by international standards (Macau, China, Albania), the quality of social

services and a positive demographic situation (in the case of Russia, in particular, survival of adults improved, indicating a recovery from the fall in the average lifespan in the post-Soviet era), as well as increasing the level of education (at the pre-school level in Azerbaijan, at the primary level in Côte d'Ivoire, at the secondary level in the Russian Federation).

However, the accumulation of human capital is the result of a dynamic process, the dimensions of which complement each other over time. Depending on the stage of a person's life, the impact of negative factors (for example, the impact of COVID-2019 on the socio-economic system in general) on this process can occur through different channels and have different effects.

Despite this fact, the development of digital technologies expands the scale of opportunities for the accumulation and implementation of human capital, regardless of the age group, with minimal resources. Considering the process of development of human capital in the era of globalization, it is necessary to single out the main factors that ensure integration processes in the digital space.

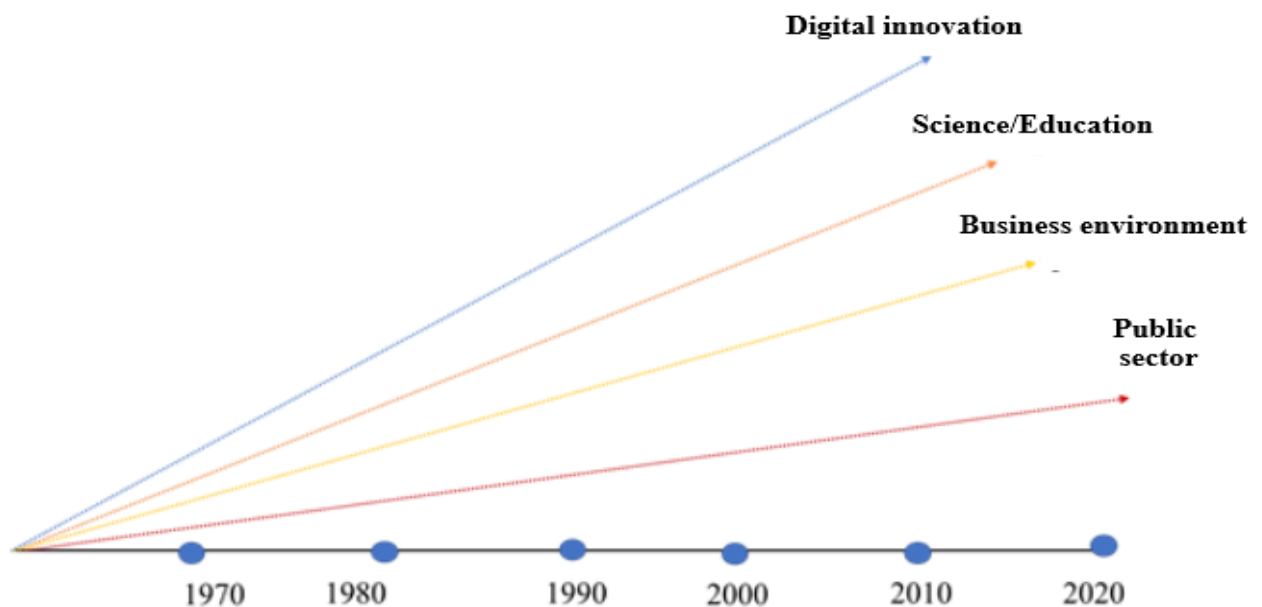


Figure 2. Key Factors Influencing Human Capital Development 2020

Figure 02 shows four main factors: innovation, science, business environment and public sector, in the context of which the main trends and tendencies in the digitization of professional skills and competencies of employees are formed. People need the right mix of skills to prepare for the job ahead. It should be noted that there is no single set of skills that a person must have in order to evolve from a traditional social order to a digital community. However, the combination of structural knowledge of information and communication technologies (ICT), as well as communication skills and basic competencies (for example, creative thinking and teamwork) is a start-up capital for a person. Effective work performance requires a holistic approach to skills development, from early childhood education to lifelong learning. Public funding for the training required to meet global challenges in the era of digital transformation goes beyond the capacity of the public sector, which includes the involvement of extrabudgetary sources, i.e. private investment.

Digital innovation is the fundamental driver of digital transformation, leading to radical changes in the way people interact, create, produce and consume. Digital innovation not only creates new products and services, but also creates opportunities for new business models and markets, and can also drive efficiency gains in the public sector. Digital technologies and data are driving innovation in a wide range of sectors, including government, business, science and education.

For example, in the UK, the national right to basic skills aims to reduce the number of adults who lack the necessary digital skills for life and work. The Future Digital Inclusion Program, funded by the Department of Education, helps adults learn digital technologies and develop their digital skills in a community setting. Through a network of 5,000 online centers, adults have access to online courses and/or face-to-face classes, either in groups or one-on-one. This program supports adults who are digitally excluded, as well as those who are often unemployed, low-skilled, disabled or with learning difficulties. It also helps adults gain the basic skills they need to transition to the new and important digital skills qualifications that the Department of Education is offering free to adults from 2020.

In Norway, the Digital Inclusion for All program provides training for people who do not use ICT in their daily lives. This helps them acquire the skills they need to master these technologies, with older people, women and immigrants as specific target groups.

The federal project "Staff for Digital Economy" is being implemented as a part of the national program "Digital Economy of the Russian Federation". The passport of the federal project was approved by the presidium of the government commission for digital development. The project is being implemented with the aim of using information technology in order to improve the quality of life and the conditions for doing business approaches to assist citizens in mastering the key competencies of the digital economy, ensuring mass digital literacy and personalization of education. As a result, by 2024 a successive education system will be built at all levels, including the identification and support of talents in the fields of mathematics and computer science, the training of highly qualified personnel who meet the new requirements for the key competencies of digital economy, the implementation of retraining programs for professions in demand in digital economy as well as promising educational projects.

Portugal "National Digital Competences Initiative 2030" aims to generalize digital access, use and literacy. At the same time, it aims to stimulate employment opportunities, vocational training and specialization in digital technologies and applications. In addition, it works to ensure active participation in international research and networks and knowledge production in digital fields. It helps both households and individuals provide the digital skills needed to both realize full citizenship and increase employability. To this end, special attention is paid to individuals who have identified a need for digital competencies.

In Singapore, the Skills Accelerator (TeSA) offers a variety of programs to support professionals in information and communication technology (ICT) and non-related industries. The accelerator helps people improve and acquire new skills and knowledge in order to be in demand in the labor market, remain competitive and meet the challenges of a rapidly changing digital world. The accelerator is administered by the Infocommunication Technology Media Development Authority in collaboration with the Singapore Workforce and Skills Future Singapore. It also collaborates with industry partners and employers.

From the perspective of the business environment, additional policies aimed at enhancing skills in digital transformation include the following:

- technical assistance to small and medium enterprises through digital business transformation centers (Colombia);
- vouchers for enhancing digital competencies (Slovenia);
- competence centers and training laboratories for cybersecurity (Germany)
- retraining and advanced training of workers (Portugal);
- training in the basics of information and communication technologies for representatives of small and medium-sized businesses (Israel);
- promoting training and skills support for the ICT industry (Latvia);
- business consulting for small and medium businesses (Lithuania);
- promoting training and skills support for the ICT industry (Latvia);
- business advice for (Lithuania);
- business accelerators for SMEs (Russia).

As a result, in this context, there is a need to modify the ways of the formation and development of human capital, as well as management of it in the era of digital transformation. In the era of digitalization, careers have become more dynamic and complex, weakening the historical correlation between age and career advancement. Rapid technological and organizational change means that workers must now reinvent themselves many times over throughout their working lives. At the same time, the broader business culture has changed, making it acceptable and sometimes even desirable, for young people to be promoted to leadership positions. As a result, 65-year-old interns are now working in collaboration with 25-year-old managers, which defines one of the main trends of the digital revolution – lifelong learning.

6.1. Concept of digital platform in human resource management

While the main approaches to human resource management began to transform during the times of the agricultural and industrial revolutions, the widespread use of information technology has forever changed the way people interact, collaborate and communicate, both within work processes and in the external environment.

Although there are no hard limits to the design of digital HR platforms, it provides organizations with a tool to understand what stage of digital development they are in and identify opportunities to support a better way of doing business that contributes to a full picture of the implementation and operation of digital platforms.

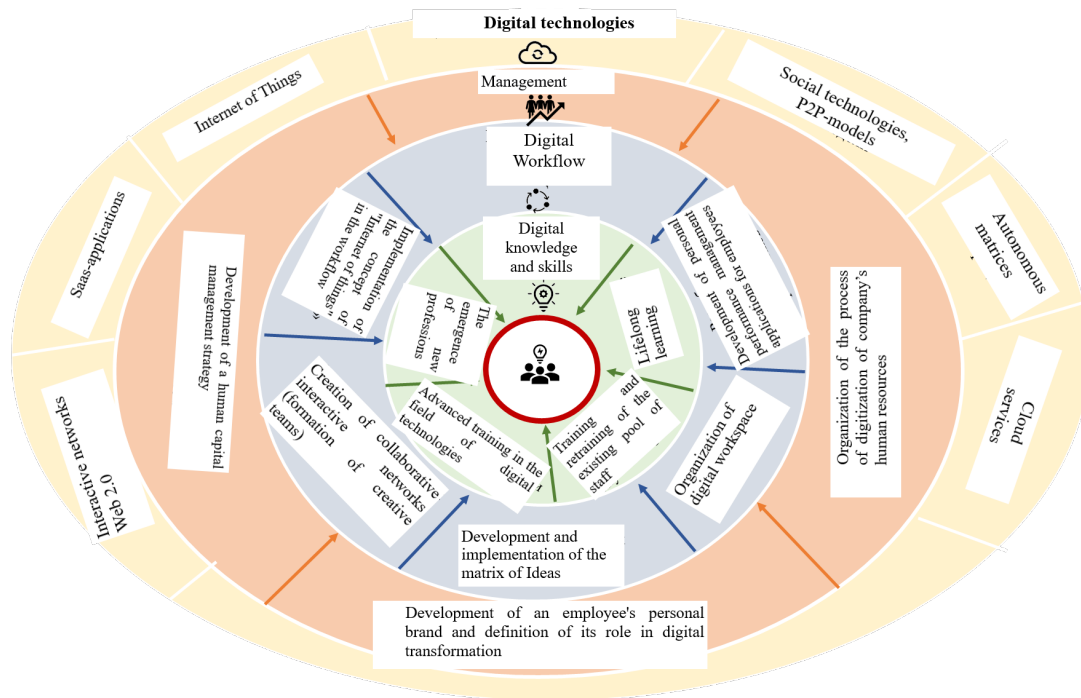


Figure 3. Digital Human Resource Management Platform

As a result of the study, a model of a digital human resource management platform (Figure 03) was developed, which can be tested in various industries. The platform is based on four main elements: digital skills and knowledge, digital workflow, management and digital technologies, which are aimed to modify human capital paradigm. Each of these elements contains a number of sub-elements aimed at digitizing human capital. Let us consider detail structure of this platform:

1. Digital skills involve the emergence of new professions, advanced training in the field of digital technologies; training and retraining of the existing pool of staff; as well as lifelong learning. In this context, it is necessary to note that the necessary process for the digitization of frames is the dynamism and updating of information flows, i.e. formation of a new layer of knowledge.

2. The digital workflow is formed on the development and implementation of the "matrix of ideas"; workplace organization; creation of collaborative interactive networks (formation of creative teams); implementation of the concept of "Internet of Things" in the workflow, development of an application in order to manage the personal effectiveness of an employee.

3. To implement human resource management, it is necessary to develop a human capital management strategy; organize the process of digitization of the organizational potential of the company staff potential; develop an employee's personal brand and define their role in digital transformation.

4. As a consequence, the transformation process requires the introduction of digital technologies: the Internet of things, autonomous matrices, cloud technologies, social technologies (P2P matrices), Saas-applications, Web 2.0 interactive networks.

The digital resource revolution includes all the technologies that people can use to form a human resource management platform, both proposed by the authors and those that have yet to be implemented. They range from HR applications and core business applications to email, instant communication and corporate social media tools and virtual reality components.

Thus, with the spread of digital technologies and wireless gadgets, the pace of modification of mechanisms to determine new directions for the development of human resources tends to change exponentially. These changes are further aggravated by the constant pressure to increase productivity and cut costs, making it difficult for employers to adjust to labor market dynamics. Collectively these trends determined directions digital revolution.

7. Conclusion

As collaboration in value networks with customers, partners and suppliers becomes increasingly important – the ways of working, organization, processes and systems – must be adapted and digitized. At the same time, the demands and expectations of employees and new talent who can work flexibly continue to grow.

A new set of digital business and work skills is needed today. Companies should pay more attention to career strategies, talent mobility, organizational ecosystems and networks in order to facilitate both individual and organizational rethinking. The problem is not just retraining or planning a new, better career. Instead, companies must take a fresh look at leadership, structure, diversity, technology, and the overall employee experience. As a result, one of the main directions of digital transformation is the formation and updating of the existing knowledge base, which determines a new trend in education – continuous education or lifelong learning aimed to develop a new layer of specialists in the field of digital technologies and education or change types of work, i.e. emergence of new professions.

It is important that companies define clear boundaries for the digital human capital management platform that is an integral part of the overall digital transformation, as well as an implementation plan. It is necessary to formulate clear goals in order to monitor the progress of the achievement of the desired results and changes, both for employees and for partners and clients. Objectives are essential for the proper direction of the development of business process, corporate governance and functioning procedures. Digital know-how is being developed through training and recruitment to enable employees to take advantage of new digital tools. The organizational structure of a company will also need to be adapted to ensure interoperability, for example, between information technology, staff and core business. In this context, during the study, the authors developed a model of a digital platform for the management of human potential, which can be applied to any company, regardless of an industry.

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