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MODERNIZATION OF APPROACHES TO HUMAN POTENTIAL MANAGEMENT IN THE DIGITAL ECONOMY

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Abstract. *Global shifts and changes in the condition of the new economy are causing competency transformations at all levels of economic regulation occurring under the influence of the rapid introduction of innovative technologies all over the world and particularly in Ukraine. The tendency of the new economy is manifested in unexpected competence shifts, which require new knowledge and information, constant improvement in order to remain competitive and economically efficient during mobilization; make responsible management decisions promptly; create high technologies, etc.*

Current competency gaps are impeding the development prospects of the new economy in Ukraine during the introduction of HRM-technologies. The article will try to sufficiently explain the facts and assumptions that HRM-technologies can reduce the competence gap between technology, people, business, society and government bodies in the system of signs of the new economy. Having explored the needs of the labor market, the real situation and opportunities focusing on future changes, the article offers ways how to overcome competency gaps at the meta-, macro-, and micro-levels. The necessity to deeply transform popular competencies and digitalization of HRM-technologies, increase IT-competencies of HR-specialists, all subjects of labor relations, and transform the HRM-competencies of linear management is demonstrated in the article as well.

Keywords: *human potential, digital HR, digital economy, new economy, HRM-technologies.*

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Introduction

The topic of the study is quite relevant given the global shifts and changes occurring in the world due to the rapid introduction of innovative technologies and digitalization.

The competence and competitiveness of a worker in the modern world are determined by several key components: worldview, knowledge, abilities, and teamwork skills. People are doomed to live in a world that is constantly changing. Development and change are integral attributes of human's existence. Human society is forced to constantly change (Melnyk, 2018). The competencies of a modern leader, businessperson, manager, or administrator could quickly transform only by flexible thinking, high levels of adaptability and socialization. The tendency of the new economy involves unexpected competency shifts that require new knowledge and information, continuous improvement to be effective in conditions of mobilization and making rapid management decisions.

The main hypothesis of the given research is a reasonable assumption that HRM-technologies in the system of new economy can reduce the competency gap between technology, people, business, society, and government. After all, recent research shows that man is not evolutionarily ready for such rapid transformations. Based on the latest research, scientific facts and scientific theory data, the paper will try to sufficiently explain the facts in the framework of digitalization and transformational changes in labor and employment.

Literary review

Let us consider the main features and trends of the new economy. The key productive forces (value sources) in the new economy are human capital as a leading factor of production and business space, which has tangible and intangible components in its structure. It represents computer technology, information and digital technologies, artificial intelligence, robots and mechanisms, intellectual property, brand, organizational knowledge, able to make a profit with a much higher rate than physical capital.

Information as a universal leading asset in the new economy is changing the production relations of the post-industrial mode of production. There are following shifts in the sectoral structure of social production: capital and labor move from the industrial sector to the services sector, within which the share of intellectual services (education, training, science, consulting) is also growing. In property relations, more and more attention is paid to intellectual property on intangible assets: literary, artistic, audio, video items, computer programs, databases, maps, photographic products; objects of industrial property rights (inventions, utility models, industrial designs, innovative proposals, trademarks); brand and commercial names; geographical indications; plant varieties and animal breeds; topography of integrated circuits; trade secrets, etc.

In the field of money circulation, the role of intangible money and non-cash transactions is also growing, the value of virtual digital currencies (cryptocurrencies) is increasing. The information concept of pricing (founder - D. Bell) prevails in the

new information economy, which explains the key role of systematized information (knowledge) in the practical processing of existing production resources. The main source of value in XXI century is not the psychophysical efforts of a worker, but, above all, his or her intellectual potential, knowledge and experience. Modern theories of value and price are based on the ideas of optimization, and in the course of solving optimization problems, evaluations of products and the factors used for their production appear. The alignment of these estimates in the market leads to the emergence of so-called equilibrium prices, which are formed under the condition of free redistribution of products and factors between economic agents. This establishes an efficient allocation of resources - between companies and products - between households (Lobza & Yurchenko, 2015). The distribution of public goods in the new economy occurs based on the analysis of a huge amount of data, both structured and unstructured Big data on real consumption, income and expenditure of households. Radical changes in the new economy are also happening in consumption relations. In the consumption of material goods and material production resources there are more and more tendencies for the thrifty use of resources and individualization of consumption based on data-driven (data analytics for purposeful decisions and actions). Consumption of the main source of value - information and knowledge means that they are becoming the property of more and more people, that is, their consumption is identical to self-growth. Information and knowledge are phenomena that can be consumed in the production process in an unlimited number of reproduction cycles: the acquisition of certain amount of knowledge does not reduce their amount in the owner (Chyrka, 2016).

Results

Thus, information, knowledge and necessary competencies (digital, socio-behavioral and cognitive) are universal values of the new economy. The 2025 set of competencies are transforming, becoming much broader, deeper and more flexible. Experts from the World Economic Forum estimated that, as a result of the rapid digitization and integration of digital technologies and human labor, more than a third of the skill list valued in the labor market today may change again in a few years. A 2017 study by Deloitte «Consulting International Trends in Human Resource Management», which was featured by more than 10,000 respondents from 140 countries, noted a significant gap between technological changes in companies' operations and productivity growth, resulting in income inequality, lack of wage growth, social and political problems all over the world. Former drivers of net profit growth do not work in the new environment, as the market valuation of companies in the stock market over the past two decades depends on advances in intellectual property and services, rather than on the production of real goods or means of production. Deloitte experts attribute the reasons for this gap to the development of human capital strategies - ways of organizing, managing and developing business, as well as coordinating the activities of employees within working process (Rewriting the rules for the digital age, 2017).

According to Eric ("Astro") Treller, head of Alphabet's Google X division, the introduction of new technologies is ahead of the human ability to adapt to them, which is growing linearly. Moreover, if people adapt quickly enough to new technologies as users, companies have to make a lot of efforts to create information and technological breakthroughs in business. An even more bigger gap is emerging in the sphere of public administration: the dynamics of public policy in relation to income inequality, unemployment, immigration and trade are irrelevant to the challenges of the new economy and digitalization. These problems, which complicate the work of enterprises due to strict government regulation, high tax rates and strict legislation, are being addressed even more slowly than other legislative and policy changes on issues such as minimum wages, trade tariffs, immigration and education, as they are just starting to form after years of public debate.

In turn, the needs of the labor market, focusing on future changes, are recognized by leading scientists in the field of HRM as key factors for successful personnel management in general. And HRM-technologies in the system of signs of the new economy could reduce the competency gap between technology, people, business, society and government. The unique role of HRM-technologies includes: helping managers and organizations adapt to new technologies and constant change, employees - using new working models and making a successful career, and companies - adapting to changes in society, regulation and public policy.

HRM-technologies in the new economy are a set of innovative methods and tools of staff management, regulated by procedures, principles, technical and personal means of their implementation, which reliably ensure the achievement of results in human resources management during the process of solving current business problems according to the development strategies. Improving the level of HR-competence of modern administrators, economists and managers, as well as the effective use of HRM-technologies is necessary for solving problems in the labor market and certain business issues.

Back in 1998, Dave Ulrich, a professor at the University of Michigan, included two new roles in the HR manager competency model: organizational structure management (reengineering and optimization of HR business processes: "collective service") and change management (transformation management: proactive support for change processes). We define HR-competence as an ability to effectively perform specific functions of human resource management: attract, train and develop, organize working activities, evaluate, motivate and stimulate staff to achieve goals, develop corporate culture, and so on. The formation of HR-competencies in managers at all levels, administrators and economists is an important task of their training, both in the system of corporate learning and in the system of higher education. However, the variability of generations of employees, nature of work, improvement of HR-technologies will require constant updating of HR-competencies of line managers. Modern successful organizations use end-to-end management and information technologies in HR management (Rewriting the rules for the digital age, 2017; Spyrs, Bolton, 2019). Our proposed definition of HRM technology provides methods of automation / digitization as integral components of HRM technology, while IT

competence is one of the most essential competencies of the current century. This is required due to following factors:

- digitalization of HR-technologies and almost all business processes;
- change of generations in the labor market - the entry into the market of the "digital generation", born with gadgets in their hands;
- development of behavioral sciences, discoveries of which are actively used in the creation of IT technologies and improvement of artificial intelligence;
- volatility of changes and uncertainty of the future.

Thus, in order to modernize the competencies of personnel management entities, it is necessary to increase the IT competence of HR specialists on the one hand and raise the HRM competence of line management on the other.

Since the accumulation of human capital involves both society in the form of state and civil society, enterprises (consumers of human capital) and people themselves as the bearers of human capital, the measures should be comprehensively developed at three management levels: macro (state), meta (professional communities, public organizations), and micro (enterprises and organizations).

Let us comment on the proposed ways to overcome competency gaps in the development of HRM-technologies in the new economy.

According to the Recommendation of the Council of Europe on key competencies for lifelong learning, digital competence is a confident, critical, responsible use and interaction of digital technologies for learning, work and participation in social activities. I.O. Kravchuk identifies the following digital competence clusters of a personnel manager (Kravchuk, 2018):

1. Computer and platform literacy, which are the basic skills of digital competence.
2. Data design and data-ethics, which includes the ability to present data by modern digital means of visualization and ethical handling of personal, financial, marketing, as well as other kinds of data.
3. Analytics as a tool for data processing and professional analysis.
4. Social intelligence as an understanding and use of social tools, including social networks.
5. Innovative thinking (Kravchuk, 2018).

Such a classification, in our opinion, although relevant in terms of the possibility and necessity of their formation in HR-specialists, still needs to be clarified in more pragmatic and special terms of such broad concepts as social intelligence, which is not necessarily formed and manifested in digital interaction, and innovative thinking.

According to HR managers, the main obstacles at the initial stage of transformation in HR services, which are only implementing or have already implemented initiatives in the field of digital transformation, are professional skills (51%) and staff potential (43%). Most CIOs also cite the level of staff qualification as a major barrier, with 65% of respondents surveyed in 2018 citing a “shortage of skilled professionals” as a major factor slowing the pace of change in their IT companies (Spyrs & Bolton, 2019).

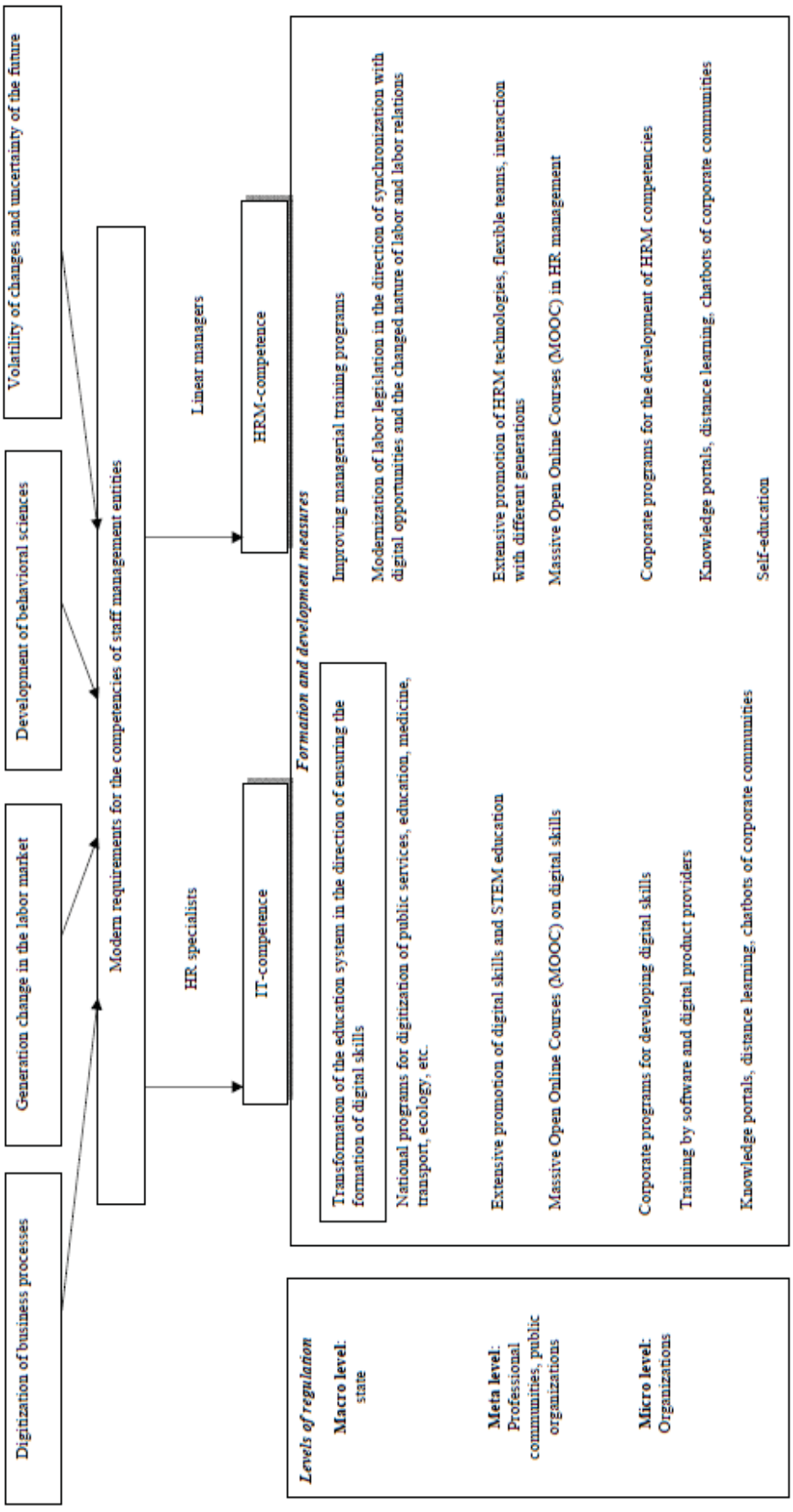

Fig. 1 - Ways to overcome competency gaps in the development of HRM-technologies in the new economy

We consider it necessary to adhere in the definition of digital competence to the definitions and clusters of 21 digital competencies of the future, prescribed by the European framework Digital Competence (DigComp 2.0), which will be discussed below.

The principal influence of the state on the formation of IT competencies in the population as a whole, including future managers, HR professionals could be:

- direct - improvement of general education programs in the direction of intensification and modernization of computer science teaching.

- indirect - creating a favorable environment that encourages and interactively develops people's IT competencies.

In the process of implementing the «New Ukrainian School» project, changes were implemented to the State Standard of Primary School, which ensured the withdrawal of computer science from the integrated course "I explore the world" into a separate subject. However, the formation of digital literacy or "digital intelligence" requires the implementation of a combined strategy of measures to reform formal education (from primary to higher) and non-formal education.

In particular, the project «Digital agenda 2020», developed by the Hi-Tech Office Ukraine, provides for the following principal tasks in terms of digital literacy and skills in the public educational segment:

• Situation analysis. Conducting an independent qualitative and quantitative research on the availability of digital skills in different groups (civil servants, teachers, students, young workers, the unemployed, people with disabilities, retirees, representatives of small and medium businesses), determining criteria for influencing the development of digital skills, the major obstacles to the use of digital technologies and specific tools;

• Based on this research - developing a list of digital skills and competencies for target audiences in individual industries by line ministries;

• Development of quality educational materials, revision and updating of training programs for advanced education and training of civil servants, educators and unemployed people;

• Development and promotion of publicly available online and offline digital literacy courses, including blended learning to cover a large number of people from different walks of life based on the adopted European Digital Competence Framework (DigiComp 2.0.);

• Measurement and certification of digital skills. Adaptation of the methodology of measurement and implementation of independent certification of the level of digital skills in accordance with the needs of the labor market;

• Harmonization of the regulatory framework governing the certification of digital skills in civil servants, teachers, other segments, according to international requirements, as well as the regulatory framework for additional accruals to salaries where digital competencies are confirmed;

• Introduction of mandatory digital competencies for civil servants, education workers, scientists (by analogy with knowledge of English), unemployed categories;

• Promoting the relevance of digital literacy among citizens («Tsyfrova adzhenda Ukrainy – 2020», 2016).

The Ukrainian Institute of the Future has developed a strategy for country's economic development with the principal strategic direction - digitalization of the economy, namely the transformation of existing analog (sometimes electronic) products, processes and business models of the organization based on effective use of digital technologies. Implementation of the strategy, according to its developers, would increase Ukraine's GDP by 8 times, ensuring the share of the digital economy in GDP by 65% and the creation of 700 thousand new jobs. To do this, the government and the business should take the following steps:

1) implement projects for the construction of solid infrastructure:

- develop a fixed broadband infrastructure;
- develop mobile Internet infrastructure;
- develop radio infrastructure (LoRaWan, etc.) for Internet of Things projects;
- develop public infrastructure for Wi-Fi access;
-develop computing infrastructure (so-called cloud, or virtualized infrastructure);
- create cybersecurity infrastructure.

2) create soft infrastructures - identification and trust infrastructure (citizen ID, mobile ID, bank ID), open data infrastructure, public services (e-government), interoperability, e-commerce and e-business, transaction-processing infrastructure, life support infrastructure, geoinformation infrastructure, blockchain infrastructure.

3) initiate and implement digital transformation projects, integrate these initiatives into local, regional, national development projects (Ukraina 2030 E — kraina z rozvynutoiu tsyfrovoiu ekonomikoiu, 2018).

At the *meta level*, development of 21 digital competencies of the future, which are defined by the European framework Digital Competence (DigComp 2.0) could be implemented through professional and public communities: the ability to process information and digital content; ability to communicate and interact in the digital environment; ability to create digital content and write program code; ability to safely use and dispose of digital technology devices, protect personal data and intellectual property; ability to solve technical problems and use ICT creatively (Systema tsyfrovykh kompetentnostei 2.0., 2019).

STEM education is a favorable environment for the formation of IT competencies. The uniqueness and suitability of STEM education for the formation of skills of the future lies in the organic combination of exact, natural sciences and arts with information technology. For example, musicians in STEM education are taught not only to make music, but also to use computer programs to create musical products (Systema tsyfrovykh kompetentnostei 2.0., 2019). At the *micro level*, individual companies can create corporate programs to develop digital skills of employees. This is now becoming relevant for enterprises in the post-Soviet space. The latest studies of the corporate education market in 2019 show the largest shortage of qualified staff in the field of IT/digital technologies.

Table 1

Curricula fields of corporate universities in Ukraine

	Academy DTEK	Academy Deloitte	Business Academy E&Y	ArselorMittal University in Ukraine	Metinvest University	Academy of of Continuing Education DNIPRO^{M}	Business School Nova Poshta	ATB Training Center
Product training						+		
Effective sales, customer focus	+		+	+	+	+	+	+
Marketing		+		+			+	
Management skills,	+	+	+		+	+		+
Public speeches	+		+			+		
Development of personal effectiveness, coaching	+	+	+			+		
Business etiquette and communications, negotiations	+	+	+		+	+		
Getting to know a company for new employees						+		+
Production management, labor protection				+	+			
Business processes, operational management			+		+		+	
Strategic management		+	+					
Project management	+	+	+					
Financial management		+	+	+	+		+	
Resource management, supply, accounting	+	+	+	+				+
Change management	+							
Risk management			+	+				
HR-management	+	+		+			+	+
Coaching and mentoring	+	+	+					
Informational technology		+ (MS Excel)	+	+				
1C System								+
Digital communications							+	
Research and development				+				
Law				+				

Source: compiled by the authors using the sources: (Akademiia «Deloit», 2019; Korporatyvne navchannia,2019; Akademyia DTЭK. Trenynhy,2020; Shkola biznesu Nova Poshta, 2020; Kariera Metinvest, 2020; Lytovchenko,2017; Universytet ArselorMittal v Ukraini,2020; Uchbovyi tsentr ATB, 2020).

A review of Ukrainian corporate university programs revealed several interesting tendencies. First, many corporate universities, which were successful in the 2000, have ceased to exist. For example, the Ukrainian Agricultural School "Mriia" disappeared with the restructuring of the holding company and the change of ownership, Privat University "Privatbank" transformed into an online internship program, UMC-University also disappeared in the process of acquisition by Vodafon. Only corporate universities of vertically integrated mining and metallurgical giants have survived - DTEK, ArcelorMittal, Metinvest and branches of international consulting companies Deloitte, E&Y. Table 1 presents the analysis results of curricula presented on the official websites of these universities and training centers, by areas.

As can be seen from Table 1, the most complete training package is presented at corporate universities of multinational corporations ArcelorMittal, Deloitte, E&Y and the Academy of Continuing Education DNIPRO. However, the names of the training programs of the last training center are more pragmatic and aimed at developing middle management competencies, while open programs in Deloitte and E&Y are aimed at the formation of competencies of top management and professionals with a high level of qualification in the field of finance, audit, HR-management. However, special courses on digital skills development are presented only at ArcelorMittal University in Ukraine (as a specialized Academy of IT users, which offers a training system for Microsoft Office software products: Word, Excel, Access, PowerPoint, Outlook and functional modules of the integrated enterprise management program SAP), Deloitte, E&Y academies (as aspects of leadership training). A separate thematic module on digital communication skills is presented in the program of Business School «Nova Poshta». It can be concluded that most in-house training centers of Ukrainian companies do not plan to develop digital skills of their employees. At the same time, open programs for the development of digital skills by software developers and web designers are actively offered by large IT companies: SoftServe, Epam, Luxoft, NixSolution, etc. Almost all IT companies have in-house professional courses.

Many companies in this sector create joint courses with information technology departments for students who learn programming and computer science for their future employment. Thus, one of the leading players in the Ukrainian IT services market - Ciklum - has been a partner of the Ukrainian Catholic University since 2016 in a master's course in computer science and Data Science. The international IT company GlobalLogic now cooperates with 15 Ukrainian technical universities. Every year, more than 2,500 and 1,000 students from the Ukrainian offices of EPAM and Luxoft participate in educational programs («Laboratorna robota», 209). However, the above-mentioned courses are not connected with digital literacy, which is necessary for any person to live successfully in the information economy, but professional courses for obtaining an IT specialty and employment in this field.

Thus, organizations aiming at digital breakthroughs in the new economy also need to pay attention to overcoming the competency gaps of employees in the field of digital literacy. This need is already being felt by companies in developed countries:

it is defined as one of the HR trends of 2020, and according to ABI research: the market of VR (virtual reality) training programs will reach 6.3 billion dollars by 2022 (Meister, 2020).

Existing competency gaps can also be resolved through the organization of training by software and digital product providers, which is offered as an additional after-sales service. Yet, this way of overcoming digital incompetence is limited both in terms of educational content and staff coverage.

In terms of optimizing staff costs, it is important to use distance learning methods to overcome digital illiteracy. Chatbots have significant potential for overcoming gaps in IT competencies. Interaction with a bot in the learning process creates skills of digital literacy.

Similarly, to overcome the competency gaps in line managers regarding HR competence, measures have been developed at the macro, meta and micro levels (Fig. 1): improvement of managerial training programs; modernization of labor legislation in the direction of synchronization with digital opportunities and the changed nature of labor and labor relations; wide promotion of HRM-technologies, flexible teams, interaction with different generations; Massive Open Online Courses (MOOC) in HR management include: corporate programs for the development of HRM competencies; knowledge portals, distance learning, chatbots of corporate communities; self-education; creating conditions for the active acquisition of the necessary cognitive and digital competencies, staff retraining, assistance in the adaptation of personnel to the changing environment, etc.

Conclusions

The conducted reviews of technological and digital changes allow to draw conclusions about the further deep transformation of the necessary competencies and digitalization of HRM-technologies. It is proved that in order to overcome the competency gaps of the subjects of labor relations it is necessary on the one hand to increase the IT competence of HR specialists, all staff members; on the other hand – improve the HRM-competence of linear management.

Also, in the context of the given research, we propose the definition of HRM-technologies as a set of innovative methods and tools of staff management, regulated by procedures, principles, technical and personal means of their implementation, which reliably ensure the result achievement in human resource management during the process of accomplishing business objectives according to the targeted development strategies. The proposed definition envisages ways of automation / digitization as an integral component of HRM-technologies, while IT competence is one of the indispensable competencies of the current century.

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