GCPMED 2018

International Scientific Conference "Global Challenges and Prospects of the Modern Economic Development"

OPPORTUNITIES, PROBLEMS AND LIMITATIONS OF DIGITAL TRANSFORMATION OF HR MANAGEMENT

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Abstract

The authors emphasized the relevance of artificial intelligence and digital technologies in HR management; highlighted three main directions of the impact of digital technologies on the field of HR management: digital workforce (introduction of new management methods, practical skills that contribute to the creation of a new network organization), digital workplace (design of the working environment, which provides performance, the use of modern communication tools), digital HR management (using digital tools and applications for solutions, experimentation, and innovation); showed trends in HR management in the digital economy and necessitated changes in the field of HR management. The authors assessed the level of digitalization of HR management technologies in Russian companies, presented examples of their successful use, and identified the main problems of implementing digital technologies in domestic practice, including: point and fragmentary solutions affecting only individual HR processes instead of a systematic approach; the objective complexity of digitalization of HR management functions and processes due to their multidimensionality; the participation of various categories of staff; the existence of restrictions on digitalization imposed, inter alia, by the law on the protection of personal data; under-prepared HR employees to the practical use of digital technologies, as well as insufficient funding for their implementation. The authors highlighted the conditions that ensure success of the digital transformation of HR management, including the need for cultural changes that must take place in companies.

Keywords: Artificial intelligence, digital technologies, digital transformation, human capital, HR management.

1. Introduction

The development of artificial intelligence, digital transformation and ubiquitous automation, which today is called the Fourth Industrial Revolution, creates real opportunities for companies to concentrate in their activities on core competence while simultaneously withdrawing everything that does not concern this core competency in the so-called ecosystems - clouds, networks, platforms. A company under the conditions of the fourth industrial revolution is a mobile company, rapidly developing, capable of quickly developing and bringing products to the market with a flexible structure. To achieve these targets, companies are required to make radical changes in the way they conduct business, restructuring business strategies and business models (Biankina, 2017; Dobrynin, Chernykh, Kupriyanovskiy, Kupriyanovskiy, & Sinyagov, 2016; Fidler, 2015; Makridakis, 2017).

The intensive introduction of digital technologies into the business (Digital Transformation) involves three main areas that in one way or another affect the staff (Bersin, 2017; Sekhar, Patwardhan, & Vyas, 2016):

- Transformation of customer service quality (development of information systems to collect customer information in order to gain a comprehensive understanding of a certain geography and market segments, as well as customer satisfaction; the use of digital technologies for additional communication with the customer; the creation of points of interaction with customers - from a Twitter account to operational responses for complaints and questions to a full-fledged online resource for ordering products and home services);

- Transformation of operational processes (digital automation, which, according to statistics, reduces the life cycle of production by 30% and ensures the release of time and resources for the development of new business areas and optimizing existing ones; virtualization of working space, formation of virtual databases that allow combining individual knowledge of employees into single collective knowledge; optimization of executive management through the introduction of electronic task setting systems, as well as systems accumulating real statistical data);

- Transformation of business models (electronic (digital) transformation of business, duplication or change of basic business functions from traditional to digital; creation of a new digital business, for example, provision of a complex of services through the Internet portal; digital globalization - the use of digital resources (including cloud technologies), connected to an integrated global network, which allows quickly making decisions for any geographic point of business).

HR management in these processes has a unique role: HR can help managers adapt to new digital technologies, employees use new work models and career building, and companies can see the opportunities offered by new technologies and adapt to changes. At the same time, priorities and opportunities for HR management are changing from bureaucratic and routine work to the main purpose of HR management - working directly with people.

The development of artificial intelligence and digital transformation levels out physical, geographical, communication, hierarchical, and other barriers, returns HR management back to the person and defines the general direction of the HR management service - integration and strategic development.
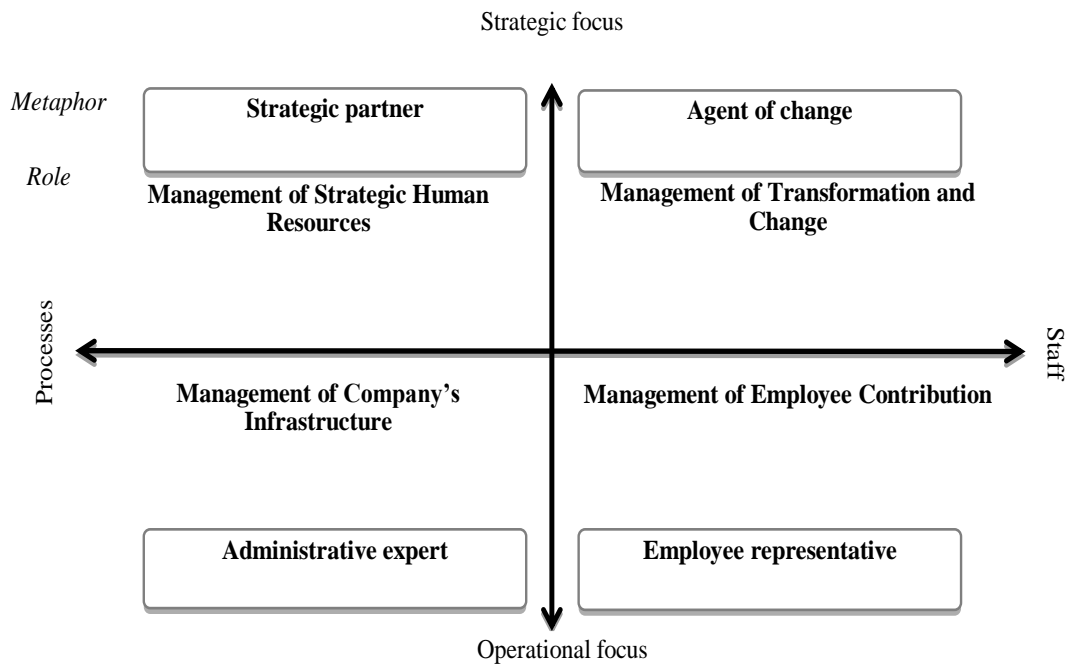
Digital technologies are increasingly used in the field of HR management. According to a global survey by Bersin (2017), 74% of the more than 7,000 companies in 130 countries around the world point out the importance of introducing digital technologies (HR - Digital) into the practice of HR management. At the same time, as experts emphasize, today HR is not enough just to buy digital products. It must learn to be "digital" (Bondarouk, Parry, & Furtmueller, 2017).

2.   Problem Statement

The authors considered the main trends of management in the digital economy, necessitating changes in the field of HR management.

1.The formation of a new digital business thinking, the adaptation of the company's business strategy and business processes to economy digitalization requires the search and implementation of new digital models for HR management that meet the requirements of performance, innovation, speed and adaptability (Konovalova, 2017; Obeidat, 2015).

2.New business conditions form the new role of HR management as a real business partner (Figure 01).

Figure 01. The role of HR service as a business partner (Ulrich, 2007)

3.HR management should be integrated into the company's business processes externally (each process / HR management function should be subordinated to two business targets: to provide the organization with people quantitatively and qualitatively; to ensure high labor productivity, and internally all processes / functions of HR management should be integrated with each other, linked to a single system.

4.In order to survive and develop in the modern "turbulent" world, under conditions of uncertainty and instability of the digital era, people, companies in general need to become agile. Agility is the quality

of a person, a group of people, a company as a whole, which allows them to operate effectively and succeed in the unstable environment (Zhu, 2016). HR management requires the formation of a philosophy of agility, which allows quickly adapting to the dynamically changing conditions of the internal and external environment.

5.An important factor contributing to the need for digitalization of HR management is the rapid growth in the number (up to 40% of the total labor force of developed countries by 2020) of the so-called Millennials or generation Y - people born after 1981 who met the new millennium in the young ages characterized primarily by deep involvement in digital technologies. The ideology of this generation is the ideology of freedom in the form of achieving the ideal balance between professional and personal life, which requires the creation of models of work and HR management corresponding to this ideology (virtual jobs, flexible employment, freelancing, etc.).

6.The rapidly growing data flows necessary for effective management require new intelligent digital tools for storing, processing and analyzing this data. Staff information should be an automated part of the digital HR management platform that provides managers with the necessary real-time data and provides executives with real-time analysis, reducing time spent on reports, and increasing time to analyze data and solve problems.

The combination of the above-mentioned time calls determine the transition to a fundamentally new concept of a technologically advanced, integrated, and based on the analysis of HR management data, called "HR 3.0".

3.   Research Questions

Experts of Deloitte (Bersin, 2017) identify three main areas of influence of digital technologies on the sphere of HR management:

- Digital workforce (introduction of new management methods, a culture of innovation, a set of practical skills that contribute to the creation of a new network organization);
- Digital workplace (design of the working environment that provides performance, the use of modern communication tools (such as Slack, Workplace by Facebook, Microsoft Teams, etc.);
- Digital HR management (the use of digital tools and applications for solutions, experimentation and innovation).

The use of digital technologies in the field of HR management is most noticeable in working with large amounts of data (big data), computer training, the use of artificial intelligence for the selection and evaluation of staff, the organization of on-line feedback with employees and several other areas. An indirect confirmation of the fact that digital HR will spread rapidly is the volume of investments that flow into numerous startups developing technologies for HR management, cloud HR-services and software.

Thus, according to Bersin (2017), 42% of companies adapt their existing HR management systems to mobile training programs in digital format, have tight deadlines; 59% develop mobile applications that integrate back-office systems convenient for employees; 51% use external social networks in their internal applications to recruit staff and manage employee work schedules; 33% of surveyed HR teams use artificial intelligence (AI) technology to provide HR solutions, and 41% are actively developing mobile applications for providing HR services.

It should be emphasized that we are talking not only about automation of individual business processes in HR, introducing high-tech products and solutions that increase work efficiency, but also about changes in the industry as a whole, forming a new model of HR management. According to experts, a fundamentally new category of tools (intelligent systems) has emerged that can provide an individual approach to develop leaders, evaluate candidates and find the right people, recommend optimal training, identify fraud attempts, develop employee stress and solve other problems in the organization.

4. Purpose of the Study

The purpose of the study is to understand how HR management in Russian companies is ready for the adoption and implementation of this concept in practice.

1.HR management in its development goes through several stages of maturity, corresponding to different concepts of HR management:

- HR management, focused on staff accounting and administration procedures (staff records management, payments to staff);
- HR management that deals service functions (recruitment, staff training and development, compensation management);
- HR management, focused on ensuring the efficiency of processes (HR strategy, reduction of staff costs, convenient HR - tools, benchmarking);
- HR management, which contributes to the achievement of business targets and competitive advantages (talent management, data analysis and forecasts, integration into business). At the last stage HR management acts as a business partner.

2.Taking into account digital technologies HR, as a business partner, reorients functional subsystems of the HR management system: from purely functional subsystems (recruitment management and staff accounting, staff development management, labor relations management, staff planning and marketing, etc.) - to strategic purpose subsystems (planning and branding, recruitment, talent management, performance management, effective HR management system).

3.Tools based on artificial intelligence, digital technologies that can be adapted for HR management, appear every day: targeting, chat bots, machine learning, big data, virtual reality and the Internet of things. At the same time, the main trends in information technology for HR management are cloud technologies, HR analytics and various platforms.

5. Research Methods

Imagine the functional target areas of HR management, in which the development of digital technologies is possible (Table 01).

Table 01. Digital technologies in HR management

HR functional target subsystems	HR functions	Digital Technology (examples)
HR planning and branding	Strategic HR planning;	HR branding platform (for example, icanchoose); HR analytics - data processing and business intelligence methods

	HR planning; HR branding	applied to the processing of HR data; Predictive HR analytics - a range of methods for predicting the future; HR BigData - huge amounts of heterogeneous digital HR information, methods for processing and analyzing such data
Recruitment	Staff recruitment and selection; Staff marketing; Staff adaptation	E-Staff Recruiter - a full cycle system that automates routine recruitment operations; Chatbot services (Wade and Wendy, Firstjob Mya, Firstjob Mya); ATS (Applicant Tracking Systems) - platforms for managing the flow of candidates (for example, Lever); Social Recruiting - using social media for recruiting; Online assessment - group testing via the Internet; Candidate screening platforms that include various tools for testing candidates before they pass interviews (Pymetrics, HireVue); Video interview; Video resume (VCV); Job posting platforms (including internship programs) for graduates and students (Debut)
Talent Management	Talent management; Staff training; Staff career management; HR management; Corporate culture	TMS - talent management systems; LMS - learning management systems e-LMS - e-learning management systems; Machine Learning; Gamification of the learning process; Virtual classes; Mobile learning; MOOC - massive open online courses; Services that allow you to influence organizational culture by creating specific incentive systems (Perkbox, Anyperk, CyberGrants)
Performance Management	Motivation and incentives; Individual performance management; Staff employment; Labour organization; Staff loyalty management	DW (Digital Workplace) - a platform that provides remote access to work resources, regardless of the location of an employee from various devices; DLP systems - data loss prevention systems; Platforms for PM (Performance Management) - provide a career plan for the candidate, establishing feedback, creating an internal platform for communication (Zugata, Everwise, Landit, Lattice); Platforms for working with companies with remote employees, part-time employees and freelancers (Befree)
HR Performance Management	HR performance management; HRM-system – a human resources management system	HRM-system – a human resources management system; ERP HCM - enterprise resource planning, module: human capital management; HR Analytics, HR BigData; CHIP (Cognitive Human Interface Personality) is a cognitive assistant who can deal with a wide range of human resources related issues.

Currently, programs with elements of artificial intelligence (Artificial intelligence (AI)) are able to solve almost the entire range of tasks facing HR managers: from choosing a candidate to analyzing the emotional state of an employee (Jesuthasan, 2017; Larkin, 2017). Similar solutions are offered by large developers - Microsoft (MSFT, NASDAQ), SAP (SAP, NYSE), IBM (IBM, NASDAQ), relatively small developers, for example, Workday (WDAY, NYSE). For example, the application SAP Resume Matcher from the SAP SE developer (SAP, NYSE) is able to examine information about job responsibilities and skills on a specific position, analyze data from thousands of resumes provided by the HR department, and rank candidates. The product of Entelo Inc. is able to analyze publicly available information about 300 million potential candidates and select suitable ones for the company's requirements.

Chat bot is a program that is designed to simulate human behavior when communicating with one or more interlocutors, Firstjob Mya can eliminate up to 75% of the questions asked by people in the recruiting process, the Wade and Wendy bot chats with candidates and helps them understand the companies' culture, employment opportunities and recruitment process, etc. (Sharapova, Sharapova, & Shvetsova, 2017).

New employee training systems are the fastest growing segment in IT technology costs. Relatively recently, companies were content with creating virtual universities and online course catalogs, today corporate training is viewed as a highly strategic business area focused on innovation and leadership development, providing world-class learning experience, long-term career development, integrating multi-functional teams for integration and teamwork.

The development of interdisciplinary skills is crucial because these capabilities are consistent with the company's transition to a network of teams. Corporate training departments are gradually transforming from providers and training organizers into content curators and experience facilitators, developing innovative platforms that turn learning and development into a self-regulating lesson, helping employees "learn" (Zakharova, 2013; Nagibina & Shchukina, 2017). At the same time, employees should be considered as internal clients interested in high-quality independent learning, development of their professional skills as a condition for a successful career.

There is a serious shift in focus from internal corporate programs aimed at developing people, to platforms which can develop people. The presence of mobile devices makes learning potentially available to everyone and at any time. Companies either create their own learning platforms or use ready-made offers, trying to seamlessly integrate internal and external content. For example, GE launched the Brilliant U online video-learning platform that is actively used by company employees (last year, according to company information, about 30% of employees downloaded their training content for other employees).

Currently, a new set of modern products has entered the learning system market (for example, Pathgather, Degreed, SAP Jam, Oracle's Video Learning, Workday Learning, Skillsoft's new learning platform), which are fundamentally different from traditional LMS (Learning Management System) and provide training materials, video and mobile learning solutions, micro-learning and new ways to integrate and use the growing library of external MOOCs (Massive Open Online Courses) of such suppliers as Coursera, Udacity, EdX, Udemy and many others available on the Internet, and even allow employees to interact online with experts in precisely those areas of study in which they need it, and at a time that is convenient for them.

One of the key factors contributing to the intensive development of staff analytics (along with competitive pressure) is the development of digital technologies (analytical data can be obtained using most ERP systems and talent management systems, study tools, text and semantic analysis modules, software recruitment management platforms and staff training). 86% of Fortune 1000 companies are going to introduce external data approaches into their daily practice (Konovalova, 2017). The main trends in the use of HR analytics include the following (Sekhar et al., 2016; Shah, Irani, & Sharif, 2017): rationale for medium-term HR strategies; strategic workforce planning; managers have the opportunity to independently (without the mediation of the HR service) use the analytical data on issues of interest to them; organizations expand the coverage of big data analysis (data provided by candidates and employees are supplemented by external data from social networks (such as Facebook and Linkedin) and available data on human activity on the Internet).

Entelo, IBM Corp. and Workday Inc., Microsoft Corp., developed software with AI elements that can predict labor risks (in particular, the employee's intention to leave the company), calculate the risk indicator for individual employees based on approximately 60 factors, including job title, pay, time off and etc.

The software market with elements of artificial intelligence, despite some unresolved issues such as interference with privacy and confidentiality, will continue to develop.

Applying the methodology for analyzing and forecasting the development of technological innovations developed by the American consulting and research company Gartner, the state of "digitalization" of the HR sphere can be assessed: according to experts, the technologies used in Job sites and online training, are extremely effective. The so-called "mobile applicants" are at the stage of transition from the field of overcoming shortcomings of productivity, and HR branding is between "getting rid of illusions" and "overcoming shortcomings".

6. Findings

As studies show, when introducing digital technologies and elements of artificial intelligence in HR management, domestic companies face the following problems:

1. Fragmentation, precision, and not systematic use of digital technologies in HR management. Separate HR management functions (selection, development, evaluation, etc.) are carried out in isolation from each other, not coordinating with others. Processes, criteria, technologies differ in different functions of HR management, as a result of which staff orientation towards results for business is lost. In Russia, the majority of those involved in automating HR processes uses point solutions (63%). More than half of the companies develop two or three HR processes, with the main areas of automation staff recruitment and internal communications, and more attention has been paid to employee assessment and training. And every fifth company began using an internal instant messaging application and / or their own social network. The share of employers who have implemented a unified system of automation of HR management does not exceed 35%.

2. The technologies used are inseparable from HR management functions and processes. Therefore, it is impossible to talk about the use of tools based on artificial intelligence, digital technologies, while not all modern HR management functions are implemented in our domestic

companies. Today, only 7% of companies use mobile technologies for coaching, 10% for performance management, 8% for time planning, 13% for recruiting and candidate management, and 21% for holiday planning.

3. The introduction of digital technology in staff work is complicated by the fact that HR management processes are quite complex, heterogeneous and diverse. They involve not only HR employees, but also line managers, ordinary employees. The activity of HR requires consideration of various aspects, including labor law, the views of trade unions, the situation on the labor market, etc. There are also direct restrictions on the activities of HR, such as the law on personal data, the need to respect the confidentiality of information relating to wages. In addition, these processes concern people with their unique personal and professional quality, and therefore difficult to formalize.

4. The Law on Personal Data, in particular, the condition that personal data of Russian citizens cannot be stored outside the Russian Federation, makes it impossible to use a number of modern foreign digital technologies, since they are cloudy and have information processing centers abroad.

5. In Russian companies, an awareness of the importance of digitalization of HR management is only emerging. According to experts, the Russian market lags behind the western one in the development of digital technologies in the field of HR management for 5-7 years, including due to insufficient funding (only 18% of companies have a budget for HR automation, another 37% have a tangible need for such a budget; among those 57 % were not engaged in automation, 57% were forced to abandon it due to lack of funds, 17 % - abandoned it due to lack of time and other resources).

6. An obstacle may also be the non-availability of HR employees to digital technologies, as well as the natural fear of revolutionary changes, including fear of losing work due to process automation, and resistance to change.

Considering the conditions that ensure the success of digital transformation of HR management, experts identify the most difficult cultural changes that should occur in the company: changes in thinking, leadership style, in the system of encouraging innovation and in adopting new business models to improve the work of the company's employees and its customers, suppliers and partners.

HR-Digital contradicts to established ways of working and is a threat to traditional management practices: digital technologies allow all people to freely exchange information; managers no longer have complete control over the messages, targets, and deadlines of news and announcements (McConnell, 2015).

Digital technologies inevitably make companies more "transparent": by accessing specialized resources, you can see salary levels (Glassdoor's Know Your Worth, LinkedIn Salary), find out the specifics of conducting interviews in specific companies, including possible questions, etc. Information about companies is spreading quickly on the network (LinkedIn, Twitter, Facebook), and bad feedback from employees is made public. The amount of feedback that a company receives from employees increases on average by a factor of 10 with the qualitative implementation of relevant mobile HR applications. Barriers between work and personal life are destroyed: employees are available almost anytime and anywhere.

In fact, prerequisites have arisen for the formation of a new culture of continuous personalized "smart learning" with the distribution of responsibilities across the company and the transformation of

models and ways of learning, increasing the importance of Social Learning (person-to-person learning). At the same time, in order to help employees perceive new opportunities and learning conditions, development units should create in-house knowledge-sharing programs, easy-to-use portals and video-sharing systems, and also contribute to building teamwork experiences that help people to constantly learn and share knowledge, and promotes the culture of "sharing", "distributed decision-making", free exchange of information.

It is also important to note that automation technologies, including artificial intelligence and robotics, will provide significant benefits to both ordinary users and enterprises, and the economy, increasing productivity and economic growth. At the same time, the widespread introduction of digital technology is associated with a number of technological risks, including directly related to the labor market (Tab. 02).

Table 02. Technological risk map (for the Russian Federation)

Level (1-5)	Technological risk
1	long refusal from IT system, inefficient development of domestic digital and information programs
5	new "breakthrough" technologies weaken competitiveness (small business cannot immediately afford to go to automation and digitalization)
4	inability of large-scale IT programs to provide the expected benefits
3	cyber security breach
2	employment, and maybe a large number of citizens who have become unemployed as a result of the introduction of various human-substituting technologies

Note: Source: (Ageev, Averyanov, Evtushenko, & Kochetova, 2017)

7. Conclusion

Radical changes in the digital era are changing the profile of HR management. Digital HR management is not just automation and digitalization of traditional HR management functions, but the redesign of these functions based on new digital business thinking, with a focus on people and work efficiency.

The digital transformation of HR management begins with a change in thinking within the framework of HR management, based on changing priorities, performing functions in real time, using platforms and cloud technologies, automation and mobility. It is important to emphasize that the introduction of artificial intelligence and automation increases the importance of technical skills that ensure the creation, installation and maintenance of machines. The study of the World Economic Forum highlighted the competencies that by 2020 will become the highest priority for employers, namely: the ability to solve complex tasks, critical thinking, creativity, the ability to manage people, the ability to cooperate with others, emotional intelligence, prudence and decision-making, service orientation, negotiation skills, cognitive flexibility (Gray, 2016). Introducing artificial intelligence and digital technologies in the field of HR management, it is important not to lose a verified set of human values. Paradoxically, the digital transformation and development of technology will lead to the fact that people

and their inherent "human competence" will play an even more important role in the long-term success of the company.

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