Digital transformation in HR: Review

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Abstract

The aim of this article is to provide scientific results on the issue using the method of analysis and systematization of scientific sources in the context of digital transformation in HR, which are traceable in selected scientific databases. To meet the objective, the research questions are: What are the potential benefits of digital transformation of HR? What are the potential risks of digital HR transformation? It was based on publications (not older than 5 years), available in the scientific databases WOS and Scopus. The research method is the systematic research. The data in the results part are sorted alphabetically by author name. The results part contains, among other things, briefly written methodologies, and results of the authors. The discussion of the results includes answers to the research questions and arguments or explanations as to why these results evoke a potential risk or benefit. The main benefits for digital transformation can include simplified administration, clarity, increased efficiency, and a green approach. It should be added that the benefits of digital transformation can be gained if the transformation is not rushed and is done correctly. Also, before transforming its HR department, an organization must assess whether it can complete the transformation and is willing to fund the various training, software and other technologies associated with the transformation. Failure or misjudgement can lead to increased risks such as: selecting inappropriate elements, reduced efficiency, employees not understanding new technologies, and vulnerability of important data. Digital HR transformation may not be easy in some companies, but it's a fundamental and necessary change for some companies if done correctly and with the organization in mind.

Keywords: digital transformation of human resources, digital transformation HR, digitalization HR, challenges of digital HR, advantages of digital HR, HR 4.0

Introduction

Human Resource Management (HR) deals with those activities related to the employment and management of people in corporations – firms, institutions, organizations, enterprises, offices, companies. It includes activities related to strategic human resource management, human capital management, knowledge management, corporate social responsibility, corporate development, securing human resources (through the process of planning the required number of employees, recruiting, selecting employees to the area of talent management), performance management, employee evaluation and compensation, employee training and development, 6 employee and labor relations, employee welfare and providing various services to employees (Armstrong, Taylor, 2015). The world is in the digital age, the market, companies, and HR departments are modernizing. New methods and new technologies are introduced to make work easier or more pleasant. There are many reasons for the so-called „reform" of human resources. Companies have outdated HR systems, are losing employees or not recruiting new ones. They may also be forced to introduce new technologies by competitive pressure.

Since the beginning of the industrial revolution, the challenge for human resource management has been balance. In the paternalistic period, flexibility was at the expense of equity. In the bureaucratic period, equity has improved at the expense of flexibility. The period of high performance has again seen an increase in flexibility and alignment at the expense of equity. Equity losses in the late twentieth century, however, are small by historical standards. As a result, the stagnation in productivity growth that characterized the late bureaucratic period has eased. Current staffing practices provide the best balance in the history. Human resource management has reduced the losses resulting from the interplay of equity, flexibility and alignment goals of management, workers and society as a whole. Helped improve workplace quality in all three dimensions. However, this process involved the tides. In the long term, it is realistic to expect that continued increases in equity, flexibility and alignment will come at the expense of ever smaller short-term losses in quality (Langbert, Friedman, 2002).

Kociánová (2012) states that human resource management (personnel management, employee management) in corporations – firms, institutions, organizations, enterprises, offices, companies has always developed in accordance with a certain social and economic context of a particular period. Due to external influences and internal conditions of corporations, certain HR activities have changed over time and the demands on HR specialists, HR managers and other HR staff have grown and will continue to grow.

Despite the good intentions behind the introduction of new technologies, overall modernization can have drawbacks or even risks that can disrupt a company's established infrastructure. Every modernization in earlier times carried with it certain risks overshadowed by the benefits. Without proper research, the negative aspects of modernization may not become apparent until the whole modernization process is complete. Unfortunately, there is no one-size fits-all recommendation or approach, as every company is different and is undergoing or will undergo at least slightly different upgrades. Digital

transformation in HR is a very young and little addressed topic. The aim of this article is to determine the current situation in the field of HR through a systematic search of several selected and relevant publications. Furthermore, this article compares the data obtained from peer-reviewed publications, which can be grouped according to potential benefits and potential risks. The contribution of the results can, deepen the awareness of the current situation in the field of human resource management and contribute to new studies dealing with the same topic.

Theoretical background

Changes are coming that are affecting the market and moving it into the digital world. The digital world has completely transformed the workplace, the way employees communicate, where they work and what technologies they use to do their jobs. With this technological process comes new responsibilities for HR departments, whether from simple yet important goals such as getting employees to like their jobs and be engaged, or actively retraining employees using new technologies. With all this, new specializations are being created, which require a different approach from HR (El-Khoury, 2017).

The economic environment continues to evolve over time and with that comes unavoidable changes in the HR industry. The HR industry needs to take proactive steps and undergo updates to the established elements, where according to Rana, Sharma (2019) it is the only way to have a chance of success.

This thesis looks specifically at HR analytics, to reveal the concept of analytics applied to HR and to explain the factors that prevent companies from moving to analytics (Fernandez, Gallardo-Gallardo, 2021).

One of the main and positive features of digital HR is the interaction with employees using, for example, mobile applications, professional trainings simplified and accessible via the Internet. The upcoming wave of feedback not only from horizontal levels but also from vertical levels requires the development of HR specialists 'competences (Kapitanov, Osipova & Chikileva, 2021). The research reveals how organizations are ensuring their survival success in this age of technology through their employees. Top management must be ready and actively support new updates.

Other publication includes an exploration of the nature of the human resource management system, various models for building an human resource management system in an organization and a study of the application of a particular model to a particular organization. Furthermore, studying and demonstrating the characteristics of the objects, subjects and objectives of the personnel management system. Research on the impact of digitalization on the human resource management system, what requirements are placed on the professional competences of the staff and new and already used trends in human resource automation and recruitment that will help to work better and more efficiently. The generalization of theoretical and empirical experience, cognitive technologies based on the use of artificial intelligence and digital data in human resource management allowed us to highlight innovative solutions and propose an algorithm for

the transformation of the human resource management system in the context of digitalization of human resource processes. In addition, the authors proposed criteria and a scale for evaluating the effectiveness of the transformation of the human resource management system in the context of digitalization of human resource processes. Through this, as well as leveraging elements within human resource such as cloud technology, remote working capabilities, big data, social media and artificial intelligence, companies can increase their lead over competitors (Kholod et al., 2021).

The opinion that organization requires a transition to a human resource 4.0 strategy to successfully overcome the pitfalls is addressed by Sivathanu, Pillai (2018). This strategy involves the use of the internet on a large scale, data file administration, artificial intelligence and also tutorials. The structure of the organization and leadership must be changed for a successful transition to smart HR 4.0.

The outer circle of HR, i.e. recruitment, is also heavily influenced by digital transformation. Job descriptions spread across social networks help you find suitable candidates more efficiently. More advanced tools have revealed a statistical correlation between the gender that uses job sites and social networks. The content of the job offers and its placement in specific media must be evaluated because of differences in the perception of the message (in relation to the gender of applicants). The research was conducted in the Czech Republic (Jančíková, Milichovský, 2019).

With the era of digital transformation comes many opportunities, but also challenges. Research conducted on companies in Russia has shown the following problems. Fragmentation when using different technologies results in reduced communication between workers. The data that is transmitted to the system is isolated from other employees. Implemented technologies are inseparable from the human resource industry; once implemented, they cannot be removed. Despite these few problems, there is a paradox, because despite all the digitalization, the human factor is all the more appreciated, which is superior to technology and ensures its proper operation (Mitrofanova, Konovalova & Mitrofanova, 2018).

Another of the many questionable innovations in the HR 4.0 wave is the recruitment or sorting of candidates using an algorithm. Many questions were asked along the lines of if the algorithm is a proxy for an objective and fair approach to recruitment, how often and how thoroughly it is reviewed, or how it is perceived by applicants. Using a comparative study of two published publications on the perspectives of managers and software suppliers. Research has shown that technology can be as biased as human being working in the social sector (Chirica, 2021).

Digitalization in the HR industry is not just about buying new technology, but also about the steps taken to integrate the new changes into the day-to-day running of the business. There is a need to change the mindset of managers so that they themselves want to adopt new technologies, software and methods (Nachit, Okar, 2020).

The scientific objective is to identify the current state of digitalization and related concepts, to take into account developments in these sectors and to define the impact of these processes on human resource management and human resource marketing. The

pace of technological change brought about by Industry 4.0 along with Covid-19 has created a significant gap between the current capabilities of employees and the rapidly evolving demands on their competencies, and skills and ability to adapt to the online environment (Karas, Brezovska, 2020).

Methods and Data

The aim of this article will be to provide scientific results on the issue using the method of analysis and systematization of scientific sources in the context of digital transformation in HR, which are traceable in selected scientific databases. Publications for this research will be selected according to the relevance of the topic under study and the date of publication (publications will not be older than 5 years). To meet the objective, research questions are posed:

RQ1: What are the potential benefits of digital transformation in HR?
RQ2: What are the potential risks of digital transformation in HR?

The following keywords were used for the search: Digital transformation of HR, Digitalization of HR, Problems of digital HR, Benefits of digital HR, Digital HR, HR 4.0. The data found are from different authors in different countries with different methods or research results. The criteria of the reviewed publications is the dedication to digital transformation in HR issues.

A systematic search will be conducted to answer the research questions. A systematic review can be characterized as: a systematic, explicit and repeatable process designed to identify, evaluate and synthesis the results produced by researchers, academics and practitioners. This procedure allows the author of the research to minimize his own subjectivity and the influence of his opinions on the content of the text (Fink, 2014; Petticrew, Roberts, 2008). A systematic search is characterized by a clearly stated aim, a research question, a described search procedure, selection criteria and a described procedure for the qualitative evaluation of the texts analysed Jesson, Matheson & Lacey (2011).

From the selected publications, position papers on the approach to digital transformation in HR will be selected. The authors' opinions will be presented in the results section. Their findings will be divided into two groups – potential benefits and potential risks – in the discussion section, where they will be complemented by a commentary explaining the relevance of their findings.

Results

For this research, 7 publications were selected that discussed HR 4.0 in detail and met the criteria of publication date (publications not older than 5 years). Other publications were not selected for the research either because of insufficient focus on the topic of digital transformation in HR or because the publication date criterion was not met.

Table 1 shows the analysed publications in alphabetical order of the surname of the first author. In addition, Table 1 shows the year of publication, the method used to achieve the results, the location where the research was conducted, the classification of the research (empirical of theoretical) and the subsequent benefits or risks of digital transformation in HR.

Table 1: Selected attributes of analysed publications

Author	Year	Method	Location	Research inclusion	Benefits	Risks
Chirica	2021	Thematic analysis	Romania	Theoretical research	None	▪ Technologies can be just as biased as socially organized humans
Jančíková and Milichovský	2019	Static analysis	Czech Republic	Empirical research	▪ Finding dependencies between the gender of the job seeker and the server where the ad is located	None
Kapitanov, Osipova and Chikileva	2021	Static analysis	Russia	Empirical research	▪ With the advent of software products, opportunities open up for remote employee management	▪ Potential unusability in small businesses
Kristoff et al.	2018	Analytic analysis	Norway	Theoretical research	▪ Replacing paper-based information with digital files ▪ Potential positive impact on user experience	▪ The existence of gaps in services, in particular as regards the intuitiveness of using new tools and systems ▪ Lack of integration between systems.
Mazurchenko and Maršíková	2019	Systematic search	Germany, Finland. United Kingdom, Portugal, Sweden, Slovakia	Theoretical research	▪ Better quality with fewer human errors ▪ Increased operational efficiency ▪ Reduces HR costs, speeding up the HRM process	▪ Reluctance of employees to adopt new technologies ▪ Replacing automation ▪ The possibility of cyber-attack ▪ Security of data
Mitrofanova, Konovalova and Mitrofanova	2019	Static analysis	Russia	Empirical research	None	▪ Fragmentation, precision and unsystematic use of digital technologies in HR management ▪ Technologies used are inseparable from the functions and process of human resource management ▪ The introduction of digital technologies into the work of employees
Sivathanu and Pillai	2018	Analytic analysis	India	Empirical research	▪ Emerging technologies such as internet, big data and artificial intelligence will automate most HR processes, leading to more efficient and leaner HR teams	▪ Necessary changes in organizational structure and leadership style

Source: Authors.

One of the first publications examined came to the surprising conclusion that there is an undeniable risk of full digital transformation in HR. Gender has come to the fore with

respect to organizational diversity as an adequate solution to algorithmic bias. To ensure good talent for future candidates in the recruitment process, the starting point for the coding algorithm is to select an equal number of women and men, of different ethnicities, races, and ages. Organizational diversity could also prove beneficial to a company's image and overall profit. It was interesting that recruiters in their articles and interviews presented a highly optimistic view of digitalization and the future of work for recruiters, even though digitalization and artificial intelligence may be the end of the recruitment business, at least as we know it. The question of HR's future actions should all digital systems fail due to a malfunction is not answered. The amount of lost data could put a serious strain on the general flow of society. The final data from the paper show that technology can be as biased as socially organized human beings (Chirica, 2021).

In admissions research by the authors Jančíková and Milichovský (2019), some avoidance of gender-related questions has been noted. To test the stated hypothesis, a contingency table was created focusing on the selected sources of employment and attitudes of applicants (from a gender perspective). The contingency table shows the relationships between potential sources of employment and the gender of applicants. Candidates chose their jobs mainly through online communication tools consisting of job offers. Based on the data obtained and its processing, it can be confirmed that there is a statistical dependence between the gender of applicants and job sites and between gender and social networks. The result of these dependencies is confirmed by statistical significance. For the relationship between gender and job-servers, the significance level is 0.030 and the strength of the relationship is 0.265. For the relationship between gender and social networks, the significance level is 0.050 and the strength of the relationship is 0.262.

The results of further research showed that there is uneven involvement of Russian organizations in the digital transformation process. Nearly one in two respondents noted that HR process automation is mostly relevant for the vast majority of large and mid-sized Russian companies looking for optimization, but only one in four respondents believe that automation is the best way forward for the vast majority of large companies. Around 40 % of respondents chose the answer „all companies are equal in the digitalization process, regardless of their size – large, medium, or small. "Nearly one in three people believe that HR process automation is relevant to virtual organizations, with the advent of new software products opening up opportunities for remote employee management (Kapitanov, Osipova & Chikileva, 2021).

It was clear from the interviews that customers of GSS HR services are generally positive about digitalization and its potential. The change to replace information written on paper with digital files was particularly welcomed. Digitalization could positively impact the user experience by giving line managers more self-service tools and autonomy. This idea was supported by analysis and further research. The empowerment of line managers through digitalization can be briefly summarized as an improvement.

However, there are still shortcomings in the service, particularly in the intuitiveness of some tools and systems. The lack of intuitiveness in the interface of the services provided

by GSS HR negatively affected the user experience impacting the availability of information. In addition, the lack of integration between systems and tools negatively impacted their user experience by double-searching and adding the same information multiple times. Within this, the training category was also discussed as there was an apparent lack of knowledge of the systems within our interviews. However, if the service interface is enhanced, training should not be necessary as the systems and tools will be inherently intuitive and no additional knowledge will be required Kristoff et al. (2018).

Mazurchenko, Maršíková (2019) their research explored the current key benefits and risks of digitalization and analyzed its impact on the competencies and roles of HR professionals. The qualitative research involves the analysis of secondary data describing the current level of digital skills based on the response of more than 7 000 respondents from six EU Member States (Germany, Finland, UK, Portugal, Sweden and Slovakia). It also presents a primary analysis of data on HR social media competencies collected in the five European countries participating in the SHARPEN project. The results show that recruiters tend to be slightly reluctant to adopt technology. The results also confirmed the importance of digitalization for human resources and the increasing demand for digital skills in recent years.

As the studies show, domestic companies face the following problems when introducing digital technologies and elements of artificial intelligence into HR management: 1. Fragmentation, precision, and unsystematic use of digital technologies in HR management. 2. The technologies used are inseparable from human resource management functions and processes. Therefore, we cannot 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. 3. The introduction of digital technologies into the work of employees is complicated by the fact that human resource management processes are quite complex. They involve not only HR employees, but also line managers, rank-and-file employees. 4. The law on personal data, in particular the condition that personal data of Russian citizens cannot be stored outside the territory of the Russian Federation, prevents the use of many modern foreign digital technologies because they are cloud-based and have information processing centers abroad. 5. In Russian companies, awareness of the importance of digitalization human resource management is only just emerging. According to experts, the Russian market lags behind the Western one in the development of digital technologies in the field of human resources management by about 5-7 years, also due to the lack of funding (only 18% of companies have a budget for HR automation, another 37% have a tangible need for such a budget, 57% of them did not engage in automation, 57% were forced to abandon it due to lack of funding, 17% abandoned it due to lack of time and other resources) (Mitrofanova, Konovalova & Mitrofanova, 2018).

The organization would require successful Smart HR 4.0 strategy to meet the challenges of Industry 4.0 transformation. Emerging technologies such as the internet, big data and artificial intelligence will automate most HR processes, leading to more efficient and leaner HR teams. Effective implementation of Smart HR 4.0 would require changes in

organizational structure and leadership style to enable HR departments to play a more strategic role in the overall growth of the organization (Sivathanu, Pillai, 2018).

Discussion

Potential benefits:

Finding a correlation between the gender of the job seeker and the server where the ad is located. This information can help facilitate targeted recruitment. For example, if a company offers a job position more suited to the female gender, it may have paid promotion on social media and vice versa. This is an unobtrusive search for a worker based on their gender. The chances of finding a worker with the desired gender just by a placing a suitable advert on a relevant website or social network are not 100%, so this method cannot be relied upon completely.

With the advent of new software products, opportunities for remote employee management are opening. Especially currently when many people are experiencing the home office for the first time, remote management is a great advantage. Of course, remote administration does not have to mean working from home. An HR professional in a large company may conduct assessments, delegate tasks, or arrange interviews in the comfort of their office. This can contribute to greater clarity and contribute to better time management. Effectiveness through clarity of tasks can also be increased.

Replacing information written on paper with digital files. The environmentally friendly and easy solution for recording information also facilitates its storage. No need for an archive, everything is on the digital network easily accessible and in great condition. This can increase the speed of finding certain files and make it easier to work with them afterwards.

Potential positive impact on user experience. Fewer bugs and an easier process means a better user experience.

Better quality with fewer human errors. Some HR software is very intuitive and straightforward, which is one of the many reasons why quality increases and errors decrease. Many other systems can almost do the work according to algorithms without the help of human workers (often recruitment programs or chatbots). Increase operational effectiveness with new systems and tools to facilitate HR work and digital record keeping.

Reduces HR costs, speeds up HRM processes. With the help of technology, the responsibilities of the HR department are reduced, much fewer people can handle routine work and the company can focus on other things.

Emerging technologies such as the internet, big data and artificial intelligence will automate most HR processes, leading to more efficient and leaner HR teams. Huge amounts of data that would fill an entire archive room can be moved using a USB drive in less than a minute thanks to an internet connection. Artificial intelligence is still

developing and is already active in many companies in the form of chatbots. This makes it possible to focus on other kinds of issues that require human thinking. Recently, even storing data on physical storage is becoming obsolete and servers are being used to simplify data access and increase data security.

Potential risks:

Technology can be as biased as socially organized human beings. New programmes and systems are also being introduced into the HR recruitment sphere. A recruitment programme should not be biased and select equal numbers of men and women on the basis of competence, regardless of race or religion. Algorithms that should be flawless can exhibit human-like biases. It follows that in some places the technology is not so far ahead to completely replace humans and do the job flawlessly. What is even more interesting is that such systems are less controlled than a newly trained employee would be.

Potential unusability in small businesses. According to research conducted in Russia, one in two respondents think that digital HR is only applicable in large and medium-sized enterprises. Small and micro enterprises have fewer employees, producing a product or offering a service is the primary goal. Taking care of employees and streamlining HR is somewhere towards the bottom of small enterprises' goals. Some employees can be easily replaceable for small enterprises, and this also reduces the need for HR to evolve, especially when all retained earnings are invested in production or services offered by the enterprise.

The existence of gaps in services, particularly in terms of the intuitiveness of using new tools and systems. It is important to note that some new programs specifically for HR are not very intuitive, often quite the opposite. The difficulty of working with new tools increases, especially for older employees. Training for new programs costs the enterprise money and time.

Lack of integration between systems and tools. We get to the problems of the software in question, which may not be compatible with software used for other kinds of work. In a simple example, we may have a program to check absenteeism and leave usage, and then there may be another program to evaluate employees based on absenteeism and leave usage. These two programs will not be compatible with each other, so the data would have to be entered into each separately, unless it is a micro-enterprise this work would be very lengthy and unnecessary.

Reluctance of employees to adopt new technologies. As it happens, people get used to something and usually do not welcome new changes. Digitalization is a big change that often requires a change in mindset. This change can be very difficult, especially for older employees. It should be added that the time before things settle down and employees get used to it may not be very short. This may entail a higher error rate or a longer time before the job is completed.

Replacement by automation poses more risk to the company than risk to the employees. Technology is becoming more advanced; computers can do more than they could 10 years ago, and their evolution is accelerating. Gradual redundancies due to replacement with new technologies are inevitable. Machines make fewer mistakes, don't get tired and you

don't have to send them a pay check every month. However, there is an initial investment to buy them, and it must be said that the investment may not only be in production machines, but also in various software and AI technologies. It is important to invest wisely, as the company may not be ready for some changes.

The possibility of a cyber-attack is always an inherent risk when entering the digital world with valuable data. Digital data is clearer and not as well protected as paper data in company archives. The security of the server does not have to be at such a level that it would not take a hacker just a few minutes to download all data. Cyber-attacks are becoming more and more common in both large and small enterprises nowadays. If a major company faces a cyber-attack and their data is not sufficiently secured, they are at risk of losing their know-how or even their image.

Security of data. After the successful transformation of HR into the digital age, almost all information is in digital form, whether on computers, the corporate website, or the cloud. The availability of data is generally more accessible than the availability of paper data. This can lead to the potential loss of important data during a cyber-attack.

Fragmentation, precision, and unsystematic use of digital technologies in HR management. The digital age introduced in companies can often feel chaotic. Information does not flow through employees, but directly to the source through the digital network. For many this can be an advantage, unfortunately this fact can lead to inconsistency in the company. Inconsistency within a company can led to lower efficiency.

The technologies used are inseparable from human resource management functions and processes. If all the new digital HR tools are implemented, it will be difficult to go back to pre-digital operations. Whether it is digital files or other technologies applied to the HR environment.

The introduction of digital technologies into the work of employees is complicated by the fact that human resource management processes are quite complex. The actual activity of human resource management is demanding and requires skilled staff. The problem arises when this employee does his job very well, but the inevitable digitalization has affected his job and he hasn't learned to work with new technologies.

Necessary changes in organizational structure and leadership style were classified as potential risks on the grounds that a change in organizational structure can make a difference to employees as well as to the running of the business. This can lead to a decrease in quality or quantity. If a change in structure is done in a hurry to implement digital transformation without regard to its infrastructure, then HR may be digitally transformed, but at the expense of the company's efficiency.

Conclusion

The research questions are answered in the summary table in the "Benefits" and "Risks" columns. In addition to the table, the results section provides a more extensive description of

the authors' methodology and results. In the discussion section, more attention is paid to the benefits and risks, and each point is accompanied by a commentary that elaborates on the possible uses or impacts of the benefits and drawbacks of digital transformation in HRM. The main benefits for digital transformation can include simplified administration, clarity, increased efficiency, and a green approach. It should be added that the benefits of digital transformation can be gained if the transformation is not rushed and is done correctly. Also, before transforming its HR department, an organization must assess whether it can complete the transformation and is willing to fund the various training, software and other technologies associated with the transformation. Failure or misjudgement can lead to increased risks such as: selecting inappropriate elements, reduced efficiency, employees not understanding new technologies, and vulnerability of important data. Digital HR transformation may not be easy in some companies, but it's a fundamental and necessary change for some companies if done correctly and with the organization in mind.

This article was limited by the lack of publications that could be included in the research, as the digital transformation of HR is still a new and under-researched topic. Although HRM is one of the most important sectors in companies, many authors do not sufficiently address the digital transformation of this department or do not present in detail the advantages or disadvantages of this transformation in companies.

This article should introduce the reader to the main potential benefits or risks of digital transformation of human resources. It could also contribute to other studies on the same topic.

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