ACCELERATED DIGITALIZATION OF HUMAN RESOURCES IN THE POST-PANDEMIC ERA

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Abstract*: The main purpose of this paper is understanding the role of technology in managing Human Resources in the Digital age. The pandemic has been an accelerator for digitalization of workspace. Human Resources Department became more virtual and digital than ever before. Many organizations increased their usage of Video conference tools, Employee self-service (ESS), Electronic performance monitoring (EPM), Internet of Things, Robotics and Artificial Intelligence. Recruitment and selection processes became significantly more virtual and digital, since video interviews usage went from 22% to 58% in 2020. Artificial Intelligence can help in Talent Management, since managers can determine the key skills that need to be developed for different roles. Digital tools can be used for Performance Management, as well as Training and Development. It is argued that E-HR speeds up activities and contributes to more transparent and accurate transactions, and it makes HR data more available and disseminated in organizations. Human Resources practitioners will need to exploit the benefits of these technologies, in order to adjust to the Digital age, and maximize their performance. In addition, we can say that ICT and AI have significant positive impact in the development of sustainability.*

Key words: Human Resources, Digitalization, Pandemic, E-HR, Artificial Intelligence

1. INTRODUCTION

Business world is facing changes, and the main source of these changes is the advancement of the technology. According to Divya and Gupta, a large number of "employees and labors will be displaced by the advanced technology". (Divya & Gupta, 2022).

The pandemic crisis had accelerated digitalization for many organizations, since many businesses couldn't operate in a usual way, and people have adapted to the new normal. Working remotely has accelerated the development of employees' digital skills, because they needed to master the new tools "overnight" (Babapour Chafi, Hultberg, & Bozic Yams, 2021).

E-HR includes online based recruitment processes, self-service HR platforms and online trainings (Kim, Wang and Boon, 2021). Corporations have digitalized the recruitment processes, performance management practices, onboarding, training and overall employee experience (Minbaeva, 2021). In addition, other HR processes, like employee relations and compensation will probably rely on *"big data, analytics and metrics",* as well as Robotics and Artificial Intelligence - AI (Mefi & Asoba, 2021). The digitalization has changed the talent strategies as well. For example, the promise of Machine learning (ML) and AI increased hiring of data scientist (Minbaeva, 2021).

Today, increasing number of companies are already adopting AI-based HR solutions (Kim, Wang and Boon, 2021). ML and AI could provide significant value for HR (Fernandez and Gallardo-Gallardo, 2020).

For enterprise systems, digitalization of work was a good solution, and small and medium organizations needed more time to respond. Partial digitalization of business processes could be the solution, by introducing home office or remote work, and attendance system (Kmecova et al., 2021).

Some of the factors that can improve the digital innovation of organizations are the digital organizational culture, integration of the technological resources, and organizational readiness (Zhen et al., 2021).

2. INDUSTRY 4.0

The world has been transformed quickly due to the fast innovation of new technologies, and hence influenced life and business worldwide. (Burrichter, Chen & Marco, 2022). Modern technologies enable machines to become sophisticated. This means that most manual-control tasks can be automated (Burrichter, Chen & Marco, 2022).

HRM field is changing rapidly, and it needs to digitally transform (Zhang & Chen, 2023). HRM professionals will need to learn the terms and applications of technology related to Industry 4.0 – for instance the Internet of Things (IoT), Artificial Intelligence, cloud computing, big data and virtual reality (Da Silva et al, 2022). The workforce trends will need to be deepened, and they should focus on Training and Learning, Human-Robot Collaboration, Organizational Culture and Diversity and Inclusion (Da Silva et al, 2022).

In their systematic review, Vrontis et al. (2022) are explaining the role of IoT, Employee self-service (ESS), Electronic performance monitoring (EPM), and AI in HRM. They imply that technology-enabled HRM have some benefits, such as "cost savings, harmonization and integration of HR activities, efficiency, support of international strategy", but also some barriers, like "more HR administration, work stress, disappointments with technological properties" (Vrontis et al. 2022). Some authors suggest that AI and Robotics will "improve our work and general well-being more than the industrial and digital revolutions" (Dabica et al., 2023).

3. BENEFITS OF USING E-HR

According to Li (2021), The integration of HRM and new technologies is an "inevitable trend for the future development of enterprises" (Li, 2021). The areas of HRM that were performed manually before the digitalization include recruitment, training, and performance management. Today, big data can help create a larger database, and manage the full-cycle management (Da Silva et al, 2022).

According to Sengupta et al. (2021), digitalization is dominant in the following functions of HR: Recruitment, Training & Development, Performance Management and Compensation (Sengupta et al. 2021). The implementation of modern technologies can relieve HRM professionals of repetitive work; documentation has been reduced by automation; and overall effectiveness of HRM systems is improved (Burrichter, Chen & Marco, 2022). Machine learning can be used for the recognition of soft skills in and talent management as well as recruitment processes (Da Silva et al, 2022).

Research from France that questioned the connection between digitalization and autonomy implied that technology and HR practices "work side by side in an organization". This mean that if the HR policies and practices are supporting the employees, the technology will support them as well. On the other hand, if the HR practices are threatening to employees, technology will be perceived as an instrument for these intentions (Zeshan, Qureshi & Saleem, 2021). In their research, Heslina and Syahruni showed that organizations should provide trainings to employees, and management should pay attention to competence of the staff, in order to assure benefits of technology that is used (Heslina & Syahruni, 2021). AlHamad et al. (2022) suggest that E-HRM can help in achieving organizational cohesion, and have an impact on organizational health, reducing bias in performance appraisal and building communication channels within the company (AlHamad et al., 2022).

The digitalization of work caused by the pandemic can have significant influence on the sustainability (Burrichter, Chen & Marco, 2022). The effects are reduced its CO_2 emissions thanks to the introduction of remote and hybrid working models and recruitment process (Kuzior, Kettler & Rab, 2021).

4. E-RECRUITMENT

Nguti and Mose (2021) define e-recruitment as "the process of identifying and attracting potential employees" (Nguti & Mose, 2021). According to Baykal (2020), E-recruitment is reducing costs and increasing efficiency. It eliminates the need for HR middleman, hence lower working hours and fewer HR professionals are required. E-HR can increase the speed of transactions, and lower the number of information errors (Baykal, 2020). By using E-HR systems in recruitment, companies could attract the attention of large number of qualified candidates. (Baykal, 2020). Today, many organizations are using social media platforms in recruiting, such as LinkedIn, Facebook and Glassdoor, reaching out to more suitable candidates (Zhang & Chen, 2023). Organizations are also establishing functions like talent sourcing experts, that are responsible for seeking and approaching talented individuals via social media. Many employers try to make a good impression on websites and platforms like this, but it is also important to send a realistic message to candidates, in order to avoid early departures (Gilch & Sieweke, 2021).

Sourcing software supports recruiters to rapidly find new candidates, as well as provide "up" and "down" votes on candidates (Li et al., 2021). According to Kshetri (2021), time to hire candidates can be reduced

from 10 to 2 weeks (Kshetri, 2021). E-HRM also help companies attract candidates from different geographical locations, which can result in organizational culture with diverse skills and knowledge (AlHamad et al., 2022).

The process of searching for potential candidates can be simplified with AI by assisting recruiters and HR practitioners with suggestions of keywords they can use to build complex search queries (Li et al., 2021). AI can also help by suggesting the most promising keywords in an ad (Laurim et al., 2021). Software "Textio" that can predict the attractiveness of a job listing, by scanning the job ad for key phrases, as well as the overall tone of the ad, and make suggestions for improving inclusiveness of the language (Hunkenschroer & Luetge, 2022). AI could be helpful in defect reduction; it could detect fraudulent activities and increase efficiency (Kshetri, 2021), as well as improve job posts and minimize selection errors (Da Silva et al, 2022). Intelligent algorithms can be used to identify and conduct the profiling of candidates (Zhang & Chen, 2023). Tools like Applicant Tracking Systems (ATS) are used for analysis of applications, and reduce the effort for both recruiters and applicants (Laurim et al., 2021). NLP techniques can be used for parsing unstructured documents (for example, CVs and cover letters) and extract important information in order to complete application forms (Hunkenschroer & Luetge, 2022). AI is used in the evaluation and selection of candidates as well, since it can analyze the entire career path of candidates, and filter out the results (Laurim et al., 2021). This technology can pre-screen candidates by checking parameters such as salary expectations, and specific skills (Laurim et al., 2021), and replace human interviewers by asking set of other predetermined questions (Hunkenschroer & Luetge, 2022).

Candidates are usually ranked by using a set of criteria, which are applied to all candidates. There are also some additional applications in the system, like specialized selection tests (i.e., knowledge tests and personality tests) and preliminary online procedures that could be applied through internet. If the evaluation is negative, the candidates are informed about the negative feedback via the web-based portal. (Baykal, 2020). For example, the software "Pymetrics" which is ML based, can predict an applicant's fit for the role. Some other AI platforms can analyze social media and other digital records in order to construct a psychological profile of candidates (Hunkenschroer & Luetge, 2022). By using AI, HR employees can conduct background checks, and assess applicants more objective than humans (Vrontis et al., 2022). The use of AI in the recruitment will result in increased efficiency, focusing on candidates with the required skills instead of primarily on qualifications (Baykal, 2020).

Some organizations are using chatbots, as the first point of contact between the company and candidates (Laurim et al., 2021). The assistance of chatbots can be beneficial for applicants, because it can help them find the right job, and they are "inclined to associate positive experiences with it" (Laurim et al., 2021).

Al-Zagheer and Barakat (2021) are listing seven benefits of E-recruitment: Shorter time for hiring; Lower costs; Wider spread of companies; Wider spread of job seekers; Confidentiality; Initiative – direct communication with job seekers; Building a reference database for future use (Al-Zagheer & Barakat, 2021).

5. TECHNOLOGY IN OTHER HRM PROCESSES

In addition to recruiting, modern technology is often used in other HR processes. For example, by utilizing AI in training, organizations can create individual development programs. Employees could choose the suitable time for the training and access training materials from their location (Zhang & Chen, 2023). AI coaching is a "machine-assisted, systematic process to help clients set professional goals and construct solutions to efficiently achieve them" (Graßmann & Schermuly, 2021). AI can be a helpful tool in coaching, but only if the client is aware of the problem and understand the goals. Therefore, it is unlikely that AI will take over the entire process of coaching. However, HR professionals should capitalize on its advantages, and combine the benefits of both human and AI approaches (Graßmann & Schermuly, 2021).

Emotional AI is a tool that can "recognize, learn about and interact" with emotional life (Walkowiak, 2023). Those platforms could be used for monitoring of stress and anxiety. Current trends include increasing use of Virtual reality for supporting mental health of employees. The pandemic accelerated the adoption of VR; thus, it became more affordable (Walkowiak, 2023).

Digital service centers can be used to cover the entire career cycle of employees first to last day at the company. There are many "Web portals, mobile apps, WeChat public numbers, self-service terminals, call

lines, smart robots and semantic analysis" that can provide benefits to employees as well as organizations (Zhang & Chen, 2023).

Internet of Things – IoT can be used in various domains, such as personal, industrial and business (Almeida, Santos, & Monteiro, 2020). According to Li (2021), internet is "being extended to the physical world, forming Internet of Things" (Li, 2021). IoT has been used within organizations, especially when they are working remotely. It is facilitating knowledge management, changing business models, facilitating HRM in general, and it can save money by preventing or fixing problems (Gamede & Mtotywa, 2022).

Robotics are being used for completing complex tasks, and Industry 4.0 offers a great potential for its further growth and improvement (Almeida, Santos, & Monteiro, 2020). Robots are already able to learn and interact with people, and they will certainly become a useful tool in Human Resources Management.

6. DISADVANTAGES AND CHALLENGES

There are several challenges and potential disadvantages of implementing modern technology to HRM. Fernandez and Gallardo-Gallardo (2020) identified 4 categories of barriers for HR Analytics adoption: "data & models, software & technology, people, and management" (Fernandez and Gallardo-Gallardo, 2020).

When it comes to recruitment, candidates could become anxious regarding their privacy, since they are sharing their personal information on the internet. Some people may avoid applying via internet if they are not familiar with technological tools (Baykal, 2020). Web based interviews are often used today. However, there are certain disruptions, such as technical problems, verbal and non-verbal communication challenges and other environmental factors. They are more comfortable for people who are experienced in this type of communication (Wolf & Burrows, 2020). According to Al-Zagheer and Barakat (2021), employers and employees in India, still prefer face-to-face interaction over online communication (Al-Zagheer & Barakat, 2021). Recruiters prefer an experts' recommendations over algorithms. (Oberst et al., 2021).

The use of digital technologies could have an impact on diversity and inclusion. For example, AI-based tool for evaluation of candidates in Amazon showed discriminatory behaviours against women. AI that screens body language, verbal and non-verbal content in pre-recorded interviews may exclude some candidates from different cultural backgrounds, different body languages and accents, or autistic candidates (Walkowiak, 2023). Contrary to that, some researchers showed that AI is more objective and less biased in evaluating candidates (Mirowska & Mesnet, 2021). According to Li et al. (2021), AI could help increase the diversity of the candidate pool (Li et al., 2021). Kshetri (2021) argue that AI can prevent some biases, but introduce new types of biases, such as gender biases (Kshetri, 2021).

Some authors argue that E-HR system could increase some costs. For example, it can be necessary to buy expensive devices for the staff, like high-tech cameras and computers (Baykal, 2020). AI could also be complex, which can impact companies' decision about AI adoption. AI developers should try to deliver tools that are user friendly. Top management should launch strategies regarding AI initiatives, provide trainings and specific procedures (Pan et al., 2022).

Some other challenges of digital transformation include disappearing of certain professions, as well as possible replacing of existing workforce (Nafchi & Mohelská, 2021).

7. CONCLUSION

Since HR is facing disruptions, HR professionals should rewrite the rules and practices in order to adjust to the new normal (Minbaeva, 2021). When exploring emerging technologies, previous ways of researching technologies could still provide fresh insights (Kim, Wang and Boon, 2021). Organizations need to change their mindset into a 'digital' one (Gilch & Sieweke, 2021). By utilizing AI in repetitive activities, HR professionals can participate only when it is necessary, and focus more on interpreting information, instead of administration (Kshetri, 2021). In order to remain competitive, organizations are expected to become cyber-based (Mefi & Asoba, 2021). Today, many small and medium size enterprises have outdated systems. However, it is important to digitalize at least some of the HRM processes, and implement HRIS (Kmecova et al., 2021), since the use of technology in HRM is inevitable (Sengupta et al. 2021). Some future studies should focus on investigating the actual digitalization paths (Strohmeier, 2020), in order to prepare for the future, as well as to respond to it (Li, Ghosh & Nachmias, 2020).

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