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Use of Modern IT Solutions in the HRM Activities: Process Automation and Digital Employer Branding

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Abstract:

Purpose: *The aim of the conducted research was to show what kind of solutions based on artificial intelligence are used by modern organizations to automate HRM activities and carry out the so-called digital employer branding.*
Approach/Methodology/Design: *Scientific literature and other reports connected with employer branding and AI were analyzed. Choosing from the group of methods, the author of the article used analysis, synthesis, abstraction, analogy, and comparison.*
Findings: *The research results show that solutions based on AI have found application in onboarding, talent management process or improvement of employee competences. Applicant Tracking Systems, Talent Acquisition Systems and Talent Management Systems as well as chatbots are changing the process of employer branding into digital employer branding.*
Practical Implications: *The results are significant to all kinds of organizations among which there are also public organizations. Implementation of new technologies will not only change the image of the organizations but also will make the HRM activities more objective and easily managed especially while remote work.*
Originality/Value: *The research provides theoretical assumptions and practical answers to encourage further research globally.*

Keywords: *Artificial intelligence, processes automation, digital employer branding, HRM activities.*

JEL classification: *F16, J5.*

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1. Introduction

Constantly changing customer requirements in connection with the dynamic development of modern technologies cause more and more organizations to make efforts to use in practice IT solutions allowing for the improvement and simultaneous modernization of processes, including personnel processes. The changes made are motivated not only by the very desire to improve, but above all to reduce repetitive work, and thus monotonous and time-consuming one, which also allows for fuller use of the potential of employees by involving them in other more creative activities. The digital revolution, including the impression of artificial intelligence solutions, allows for a change in the image of an organization, which is particularly important for companies operating in an environment with a high level of competitiveness, and thus organizations caring for their own image as a desired employer in the market, which is directly related to the employer branding strategy implemented by many organizations. Considering the progressive automation of personnel processes, the aim of this article is to show what solutions based on artificial intelligence (AI) are used by modern organizations to automate personnel processes and implement the so-called digital employer branding.

Choosing from the group of methods, the author of the article used analysis, synthesis, abstraction, analogy, and comparison. Special attention was paid to reports covering the AI issue and the analysis of websites of selected organizations dealing with employee recruitment and shaping the organization's image, which allowed for the identification of IT solutions used in practice and allowing for the automation of processes and the implementation of digital employer branding. The analysis was also carried out on the offers of companies creating solutions based on artificial intelligence for the needs of customers and in accordance with their guidelines, which made it possible to achieve the research objective.

2. Artificial Intelligence in the Service of Modern Organizations – advantages and Disadvantages of Business Automation

Artificial intelligence is a term that appears more and more often in scientific and business discussions as well as in everyday life. According to Mijwel (2015), "*Artificial intelligence is the general name of the technology for the development of machines, which are created entirely by artificial means and can exhibit behaviors and behaviors like human beings, without taking advantage of any living organism. Artificial intelligence products, which, when approached as an idealist, are completely human like and can perform things such as feeling, foreseeing, and making decisions, are generally called robot names"* (Mijwel, 2015: 3). Whereas in Oxford Dictionary AI is defined as *"the theory and development of computer systems able to perform tasks normally requiring human intelligence, such as visual perception, speech recognition, decision-making, and translation between languages"* (Oxford Dictionaries, 2019). However, according to the Encyclopedia Britannica, "*Artificial intelligence (AI), the ability of a digital computer or computer-controlled robot to*

perform tasks commonly associated with intelligent beings. The term is frequently applied to the project of developing systems endowed with the intellectual processes characteristic of humans, such as the ability to reason, discover meaning, generalize, or learn from experience" (Copeland, 2020).

The term artificial intelligence was first used in 1956 at the Dartmouth Conference (Spector, 2006: 1251), but, referring to the pages of history, mention of this type of solution, namely humanoid robots, can already be found in ancient Greek mythology (Mijwel, 2015). Marvin Minsky, who stated in his book "Stormed Search for Artificial Intelligence" that "*the problem of artificial intelligence modeling within a generation will be solved"* (Mijwel, 2015: 2), was therefore not wrong. The next breakthroughs showing the technological progress and growing interest of AI are the computer winning a chess match with master Garry Kasparov in 1997, or the sorting out the Rubik's cube combination by using less than 20 moves (2010).

Artificial intelligence combines three key elements, such as, *high-speed computation, a huge amount of quality data and advanced algorithms differentiate AI from ordinary software* (EY, 2018: 1). The use of special algorithms increases the accuracy of the performed actions, thus eliminating the so-called human factor error, moreover, *"the technology based on artificial intelligence is able to imitate the cognitive functions that we attribute to the human mind, including the ability to solve problems and learn"* (Syam and Sharma, 2018).

Artificial intelligence, originally associated with science fiction films, has been permanently applied in contemporary organizations, becoming an essential element for modernizing and accelerating particularly repetitive processes. According to Amer Awad Alzaidi (2018) "*artificial intelligence as a field of science has become a competition for modern computer systems. The application of human-like reasoning, learning and self-correction capabilities, combined with the development of hardware and software technologies, has made it possible to offer users technological solutions based on complex algorithms, communicating at high speed, allowing for efficient decision-making, by some considered comparable to human decisions, by others – far beyond the capabilities of experts"* (Alzaidi, 2018: 140).

Artificial intelligence has found its greatest application in sales, marketing (Jarek and Mazurek, 2019: 49-51) and human resources (Ruby Merlin and Jayam 2018). Wayne F. Cascio and Ramiro Montealegre in their article "How Technology Is Changing Work and Organizations" (2016) show in detail the issue of technology impacting the change of work environment and the organizations themselves. The authors stress the need to conduct in-depth research on the impact of the technology using, among others, the ethnographic method (Barley, 2015) and experience sampling (Beal, 2015) to maximize the positive effects on individuals and organizations and minimize the negative effects. The above-mentioned action will be a stimulating and continuous challenge for the following years, as AI enters almost every area of human life – both private and professional (Cascio and Montealegre, 2016).

However, not all organizations are in favor of implementing solutions based on AI. The main reasons for this attitude include:

- the cost of implementing solutions,
- the fear of losing the confidentiality of personal data,
- the need to use more safety protocols to develop a safe automatic environment,
- the need to update and maintain solutions,
- limited possibility of integrating existing systems with AI-based solutions,
- dehumanization of personnel activities,
- the need to adapt solutions to the legal and ethical requirements of the country and organization in question (Khanzode and Sarode, 2020).

The staff themselves draw attention to concerns that they are being deprived of a certain range of activities, which may contribute to job cuts, especially in posts where staff have been responsible for repetitive and routine tasks and therefore not requiring a high level of competence. In turn, researchers Peter Cappelli, Prasanna Tambe, and Valery Yakubovich show four main problem areas directly related to the use of AI-based solutions in HR, such as:

1. complexity of HR phenomena,
2. constraints imposed by small data sets,
3. ethical questions associated with fairness and legal constraints,
4. employee reaction to management via data-based algorithms (Cappelli, Tambe, and Yakubovich, 2018).

Huge concerns about the use of artificial intelligence are also linked to the understanding of the word intelligence, which for many people is intrinsically linked to human as a key human attribute, not a machine (Mijwel, 2015). Those in favor of these solutions, in turn, point out:

- reducing the burden of repetitive activities on employees, such as answers to customer questions,
- reducing subjectivity in processes, which has a positive effect on the organization's image as an employer,
- shortening the time of the activities,
- facilitating reporting activities and the calculation of return on investment,
- the possibility of relieving the burden on the organization and directing its main efforts towards activities directly contributing to its success and market position (Chowdhury and Sadek 2012; Ahmed, 2018; Khanzode and Sarode, 2020).

The implementation of AI solutions requires several components, such as cloud solutions, digital help e.g., assistants, automated machine learning, APIs allowing to

connect to multiple messengers (Skype), social networking messengers or non-standard chatbots. As EY company emphasizes "*A key medium of conversational AI is the chatbot. This product provides intuitive instruction and performs pattern studies to act as a smart and efficient assistant. The bot uses logic to determine user inquiries and connect with enterprise systems to get the desired results. Machine learning plays an important role, working with patterns and using cleaner sets of data"* (EY, 2018: 5).

The practical use of modern IT solutions by many organizations is an obligatory element allowing for the effective use of the resources held. However, many companies are still afraid of implementing solutions based on AI, which does not mean that they will not be forced to do so by the economic situation, as many organizations have found out in connection with the Covid-19 pandemic. Changes in the use of AI have already been seen to a large extent when comparing the results of the 2018 and 2019 studies conducted by Oracle and Future Workplace. The study of 8,370 employees, managers, and HR leaders across 10 countries, found that AI is becoming more prominent with 50 percent of workers currently using some form of AI at work compared to only 32 percent last year. Workers in China (77 percent) and India (78 percent) have adopted AI over 2X more than those in France (32 percent) and Japan (29 percent). The majority (65 percent) of workers are optimistic, excited, and grateful about having robot co-workers and nearly a quarter report having a loving and gratifying relationship with AI at work. Workers in India (60 percent) and China (56 percent) are the most excited about AI, followed by the UAE (44 percent), Singapore (41 percent), Brazil (32 percent), Australia/New Zealand (26 percent), Japan (25 percent), U.S. (22 percent), UK (20 percent) and France (8 percent) (Oracle, 2019).

Greater interest and confidence in artificial technology is not only due to organizational needs, but above all to the cultural specificity of generations Y and Z, which have entered and continue to enter the labor market, mostly recognizing modern technologies as natural and obvious solutions (scientists point out to avoiding generalization in relation to representatives of generations – Lyons and Kuron, 2013; Brant and Castro, 2019). An upward trend in the interest in and use of solutions based on AI will be visible in the coming years, and the pace of its implementation will largely depend not only on the financial background of the organization, or on gaining supporters of such solutions, but above all on the economic situation, social needs, and the level of competition on the market.

3. Needs vs. Difficulties in Automating Processes in an Organization

According to the 2020 company report Oracle's Top 10 Cloud Predictions. The impact automation, AI, machine learning, blockchain, and more will have on IT by 2025, one of the 10 key changes that organizations will face in the near future will concern the fact that "*Automated business processes will enable more personalized interactions in HR, sales, and other business domains"* (Oracle, 2020: 12). The authors of the report emphasize that "*AI and autonomous technologies are permeating the workplace,*

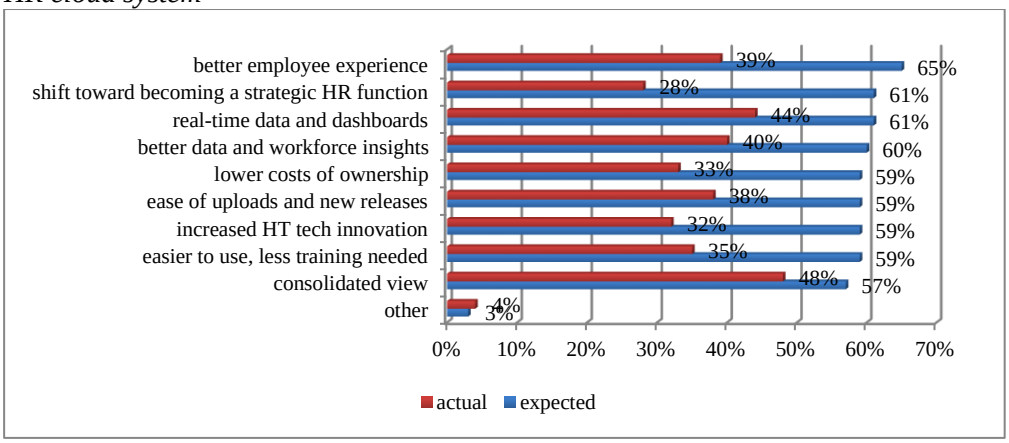
streamlining routine business processes and freeing up professionals to focus on more-meaningful and productive human interactions. For example, automated workflows can streamline recruiting operations by tracking applicants and fielding requests from new hires. Some HR teams use AI to identify top candidates by comparing their stated qualifications against job postings. Chatbots can communicate with candidates to answer questions and schedule interviews. These automated functions alleviate routine administrative tasks so HR professionals can focus on hiring qualified candidates that match the corporate culture. By 2025, 70 percent of recruiting will be taken over by AI and bots" (Oracle, 2020: 13).

The implementation of modern solutions in the case of many organizations has led to a situation where the existing systems are not fully interconnected, as evidenced by data from the *"Leading the social enterprise report: Reinvent with a human focus: 2019 Deloitte Global Human Capital Trends"*, according to which many organizations still have a mixed set of HR systems in place. Only 5 percent of this year's survey respondents told us they have a fully integrated HR cloud platform. Most of the others have some combination of cloud and on-premises software, and 29 percent have no systems at all. Since many organizations are still using and maintaining numerous HR systems, the quality of the user experience and the level of integration have not reached the levels often promised by HCM cloud vendors.

Many organizations are using employee engagement layers to improve their solutions' overall usability and to provide a higher level of technical and functional integration (Deloitte, 2019: 94). The lack of integration of the systems, or the implementation of only half of the solutions, leads many users of AI-based systems to think that the solutions offered to them are not able to fully meet their needs. Organizations expect a great deal from modern solutions, so it can be considered that they see the possibility of improving these tools, as confirmed (Figure 1).

Meeting the expectations of users is a task faced daily by employees of many companies offering AI-based systems, so it can be considered that the user experience itself is a huge source of inspiration for changes in systems, including enriching them with solutions and links that have not been implemented before. The market of HR technologies based on AI is constantly developing, thanks to which we can see more and more solutions offered by companies that already cover almost all areas of personnel activity, including recruitment and selection, talent mobility management, employee appraisal, onboarding, training, communication and knowledge exchange, work organization, benefits, or payroll administration. Other areas that are also slowly becoming more and more automated include surveys of employee opinion and engagement, tools to build a good atmosphere and wellbeing of employees linked to coaching activities, performance management, tools to support self-study of employees or to allow employees to keep up to date with unethical situations at work, also to reduce harassment (Deloitte, 2019).

Figure 1. *Organizations generally expected more than they actually got from their HR cloud system*



Source: *Based on Deloitte Insights (2019), Leading the social enterprise: Reinvent with a human focus. 2019 Deloitte Global Human Capital Trends, p. 95. https://www2.deloitte.com/content/dam/Deloitte/cz/Documents/human-capital/cz-hc-trends-reinvent-with-human-focus.pdf.*

AI is applied in many areas of functioning of contemporary organizations (Mihalcea, 2017), as it is emphasized in the EY publication: *Human resources executives have faith that merging AI into HR administration functions will benefit and improve the overall employee experience. This will provide more capacity, more time and budget, and more accurate information for decisive people management* (EY, 2018: 1).

Applications based on artificial intelligence therefore allow not only to increase the potential of employees, change the image of HR departments to a more professional one, but above all to improve analysis, prediction, and diagnosis activities. However, the choice of technology adequate to the needs should be based on the recognition of the requirements of the organization, the employees themselves, as well as the knowledge of organizational culture, as these are the key elements in adjusting solutions to the existing systems and internal organization relations.

The implementation of solutions based on artificial intelligence also requires the creation of an appropriate climate in the organization which will be conducive to change, and this is possible through the following actions:

- to thoroughly test the solution before it is implemented in the organization to ensure that the results are acceptable and that the business model fits into the existing values, organizational culture, and strategy,
- to precisely define the purpose of the solution and to promote this purpose among the employees,
- to make employees aware of the disadvantages and advantages of the new solution by showing them specific situations,

- to encourage employees to gather their experience, which can provide the necessary information to better tailor the solution to existing needs,
- to involve the employees from the department to which the solution is dedicated in the process of its creation, which will allow for closer cooperation with the IT department,
- to define the expectations of workers reasonably distributed over time, assuming an adequate amount of time to learn and get used to the solution in practice,
- to prepare training for employees to enable full testing of the solution,
- to encourage employees to report problems with the way systems work, including suggestions for improvements,
- to create a transparent procedure for the use of the solution with the identification of the persons responsible for the technical supervision of the solution, which is an essential element in crisis situations (Reilly, 2018: 13-14).

The indicated actions not only increase the probability of success of the organization, but also allow employees to prepare gradually for using modern solutions. Such an approach is particularly important in the process of building the image of the organization as a good employer, which can rationally use both modern technologies and the potential of its employees.

4. Solutions for the Automation of Personnel Processes Used in Poland and Worldwide

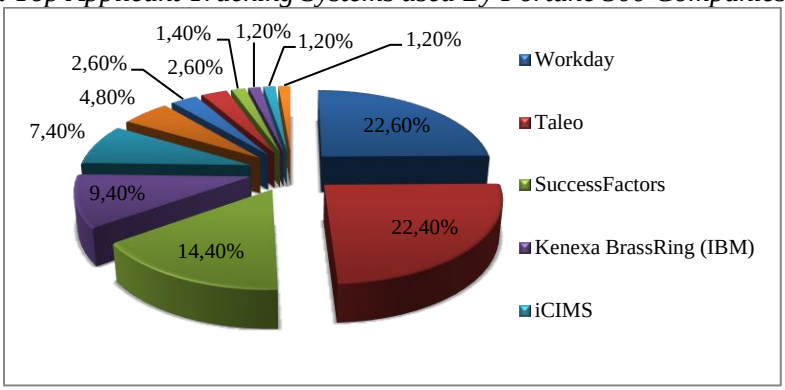
Solutions based on artificial intelligence are increasingly becoming an integral part of every process in an organization, especially personnel processes. The pursuit of efficiency while maintaining high quality has become the basic reason for implementing modern tools facilitating and accelerating the work of HR departments.

Special attention of HR departments is paid to solutions dedicated to recruitment and selection, as in many cases these are the most time-consuming and repetitive activities, hence the possibility of simplifying and accelerating them is important. Solutions based on AI have also found application in onboarding, talent management process or improvement of employee competences.

In the online employee recruitment process, many organizations use tools dedicated to particular processes. Companies use e.g., ATS (Applicant Tracking System), i.e., an application facilitating the flow of information, collecting, storing, securing, and managing the data of candidates applying, as well as full automation of the entire recruitment process (Salahudeen *et al.*, 2017). The above software greatly facilitates the acquisition of new employees. An informed employee is a person who should know in many cases a candidate's CV is not addressed directly to the recruiter, but checked by the system, therefore preparing a correct CV optimized for ATS

algorithms is the first step to success. ATS makes it possible to collect candidates' CVs in one place, to identify people who meet the competence requirements included in the competence profile of a given position to the greatest extent, thanks to which time for the analysis of application documents is shortened to a minimum. Not only organizations use ATS solutions directly, but such a tool is also applied by e.g., LinkedIn (Alzhrami, 2020). Examples of ATS applications popular worldwide include Taleo, Workday, Brassing, SmartRecruiters, iCIMS, JazzHR, SuccessFactor, Jobvite, Greenhouse, CATS, Lever and BambooHR (Picture 2). In turn, e-Recruiter, HRlink, Traffit, Element, AppManager, elevato or hrappka.pl are also used in Poland.

Figure 2. *Top Applicant Tracking Systems used By Fortune 500 Companies*



Source: *R. Kelly (2019), Top ATS Systems Used by the Fortune 500 in 2019 (Workday Beats Taleo).*
https://blog.ongig.com/applicant-tracking-system/top-ats-systems-used-by-the-fortune-500-2019.

The key advantages of ATS systems with extended modules include the ability to specify:

- average employment time,
- average time for disqualifying a candidate,
- effectiveness of recruitment sources (where the candidates learned about the recruitment, applications from which sources end up with employment, etc.),
- conversion of candidates (what percentage of candidates are employed),
- scale of resignation of candidates (how many chose another offer or resigned from recruitment),
- average assessment results for each candidate,
- reasons for rejecting candidates,
- workload of recruiters,
- effectiveness of recruiters.

Thanks to the ATS system, it is also possible to monitor on an ongoing basis which of the candidates has agreed to participate in future recruitments, which allows for

automatic anonymization of data at the right time or asking candidates by e-mail for updated approvals. It is worth noting that the anonymized candidate remains in the system as a statistical entry, which allows for the preparation of aggregate data and reports, while ensuring their full reliability. The extensive reporting functions also make it much easier to carry out reporting and integration with the "Career" tab on the website.

Full online employee recruitment also includes a job interview. Software dedicated to video recruiting can be used to conduct a virtual meeting. However, not every organization could use this solution, which is why in many cases public solutions are still popular, including free applications such as Facebook Messenger, Google Hangouts, WhatsApp, or Skype. The process of conducting a recruitment interview can also be supported using tools for analyzing the voice of candidates, which allows to determine their degree of involvement or authenticity. An exemplary tool is the solution offered by PRECIRE – combining psychology and artificial intelligence for language analysis. The method was first patented in the USA in 2017, while it was first introduced to Europe and Switzerland in 2019 (PRECIRE, access 26.08.2020).

The recruiter's work may also be supported by, among others, a tool called RefLynk allowing for automatic verification of the skills that the candidate has included in his application documents. This solution is based on a series of tests and tasks, so not only recruiters but also the candidates themselves receive feedback. It significantly speeds up traditional reference checking, making the whole process shorter, less labor and cost intensive. The indicated solution may also be used during an exit interview, and the questionnaire sent to departing employees may contain both open and closed questions based on the Likert scale (Reflynk, access 26.08.2020). Similar opportunities are also offered by Vitay, a Canadian-based organization established in 2017 that offers a piece of software called Vitay, which can also be used for live training by the Internet. Recruiters can also use solutions such as Jointl, Good Egg, SwiftCheck, Checkstar and many others (SOURCEFORGE, access 26.08.2020).

Chatbots are also used in personnel activities. "*An HR Chatbot is one major category within AI recruiting software that allows job seekers and employees to communicate via a conversational UI via SMS, website, and other messaging applications like What's App. The platform allows for meaningful exchanges without the need for HR leaders to take time out of their Day"* (Select Software Reviews, 26.08.2020). The word is a combination of "chat" and "robot". These are made up of a complex technical and text-based dialog system. Communication with a chatbot is done via text input or speech recognition and serves to receive, answer, and process user requests without the need for human intervention. Chat bots are being used more and more frequently to assist communication processes and digitalize procedures. This is because the latest generation of chatbots not only carry out a conversation with the user, but also trigger specific processes in other systems and applications by controlling technical interfaces. The chatbot thereby becomes an "Actbot" (Bönke, 2020).

Chatbots are unusual solutions that are used in the following activities:

- initial verification of competences, candidates' qualifications, availability, and expectations,
- planning of recruitment interviews, including careful analysis of recruiters' schedules, and matching the timing of the interview with other duties,
- conducting a conversation in the Career tab with potential employees, suggesting job offers adequate to their competences,
- engaging employees in referral programs by sending employees information about the existing program and the possible benefits of referral of a valuable employee,
- conducting preliminary "interviews" consisting of providing the potential candidate with information about employee benefits or development opportunities in the organization,
- supporting employees in the process of onboarding by answering standard and routine questions, which allows to reduce the burden of HR staff (Nawaz and Gomes, 2019).

An important aspect in the process of using chatbots is the possibility of measuring the activity of these solutions by analyzing e.g., the percentage of people interacting with the chatbot, the detachment of people passing from the career tab to the ATS, or the percentage of people registered via the career tab on the organization's website. This type of data allows you to show the rate of return on investment, which was the purchase of a given solution. Chatbots such as XOR, Ideal, Mya, Wade and Wendy have found a permanent application on the market. In Poland, chatbots were implemented by Budimex, one of the largest organizations in the construction industry. Emplocity, as a solution provider, helped to implement the chatbot, which is responsible for the verification of candidates' experience, language skills and financial expectations. It also analyses the acquired information and recommends the best applications (Budimex, access 28.08.2020).

Chatbots as solutions dedicated also to personnel activities are primarily devices that are constantly learning to better identify the needs of users. Each subsequent query therefore becomes a treasury of knowledge. As fast and uncomplicated systems, chatbots also have another key advantage, namely full 24-hour availability (Nawaz and Gomes, 2019; Wisskirchen *et al.,* 2017). However, chatbots are not always able to meet all challenges, so it is worthwhile for them to be equipped with the possibility of direct connection between the user and the employee, which is particularly important in resolving conflict situations, including those related to ethical issues. The key advantages of chatbots include:

- timely implementation of processes without the mistakes typical of humans, such as fatigue or irritation,
- low operating costs, reduction of costs related to infrastructure and employment of additional staff,

- the speed of response, regardless of the number of inquiries,
- standardization of responses to allow control over the image that an organization wants to achieve,
- shortening the time spent by employees on searching for answers to standard questions related to the functioning of the HR department (e.g., how to apply for a leave, what form to fill in, how to take advantage of benefits, how to settle a business trip),
- improving internal and external communication,
- reducing the process of duplication of documents and facilitating the process of collecting and standardizing documents.

Accepting a candidate for a job does not fully complete the process of obtaining employees. It is crucial that the employee is properly implemented, adapted to the work environment and organizational culture, as well as supported in the performance of new duties at the workplace. Artificial intelligence has also found application in onboarding, which allows for the reduction of rotation among newly hired employees. Onboarding for many organizations is usually associated with a series of questions that appear among newcomers, which should be answered. The repetitiveness of these questions allows artificial intelligence to be used to improve the whole process not only from the point of view of the organization, but above all the new employee. A well-constructed onboarding chatbot should make it possible:

- to introduce an employee to the company,
- the training necessary for an employee, inter alia, to be authorized to use the systems in question, or to equip an employee with the knowledge and skills related to the job and resulting from the organizational culture and therefore specific to a given organization,
- social integration of an employee with other employees.

General, professional, and social needs should therefore be met by using chatbots. This solution has been described by some as a virtual mentor, because in many cases, such a person can effectively replace chatbots. Reducing the stress associated with the first days at work using modern solutions is the key to reducing employee turnover and increasing retention, which at the same time translates into the image aspect not only of the HR department itself, but of the entire organization.

Chatbots are also used in other areas of the organization's operations (dialogs of sales departments with external customers, support of purchasing functions, product management, marketing support, internal communication, customer service department), where, considering the most popular systematics of chatbots division, the following ones are most often applied:

- notifying chatbots, which are responsible for providing one-way information,

- process chatbots, which help clients go through a standard process that requires several decisions to be made, and therefore to select actions from the pool,
- conversation chatbots responsible for conducting a conversation with a client, which is possible thanks to the use of NLP (Natural Language Processing), which enables the client to answer several standard questions while identifying the client's needs (Machowczyk, 2018).

Artificial intelligence has also found application in the process of talent acquisition, which has significantly changed the previous approach to employer branding activities (Rajesh, Kandaswamy, and Rakesh, 2018). The process of talent acquisition begins already at the stage of recruitment and selection and is then carried out through the appropriate organization of onboarding activities, improvement of competences, organization of remuneration policy, fair system of assessment, planning of career paths and efficient flow of information in the organization (Harsch and Festing, 2020).

The talent management process is carried out with the support of TAS - Talent Acquisition Systems and TRM - Talent Management Systems. These systems allow not only for integration with ATS and HRIS (Human Resource Information Systems), but also other systems in an organization, which allows for a more professional approach to human resources management.

Some employers opt for talent management suites, such as Oracle Taleo Cloud Service. These systems are typically delivered from software as a service (SaaS) platform and offer talent acquisition, performance management, compensation management and learning management modules. Other big talent management vendors include SAP, with its Success Factors software; IBM Kenexa; Cornerstone OnDemand; SilkRoad; and Halogen. (…) Another route employers take is to use dedicated talent acquisition software from vendors such as Recruitee, JazzHR, MightyRecruiter and COMPAS (SeachHR Software, 2019). Several solutions are also offered on the domestic markets as part of startups.

The well-known TAS include, among others, RecruiterFlow, Yello, iCIMS, Ideal, Recruiter – Talent Acquisition Software, SumTotal Solution, Ascendify, Employee Experts and Talentrackr (Software Suggest, 2019). Some of the solutions indicated allow for full integration with social media, career portals and CRM (Customer Relationship Management), additionally offering the possibility of video calls, tests and assessments, knowledge management, payroll, working time and attendance while being a cloud-based talent acquisition software. The very interest in the process of talent management is of great importance in the process of building the image of the organization because it shows the willingness of the organization to undertake longer cooperation with employees who have the appropriate potential and willingness to develop. Increased interest in the talent management process results in increased popularity of job offers for Talent Acquisition Specialist positions and the creation of Talent Acquisition Teams.

Artificial intelligence is also used in HR departments in the process of improving employee competences. LMS – Learning Management Systems are solutions used by many organizations (Mohammed *et al.,* 2017). These solutions based on AI allow better integration of the user with the platform, which results in a more personalized training process. By identifying both cognitive, behavioral, social, and emotional characteristics of the user, it is easier to motivate the user to learn. The more user data is entered into the system, the faster the system learns by identifying the needs and educational opportunities of employees. The result of such actions is better selected and profiled educational material.

On the other hand, the organization has an opportunity to see the process of acquiring new competences by the employee, which facilitates the process of competence management, and enables a more precise determination of the career path and its location in time. The best-known LMS include, among others, the following: TalentLMS, LearnDash, SkyPrep, Academy of Mine, Docebo, Blackboard, Moodle, JoamlaLMS, Adobe Captivate Prime, SAP Litmos LMS and many others (Enfroy, 2020). In Poland, organizations also use such solutions as tomHRM – a platform that offers both ATS, time registration, training management, employee assessment and onboarding (tomHRM, access 30.08.2020).

5. Digital Employer Branding – Towards the Image of a Modern Employer

The implementation of solutions based on AI in the organization allows not only to streamline operations, reducing the time of certain tasks, but above all to better manage human resources. Professional career tab on the organization's website or profiles on social networking sites such as Facebook or LinkedIn are popular activities in the process of managing the organization's image. However, given the level of advancement of technology available on the market, they are completely insufficient to build a strong employer brand. Currently, the recommended activities include preparing professional recruitment videos, running company blogs, interactive games, publishing newsletters, managing chats, and participating in online (virtual) job fairs.

Attracting talent and building employee engagement only becomes effective when brands are strategic, consistent, transparent and authentic in their messaging (Chan and Hyun, 2014), so it is very important to build and manage EVP (Employer value proposition) (Biswas, 2013), which should be agile and responsive – thus following both market trends, while at the same time being embedded in the organizational culture and offering key values relevant to the organization and the talent it wants to attract. All the above-mentioned activities can be supported by implementing solutions based on AI in the organization, enabling more professional management of the organization and its image. The literature has thus referred to the term Digital Employer Branding, which includes a set of activities undertaken by the organization to build the employer's image and implemented using digital solutions, including AI. Examples of actions are presented in Table 1.

Table 1. *Activities implemented within digital employer branding*

Title of the action	Description
Creating and sharing EVP	The information about EVP should be reflected in the overall image building activities, and not only in the job advertisements and career tab on the website. The appropriate presentation and communication of the package of benefits offered to potential job applicants is possible through the creation of a recruitment video, placement in published newsletters, special exposure on social networks and during virtual job fairs.
Digital storytelling	*(…) could be used as a means of increasing the employer brand by bringing more authenticity and legitimation into the commercial communication of companies* (Crisan & Bortun, 2017: 280).
Social media activity	Active profile management on websites such as Facebook, Instagram, LinkedIn, etc.
On-line job interview	Conducting job interviews via e.g., Facebook Messenger, Google Hangouts, WhatsApp, Skypeect.
Automation of recruitment and selection processes	Implementation in the ATS organization. Linking ATS with other systems used in the organization in the HR department, including the career tab on the website.
Automation of talent acquisition process	Implementation in the TAS organization. Linking ATS to LMS and TAS.
Automating the competence management process	Implementation of LMS solutions allowing not only for implementation of standard competence development activities, but also for improvement of onboarding activities.
Use of chatbots	The use of chatbots in the process of recruitment and selection, onboarding, improvement of internal communication and standardization of internal documentation.
Analysis and forecasting	Through the use of solutions in personnel processes based on AI, organizations gain the possibility of collecting a huge amount of information, which facilitates reporting and carrying out the necessary analyses to determine e.g. the scale of retention, rotation, or efficiency of recruits, the quality of candidates' applications, average recruitment time, etc., which leads to determining the expected time in which the investment in modern systems will pay off.

Especially during the Covid-19 pandemic, organizations recognized the advantages of Digital EB, although the term itself is not popular both in typically scientific and organizational considerations. For it is becoming increasingly natural to use modern technologies, which in the times of the pandemic made it possible to carry out remote work, including increasing the confidence of potential users with solutions which, until now, were considered too modern or unnecessary. The implementation of the solutions described in the article in many cases makes candidates aware of how modern an organization is, on what values it places particular emphasis and how it treats employees.

The introduction of remote working has in many cases become possible because organizations have used systems which can be operated on generally available mobile devices without great difficulty. In addition, the employer has the possibility of viewing the activities carried out by the employee in the system without any major difficulties, which makes it easier to control the work of subordinate employees.

It is worth emphasizing, however, that digital EB alone does not allow for building the desired image of the employer, because in many cases it is treated as a tool for building the first, but important, good impression. Positive experiences should continue to be created through appropriate behaviour of the organization's employees, equal treatment, smooth internal communication and effectively implemented socialization processes (Tumasjan *et al.*, 2020). The indicated activities supported by solutions based on AI allow, in combination with a well-developed EB strategy, to build the desired image of the organization as an employer.

6. Conclusion

The future of personnel activity, including actions aimed at shaping a positive image of the organization as a desired employer in the labor market, both in Poland and abroad, will be based, according to the predictions of both theoreticians and practitioners, on hybrid solutions, seamlessly combining modern technological solutions based on AI with standard activities, albeit undertaken with greater awareness of the relationship between the image of an organization and the effectiveness and quality of activity in each area. The multiplicity of factors determining the current situation on the labor market shows the complexity of the needs of the organization as well as those of employees, job candidates and clients. Satisfying the existing needs is not always possible through standard activities, hence the demand for non-standard activities – although in many cases more effective – is growing.

However, not all organizations recognize the need to implement modern solutions, which is related to the specificity of the organizational culture, including the fear of employees themselves losing their jobs. It is clear from several studies which have been carried out, implementing solutions based on artificial intelligence is not always tantamount to making employees redundant. In many cases, the effect of the undertaken modernizations becomes the possibility of better use of the intellectual capital of employees, smoother management of the knowledge and experience of employees, which in the end translates into their better adaptation to the labor market and greater value as an employee.

The activities of HR departments and actions undertaken to shape the image of an organization as a desired employer in the labor market are increasingly based on solutions using AI. Automation of processes such as recruitment and selection, onboarding, improvement, and talent management significantly facilitates work, including increasing objectivity in action, introducing important standards. Such solutions as ATS, TAS, LMS and chatbots revolutionize the business while allowing to shape the image of an organization as a modern employer. Digital employer branding is based, among other things, on these tools, and combined with activities on social networking sites and creative management of the career tab on the website, it significantly increases the organization's chances of image success, which is

particularly important in the case of companies operating on a highly competitive market.

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