

Conference Paper

Digital Transformation of HR Technologies

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Abstract

This article involves a study of the personnel management technologies digitalization degree based on the results of the SAP, Deloitte and Hays report, published in 2019. The analysis demonstrated HR automatization dependence on the size and specialization of organizations. The larger the company, the more complex personnel management processes are. The article defines four digitalization levels from the paper approach to the active use of artificial intelligence systems. Industries with the highest automatization percentage are identified. The article takes a closer look at personnel recruitment, selection, adaptation and training practices performed with the use of appropriate tools and programs. Among the most laborious recruitment functions stand communication with potential candidates, testing and interviewing, especially in cases of mass recruitment. Specialized programs that process CVs, build ratings, conduct video interviews and online testing to optimize recruiter's work. The advantages of chatbots and messengers for adaptation digitalization are pointed out. Most executives have a positive attitude to the transition to new automated HR methods. The role of e-learning and software training is outlined, and the advantages of webinars, test constructors, and distance learning implementation are analyzed. It is noted that one third of Russian companies are actively automatizing employee training and development technologies. The article also highlights the most important personnel management processes that demand digital transformation in the first place. The automatization necessity of management accounting, effectiveness analysis of the current HR system, and benefits calculation is justified. Gamification advantages are outlined, as they are used in adaptation, training and personnel assessment processes. Senior management, HR executives and information services role in moving to a new level of personnel management is emphasized. VTB, VTB 24 and Sberbank spendings on automated HR systems are reasoned. Conclusions on the need to invest in digital transformation of HR processes are drawn.

Keywords: personnel management, technologies, digitalization, process.

1. Introduction

The high competitiveness level in the era of global digitalization dictates the transition to automated personnel management technologies. The growth of requirements for professional competencies, unique abilities, and multi-potential of employees in modern organizations has made HR processes transformation vital.

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The purpose of the study is to analyze trends and forecast prospects in the field of digital transformation of personnel management technologies.

As the business develops and the staff expands, HR processes and the volume of analytical data are becoming more complex. The issues of personnel accounting, calculation of compensation and benefits, staff recruitment, adaptation, assessment, and training are updated. The introduction of multi-functional automated programs allows optimizing the entire cycle of personnel management. Automated programs have a number of advantages: functions and time optimization, a better level of HR decision-making, increased accuracy and reduced complexity in working with big data, reasonable use of staff potential. Automatization of routine operations allows professionals to spend more time on developing new ideas and promising goals for business development.

2. Methodology and Methods

The purpose of the study is to analyze and identify HR technologies digital transformation level. Data obtained from the study is based on the results of SAP and Deloitte report presented at the SAP Forum in 2019. The survey covered 434 companies in various fields of activity, with staff from one hundred to ten thousand employees. The goals of SAP and Deloitte survey were to identify the stage of digitalization among Russian companies and personnel management processes automatization level. The analysis of HR processes automatization is also based on the online survey of HR specialists from 487 Russian and foreign organizations conducted by the international recruitment company Hays. In 2019, Hays presented the final report on the “Research of IT technologies in the field of HR” results [7]. The purpose of the survey was to identify the most automated areas of the personnel management system.

3. Results and Discussion

SAP and Deloitte note that automatization level of personnel management processes directly depends on the size of the company. The automatization evaluation is based on the following principles of ranking. The first and the lowest level include companies with a paper approach to personnel management. The second level involves partial automatization of HR processes. The third level requires a high percentage of HR technologies digitalization. The fourth category includes companies with a full cycle of HR system automatization. The larger the company, the greater the need for automatization

of all processes. Dependence of the HR technologies digital transformation level on the size of the company is reflected in table 1.

TABLE 1: Dependence of the HR technologies digitalization level on the size of the company

digitalization level	number of staff, people
the first: paper approach to personnel management, non-structured processes	up to 100
the second: partial automatization of HR processes, using different systems for different types of data, no unified data processing system	100–1000
the third: HR processes standardization, unified data base, opportunities for access to data from all the range of mobile devices	1000–10000
the fourth: artificial intelligence implementation to management; data of analysis, optimization and forecast; unified interface; additional applications	more than 10000

We conclude that, as the company grows, it becomes necessary to standardize processes and create a unified database for their analysis, control and evaluation.

The study revealed the most automated areas of activity. The need for digitalization of the entire HR cycle is highly relevant for the financial industry, metallurgy, mining, and information technologies (the fourth level according to SAP and Deloitte). Automatization of technologies for personnel management processes is rapidly occurring in such industries as medical, media, Internet, and retail (the third level according to SAP and Deloitte). The obtained data on the HR technologies digital transformation degree depending on the sphere of activity of companies is presented in table 2.

TABLE 2: Digital transformation level of HR technologies depending on the company's sphere of activity

digitalization level	company's sphere of activity
the first: paper approach to personnel management, non-structured process	energy sector, construction, education
the second: partial automatization of HR processes, using different systems for different types of data, no unified data processing system	oil, gas, manufacturing, professional services, transport, logistics
the third: HR processes standardization, unified data base, opportunities for access to data from all the range of mobile devices	Retail, medicine, media and the Internet
the fourth: artificial intelligence implementation to management; data analysis, optimization and forecast; unified interface; additional applications	Finance, banking, metallurgy, mining, information technologies

Large-scale industries such as oil and gas, energy and construction, and the education sector (second and first level according to SAP and Deloitte) lag behind in HR technologies digitalization. According to received data, more than 50% of employees still print out, sign and submit documents to the HR department. At the same time,

companies are implementing electronic document management. There is no unified database in 35% of companies, and manual analysis of HR processes using standard applications is performed in 60% of them. As a conclusion, we can note that the problem of HR technologies transition to the digital level is becoming more and more relevant today, especially for large businesses.

Let's take a closer look at the recruitment, adaptation, and training automatization practices.

The expansion of company's activities is always connected with the issues of hiring and selecting the required professionals. Personnel assessment is the most important and laborious tool in the activities of HR services [1]. The recruiter's task is to identify the relevant personal and professional qualities of employees. An important factor is the closing time of the vacancy. The functions of the recruiter involve daily calls with candidates to discuss questions typical for the vacancy. The use of information technologies has made it possible to optimize this function. Automatization of the recruitment process is particularly relevant for mass recruitment to large trading companies. Special programs are also widely used in recruitment agencies, allowing creating a database of people looking for a job. The most popular modern recruitment programs are Huntflowe, Cleverstaff, E-Staff Recruiter, Asper — a SaaS system, TalentScan platform, Experium service, FriendWork Recruiter, Skillaz, Hrscanner.

The advantages of information systems include not only saving recruiter's time, but also maintaining statistics, processing responses, analyzing online testing responses, conducting a comprehensive video interview, saving candidates' stories, building candidates' ratings, identifying duplicated resumes, and creating up-to-date databases [3]. Functional automatization results in minimizing the time for closing a vacancy and improving the performance of the HR department. In reality, the recruitment block of modern Russian companies is only 4% automated. A chatbot has been introduced and actively used in 6% of Russian organizations. There is a strong demand for the E-Staff Recruiter system for digitalizing the recruitment process. In future, 20% of companies plan to implement software servers. The reviews on internal job portals such as Potok and FriendWork Recruiter are mainly positive. The advantages of SAP HRM are noted, but the high cost of the program does not allow its implementation in smaller companies. Today, SAP is installed in such companies as LUKOIL, GAZPROM, Rosneft, and Severstal. Medium-sized companies prefer to implement Huntflow and Experium programs. HR specialists note the advantages of the Workday and GoRecruit programs. According to Hays research, the recruitment block is automated in 41% of companies.

After actually hiring, new staff adaptation is the next step. It is important to note that according to statistics, 90% of people who left the company in the first working year there, the main reason for resignation is the lack of adaptation programs [5]. Staff adaptation is primarily aimed at the new employee's comfortable integration into the corporate culture of the company, in the environment in which he will work. Automatization of adaptation programs allows reducing the time for a newcomer to adapt to the rules, business tasks, work team, and to understand the prospects and his or her own role in the company. An innovation in adaptation is onboarding, which allows you to get acquainted with the main values of the company before starting to work. After the employee receives an offer, but will not still start performing his or her duties, having the "minus first day", a chatbot will tell him or her about the required set of documents, remind the address, make an introduction to the corporate culture and will forward links to main social networks, in order to prepare an employee for the first working day. Chatbot is a technology that allows users to get corporate services or answers to questions by manipulating messengers. The script chatbot contains the logic of answers to standard questions. You can use a chatbot with a neuro-network that allows the user to ask all sorts of questions. In this particular scenario, artificial intelligence must understand the request and formulate a logical response. The bot sends the newcomer an invitation to lunch. At the same time, working employees receive a message that a new employee has come to the company, to whom they should pay special attention and support. Automatization of adaptation processes allows using the LMS (Learning Management System) for online learning [2]. An employee uses recommended links to take training video courses, interactive business games, trainings from leading professionals, and a film instruction on information security. It is possible to view the downloaded training package from a computer or a phone at any suitable time. In personal account, an employee can track his or her level, progress, and postpone interesting courses for future viewing. The Manager in the personal account has an opportunity to assess the progress of a newcomer, whether he/she has viewed all the courses, to propose topics of interest, to determine the potential and to make recommendations [9]. The automated system allows several expert mentors to write a review at the end of the trial period, making it possible for HR professionals to make a balanced final decision on a new employee. As a result of adaptation digitalization, a new employee with the help of chatbots, the LMS program, and online progress assessment starts performing business tasks much faster and successfully joins the company. Process automatization encourages experience and initiative sharing.

According to SAP and Deloitte, only 14% of HR specialists work with automated adaptation programs. Hays notes that evaluation, adaptation and training unit is automated in 34% of the companies that participated in the survey. Most HR managers are planning to implement automatization of adaptation programs in the nearest future, which will allow creating an action plan depending on the position of the new employee [10]. The most popular digital adaptation programs are Matrix and Workday. Respondents note the advantages of SAP and Looop. Most companies use corporate social networks to optimize internal communications (Workplace by Facebook, DaOffice), intranet (IBM WesSphera, Oracle WebCenter Suite, MS Sharepoint), chatbots, online radio and messengers (WhatsApp, Telegram, Skype).

The success of an enterprise directly depends on its employees' performance. Investing in professional development brings the company more profit than investing in the production facilities improvement. An employee armed with new knowledge can generate new ideas and easily cope with a wide range of problems [4]. Electronic or software training allows combining audio, video, and text materials. The ability to choose a convenient time and place for the listener while saving an employer's money is a definite advantage. During the webinar, online communication allows you to ask a clarifying question and get comments. If an employee has important tasks to cope with and cannot listen to the lecture, it is always possible to watch it in the recording. The test constructor allows quickly checking the knowledge level and adjusting recommendations for professional growth through testing [6].

Chatbots help to organize the training process, send messages about dates, timetables and professors, answer questions, and register employees for selected training courses 24 hours a day. An electronic distance learning system completely immerses an employee into the educational process. Advantages: all the materials remain in an electronic form for students to have access to, automated verification of acquired knowledge, archive of training courses, technical support, thematic forums, blogs, and free access to any type of content. According to SAP and Deloitte, only 7% of employees are trained on the basis of an automated system. However, Hays reveals more optimistic indicators: more than 30% of companies are actively implementing training technologies automatization. Positive reviews on the results of training digitalization were left by 74% of managers. It is also important to note the trend towards gamification implementation in learning. 21% of companies use gaming technologies in personnel development.

According to the Hays research, top-priority HR processes in digital transformation are HR accounting — 72% of respondents, efficiency analysis of HR processes —

61%, compensations and benefits systems — 49%. The results of the survey on the importance of automatization of HR technologies are presented in table 3.

TABLE 3: Top-priority HR processes requiring automatization, according to respondents.

HR processes	importance of HR processes automatization, % of respondents
personnel record	72%
working time estimation	66%
HR systems efficiency analysis	61%
compensations and benefits	49%
recruitment	41%
assessment	42%
adaptation	40%
training	41%

It is important to note that as many as 95% of managers and CEOs understand the relevance of personnel management digital transition. A small part is satisfied with the current situation or considers it right to outsource HR functions. The most popular program to apply in practice is Excel. A final decision on digitalization implementation remains the responsibility of the CEO and top managers. An important role is played by the company's HR Director and IT services. The mutual cooperation of senior management, HR and IT plays a crucial role in the HR technologies digitalization level.

A united VTB and VTB 24 Bank, with almost 60 thousand employees, is implementing a project to automate personnel management at a total cost of 479.2 million rubles. The project is set for three years — from 2019 to 2021. Sberbank uses SF worth 300 million rubles for 230 thousand employees [8].

4. Conclusions

The majority of large companies implement automated programs to optimize HR technologies. Medium-sized companies also strive for it, understanding the advantages and benefits of the programs.

Additional features of artificial intelligence are actively used in the financial sector, metallurgy, mining and in IT.

Top-priority areas for digitalization are HR accounting processes, HR analytics, and compensation calculation.

When implementing recruitment and adaptation programs, chatbots are definitely popular, helping an employee to learn information about the company's values in a short time and get into work faster.

LMS (Learning Management System) is actively used for online training of new and current employees. HR gamification is also a priority. Gaming technologies are used by 69% of companies for employee development, 24% for evaluation, and 59% for adaptation programs.

SAP is the most promising program to analyze the effectiveness of HR technologies. However, a high cost does not allow its implementation in smaller companies.

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