

# Analysis of the possibility of applying the concept of "HR Zero" by Belarusian organizations

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**Abstract.** Digitalization of human resource management technologies represents the process of transformation of the traditional human resource management system through qualitative changes in its functions, achieved by combining information and communication technologies with the competencies of personnel of HR office, its processes and operations, allowing the use of personnel data in digital form, automate human resource management processes and operations that do not require managerial decisions, and introduce digital technologies in order to improve the working environment and working conditions, increase labor productivity, speed and quality of management decisions, which in general will have a positive impact on the effectiveness of the organization as a whole. These changes involve the transition of human resource management to the "HR 3.0" level and the application of the "HR Zero" concept - the principle of organizing human resource management processes in the company, which allows automating key personnel procedures, delegating part of the functions of HR specialists to line managers and creating a flexible organizational environment. The purpose of the study was to establish the possibility of applying the concept of "HR Zero" in Belarusian organizations. To achieve this goal, the following tasks were solved: obtaining data and forming an empirical research base; analyzing changes in the skills of HR specialists; assessing the compliance of HR specialists' competencies with labor market requirements; classifying competencies and analyzing the possibility of automating HR operations. During the research, the method of nonparametric analysis was used and Spearman's rank correlation coefficient was calculated. The analysis made it possible to conclude that at this stage the concept of "HR Zero" in Belarusian organizations is applicable in fragments, for individual operations, this is due to the specifics of the work of HR specialists and the requirements of the Belarusian labor market, as well as the general level of digitalization of domestic organizations.

## 1 Introduction

One of the main trends of the modern economy is the digitalization of human resource management technologies. This process can be described as the transformation of a

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traditional human resource management system through qualitative changes in its functions, achieved by combining information and communication technologies with the competencies of personnel of HR office, its processes and operations, which allows the use of personnel data in digital form, automate processes and operations of human resource management that do not require managerial decisions, and introduce digital technologies in order to improve the working environment and working conditions, increase labor productivity, speed and quality of management decisions, which in general will have a positive impact on the effectiveness of the organization as a whole.

Digitalization of the organization's business processes, in particular automation of operations carried out by HR specialists, served as the starting point of such a direction as "HR Zero" - the principle of organizing human resource management processes in the company, which allows you to automate key personnel procedures as much as possible, effectively delegate part of the functions of HR specialists to line managers [4].

Analysis of the development of human resource management processes in large European organizations suggests their transition to the "HR 3.0" level [1, 3].

According to research conducted by Russian companies Deloitte and SAP CIS in 2019, the average index of digitalization of HR processes is 1.83 (with the maximum possible index equal to 4), which corresponds to the transition from the level of "HR 1.0" to "HR 2.0" [5-8]. If we consider this indicator by the level of automation, then it reflects the state of "HR on paper" and "Fragmentary digitalization". For comparison, the digitalization index of foreign companies in a similar survey was 2.08 (the transition from "HR 2.0" to "HR 3.0"). At the same time, banking and financial organizations, metallurgy and mining, IT and telecommunications turned out to be the most progressive in the digitalization of personnel work. The most "non-digital" industries are education, construction and energy.

An analysis of the few publications on the digitalization of the personnel work of Belarusian organizations allows us to conclude that the most advanced areas in this direction are the banking sector and the IT industry [2]. Their level is the transition from the level of "HR 1.0" to "HR 2.0".

The purpose of the research conducted by the author was to establish the possibility of applying the concept of "HR Zero" in Belarusian organizations.

To achieve the purpose of the study, the following tasks were solved:

- obtaining data from resumes of HR specialists, vacancies of employers' organizations of the Republic of Belarus and the formation of an empirical research base;
- analysis of changes in the skills of HR specialists over the past eight years;
- assessment of compliance of HR specialists' competencies with the requirements of the labor market (according to the data of 2021);
- classification of competencies and analysis of the possibility of automation of HR operations.

The following scientific methods were used: general scientific and economic methods of analysis, the method of nonparametric analysis, methods of grouping, comparative and factor analysis, averages and classifications.

## **2 Analysis of the competencies of HR specialists of organizations of the Republic of Belarus**

Obtaining data from resumes of HR specialists and vacancies of employers' organizations of the Republic of Belarus was carried out according to the author's methodology for extracting, cleaning, classifying and analyzing information from online job search sources using Big Data and artificial intelligence technologies [9]. According to this technology, an empirical base has been formed, including 1148 competencies, out of 517 vacancies and 1002 resumes received for positions corresponding to the codes of the initial group of classes 1212 "Heads

of structural divisions for personnel and labor relations", 2423 "Professional specialists in the field of recruitment and use of personnel", 2424 "Professional specialists in the field of personnel training and development", 4416 "Specialists in maintaining HR records" according to the National Classifier of the Republic of Belarus "Occupations" (OKRB 014-2017), harmonized with the International Standard Classification of Occupations 2008 (International Standard Classification of Occupations 2008, ISCO-08) at the level of four characters of the code. When forming the research database, the problem of selecting, interpreting and grouping the positions required for analysis is solved with the help of machine learning.

At the second stage of research on changes in the skills of personnel services specialists of organizations of the Republic of Belarus that occurred from January 2014 to December 2021, the method of nonparametric analysis was applied and the Spearman rank correlation coefficient was calculated [10] (Table 1).

**Table 1.** Analysis of changes in the skills of HR specialists.

Competence	2014, %	2021, %	Deviation, +/-	Rank, 2014	Rank, 2021	d
PC user (knowledge of office programs)	20.8	11.0	-9.8	25	25	0
Recruitment of personnel	2.3	4.0	1.7	1.5	19	2.5
HR records management	19.5	9.4	-10.1	24	24	0
Organizational skills	2.1	3.1	1	15	17	2
Teamwork	3.9	5.4	1.5	20.5	22	1.5
Administration of employment, transfer and employment termination	2.0	3.1	1.1	13	17	4
Personnel onboarding	0.0	3.1	3.1	6	17	11
Personnel training and development	0.0	4.5	4.5	6	20	14
Personnel management	3.9	2.7	-1.2	20.5	15	-5.5
Evaluation of personnel and candidates	2.0	2.5	0.5	13	13	0
HR document management	4.2	7.7	3.5	22	23	1
Registration of workbooks	0.0	2.2	2.2	6	9	3
Knowledge "1C: Enterprise 8. Salary and personnel management"	9.4	2.6	-6.8	23	14	-9
Team Management	2.0	2.2	0.2	13	9	-4
Registration of sick leave and vacations	0.0	2.2	2.2	6	9	3
Working with a large amount of information	0.0	2.2	2.2	6	9	3
Business correspondence	0.0	2.2	2.2	6	9	3
Military registration	0.0	2.2	2.2	6	9	3
Educated speech	0.0	2.2	2.2	6	9	3
Business conversation	0.0	2.0	2	6	4.5	-1.5
Corporate culture	0.0	2.0	2	6	4.5	-1.5
Business communication	0.0	4.7	4.7	6	21	15
Knowledge of personnel legislation	3.6	0.0	-3.6	19	2	-17
Ability to work with office equipment	2.3	0.0	-2.3	1.5	2	-14.5
Driver's license of category B	2.9	0.0	-2.9	18	2	-16
Other	19.1	16.8	-2.3	-	-	-

d is the difference between the ranks.

Source: compiled by the author on the basis of Belmeta.com , Rabota.by and GSZ.gov.by as of 17.03.2022.

The static significance of the rank correlation coefficient was determined using the calculated t-Student coefficient. At the same time, the rank correlation coefficient was 0.418, the calculated t-Student coefficient was 2.207, the tabular t-Student coefficient was 2.011 (with a degree of freedom of 48 and a coefficient significance level of 0.05).

The analysis of the obtained correlation coefficient allowed us to establish that there is a moderate direct relationship between the competencies of 2014 and 2021, since the rank correlation coefficient is in the range of 0.3-0.5. The hypothesis that Spearman's rank correlation coefficient is zero is rejected, which indicates a statically significant rank correlation coefficient and a significant correlation relationship.

Since a moderate relationship has been established between the competencies of 2014 and 2021, the object of further analysis was the skills of specialists whose rank difference exceeded 3 points (with positive and negative dynamics). One part of the competencies with positive changes is in the nature of personnel procedures, i.e. it represents a narrow area of specialist activity (registration of sick leaves, vacations, workbooks, etc.). The other part is a consequence of the transformation of business processes (for example, working with a large amount of information). Competencies with negative tendencies are "mobile", i.e. migrating to other positions.

As a result of the analysis of changes in the competencies of HR specialists of organizations of the Republic of Belarus, it was found that: this direction meets the requirements of HR management of the organization to a greater extent than human resource management, i.e. HR specialists focus on local processes and disparate procedures, document management and personnel records management; and also revealed a trend of the transition of soft skills from HR specialists to the line managers of departments, and the hard ones – to the professionals of related areas, which corresponds to the trends in the transformation of human resource management functions within the digitalization of business processes during the transition from the HR 2.0 stage to HR 3.0 (HR Zero direction).

Further, the analysis of the compliance of the competencies of HR specialists available and in demand by the labor market of the Republic of Belarus was carried out. When studying data from resumes and vacancies in order to establish the strength and direction of the relationship between available and sought-after competencies, a nonparametric analysis method was used and Spearman's rank correlation coefficient was calculated (Table 2).

**Table 2.** Analysis of available and sought-after competencies of HR specialists.

Competence	Presented in		Rejection, +/-	Rank, resume	Rank, vacancies	d
	resume, %	vacancies, %				
PC user (knowledge of office programs)	11.0	12.4	1.4	31	31	0
Recruitment of personnel	4.0	4.0	0	25	25	0
HR records management	9.4	10.9	1.5	30	30	0
Organizational skills	3.1	0.4	-2.7	23	5	18
Teamwork	5.4	1.4	-4	29	1.5	12.5
Administration of employment, transfer and employment termination	3.1	4.2	1.1	23	26.5	-3.5
Personnel onboarding	3.1	0.9	-2.2	23	11.5	11.5
Personnel training and development	4.5	1.6	-2.9	26	19	7
Personnel management	2.7	0.9	-1.8	21	11.5	9.5

Continuation of table 2.

Evaluation of personnel and candidates	2.5	2.6	0.1	18.5	22	-3.5
Maintaining a timesheet	2.5	1.6	-0.9	18.5	19	-0.5
HR document management	5.2	4.7	-0.5	28	28	0
Registration of workbooks	2.2	1.6	-0.6	14	19	-5
Team Management	2.2	0.4	-1.8	14	5	9
Registration of sick leave and vacations	2.2	3.3	1.1	14	23.5	-9.5
Working with a large amount of information	2.2	1.2	-1	14	14	0
Business correspondence	2.2	1.4	-0.8	14	1.5	-2.5
Military registration	2.2	4.2	2	14	26.5	-12.5
Educated speech	2.2	0.7	-1.5	14	9	5
Business conversation	2.0	0.0	-2	9.5	1	8.5
Knowledge of corporate culture	2.0	1.2	-0.8	9.5	14	-4.5
Business communication	4.7	1.9	-2.8	27	21	6
Drawing up the staffing table	0.0	5.3	5.3	4.5	29	-24.5
Knowledge "1C: Enterprise 8. Salary and personnel management"	2.6	3.3	0.7	20	23.5	-3.5
Automation of personnel document flow	0.0	1.2	1.2	4.5	14	-9.5
Outstaffing	0.0	0.7	0.7	4.5	9	-4.5
Work in the Consultant Plus system	0.0	0.7	0.7	4.5	9	-4.5
Time management	0.0	0.4	0.4	4.5	5	-0.5
HR brand management in social networks	0.0	0.5	0.5	4.5	7	-2.5
HR Business Partner	0.0	0.2	0.2	4.5	2.5	2
Team building	0.0	0.2	0.2	4.5	2.5	2
Other competencies	19.1	26.1	7	-	-	-

Source: compiled by the author on the basis of Belmeta.com , Rabota.by and GSZ.gov.by as of 17.03.2022.

The coefficient of rank correlation of available and demanded competencies of HR specialists was 0.587, the calculated coefficient of the t-Student was 3.9, the tabular coefficient of the t-Student was 2.0 (with a degree of freedom of 60 and the significance level of the coefficient of 0.05).

The analysis of the obtained correlation coefficient allowed us to establish that there is a noticeable direct relationship between the available and demanded competencies of HR specialists (according to the data of 2021), since the rank correlation coefficient is in the range of 0.5-0.7. The hypothesis that Spearman's rank correlation coefficient is zero is

rejected, which indicates a statically significant rank correlation coefficient and a significant correlation relationship. That is, the analysis of available and demanded competencies is natural.

According to Table 2, digitalization requires specialists to possess modern HR tools that are already in demand by employers.

The assessment of discrepancies between the available and required skills of HR specialists was carried out by ranking competencies, establishing the sign and magnitude of the deviation in the ranks obtained. In the analysis of inconsistencies, the competence rank in vacancies was taken as the basic component. The analysis of the relationship between the available and demanded competencies of HR specialists allowed us to identify skills with signs of imbalance and classify them by lack and excess of competencies.

The digital skills necessary for the application of the concept of "HR Zero" are assigned to a group with a negative imbalance (except for "PC user (knowledge of office programs)") – they revealed an insufficient level of competencies available to specialists.

Then, with the help of artificial intelligence technologies, the identified competencies were grouped and systematized according to the ESCO international classifier (European Skills/Competencies, Qualifications and Occupations), which ensures the compatibility of resumes and vacancies according to the Interchange of Data between Administrations program (IDA) and the European Interoperability Framework (EIF) [11].

To correlate existing competencies with those in demand, it is advisable to use the ESCO classifier in these studies because: it provides a unified terminology for professions, skills, competencies and qualifications, reveals the actual competencies of each profession, and the multilingualism of the classifier allows you to accurately translate terminology into Russian.

According to the ESCO classifier, all competencies are divided into [12]:

- knowledge (K) corresponding to specific fields of activity;
- Language knowledge and skills (L):
- skills (S):
- attitudes and values.

In further studies, the identified competencies of HR specialists were distributed according to the category "Skills" (S1 – S8) and analyzed for the possibility of automating HR operations for which these skills are needed (Table 3).

**Table 3.** Analysis of the possibility of automation of HR operations by the skills of specialists/

Skills	Possibility of automation of operations
S1 (communication, cooperation and creativity): Teamwork Conducting business correspondence HR brand management in social networks Outstaffing Educated speech Business conversation Business communication Training and development	not possible
S2 (Information skills): Working with a large amount of information	completely possible
S3 (help and care): Maintaining military records Personnel onboarding	possible partially

Continuation of table 3.

<p>S4 (Management skills):                  Conducting personnel records management                  Personnel management                  Personnel document management                  Registration of workbooks                  Team Management                  Registration of sick leave and vacations                  Recruitment of personnel                  Evaluation of personnel and candidates                  Application of organizational skills                  Administration of employment, transfer and                  employment termination                  Knowledge of the basics of time management                  Team building                  Drawing up a timesheet                  Drawing up the staffing table                  Knowledge of corporate culture                  HR Business Partner</p>	<p>possible partially</p>
<p>S5 (working with a computer):                  Application of office programs on a PC                  Ability to work with "1C: Enterprise 8. Salary and                  personnel management"                  Automation of personnel document flow                  Work in the Consultant Plus system</p>	<p>completely possible</p>

Source: compiled by the author.

Grouping of the identified competencies of HR specialists made it possible to determine which skills, according to the ESCO classifier groups, are most in demand by the labor market. So managerial skills are in maximum demand among employers, followed by communication, cooperation and creativity skills, computer work is in third place, help and care are in fourth place, and information skills close the list.

At the same time, it is possible to fully automate operations that require computer skills and presented information skills. And operations on the skills of the S1 group "Communication, cooperation and creativity" are not automated.

### 3 Conclusion

In the course of the conducted research, it was found that the skills of personnel services specialists of Belarusian organizations meet the requirements of the organization's personnel management activities to a greater extent than human resource management. At the same time, the changes in the competencies of specialists that occurred from 2014 to 2021 reflect the transition of soft skills to line managers of departments, and hard skills to professionals in related areas, which corresponds to the trends of transformation of HR functions.

The study of the competencies of HR specialists demanded by the labor market made it possible to identify new skills in this profession: automatic staffing, automation of personnel document management, outstaffing, HR brand management in social networks, labor market analysis.

The analysis of the relationship between the available and demanded competencies of HR specialists allowed us to identify skills with signs of imbalance and classify them by lack and excess of competencies. Thus, according to the digital skills necessary for the application of the concept of "HR Zero", an insufficient level of competencies available to specialists was revealed.

The analysis of changes in the competencies of HR specialists, their compliance with the requirements of the labor market and the study of the possibilities of automation of HR operations allowed us to conclude that at this stage the concept of "HR Zero" in Belarusian organizations is applicable in fragments, for individual operations, this is due to the specifics of the work of HR specialists and the requirements of the Belarusian labor market, as well as the general level of digitalization of domestic organizations.

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