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Modernization of HR services driven by digitalization: example of Russian Railways

Master's Thesis

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ABSTRACT

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The aim of the dissertation is to study ways to improve HR services in the context of digitalization. Digital transformation entails a change in the role and functions of a company's HR department. Therefore, it is important to introduce technologies into the work of HR at all stages: from the search for employees to their implementation and further development. And since our world is constantly changing, the technologies used in the work of HR also change. This paper analyzes not only the impact of digitalization on HR but also discusses all the ways that will help companies to digitally transform the work of HR departments.

For the dissertation hypothesis, this analysis consists of the use of qualitative and quantitative methods with the involvement of company employees implementing Digital HR in their work. The methodological analysis included observation of the activities of HR of the services of a Russian company and data analysis using standard statistical methods.

The conducted research led to the identification of measures to improve the HR services of the company based on the analysis of existing HR services, the study of trends in Digital HR, and interviews of employees and potential employees of the company.

Thus, the proposed measures will help bridge the gap between the company's high strategic goals regarding the development of HR of the company's services and its current development as part of the transition to the digital economy. The recommendations presented in this work can be used for the development of HR services in any company that uses technologies in HR operations.

TIIVISTELMÄ

Tekijä: Kamilla Khairullina
Työn nimi: Digitalisaation ajamien HR-palveluiden nykyaikaistaminen: esimerkki Venäjän rautateistä

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Väitöskirjan tarkoituksena on tutkia tapoja parantaa HR-palveluita digitalisaation yhteydessä. Digitaalinen muutos merkitsee muutosta yrityksen henkilöstöosaston roolissa ja toiminnoissa. Siksi on tärkeää ottaa tekniikat käyttöön henkilöstöhallinnon työssä kaikissa vaiheissa: työntekijöiden etsimisestä niiden toteuttamiseen ja jatkokehitykseen. Ja koska maailmamme muuttuu jatkuvasti, myös HR-työssä käytettävät tekniikat muuttuvat. Tässä artikkelissa analysoidaan paitsi digitalisaation vaikutuksia henkilöstöresursseihin myös käsitellään kaikkia tapoja, jotka auttavat yrityksiä muuttamaan henkilöstöosastojen työtä digitaalisesti.

Väitöshypoteesin kannalta tämä analyysi koostuu kvalitatiivisten ja kvantitatiivisten menetelmien käytöstä, johon Digital HR: n käyttöön ottavat yrityksen työntekijät osallistuvat. Metodologinen analyysi sisälsi venäläisen yrityksen henkilöstön HR-toiminnan tarkkailun ja data-analyysin tavanomaisilla tilastollisilla menetelmillä.

Tehty tutkimus johti toimenpiteiden tunnistamiseen yrityksen HR-palveluiden parantamiseksi nykyisten HR-palveluiden analyysin, digitaalisen HR-trendin tutkimuksen sekä yrityksen työntekijöiden ja potentiaalisten työntekijöiden haastattelujen perusteella.

Ehdotetut toimenpiteet auttavat siten kaventamaan kuilua yhtiön korkeiden strategisten tavoitteiden välillä, jotka koskevat yrityksen palvelujen henkilöstöhallinnon kehittämistä, ja sen nykyisen kehityksen osana siirtymistä digitaalitalouteen. Tässä työssä esitettyjä suosituksia voidaan käyttää henkilöstöpalveluiden kehittämiseen yrityksissä, jotka käyttävät teknologioita HR-toiminnassa.

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1. Introduction

The digital economy is a system of economic, cultural and social relations based on the active introduction of digital technologies and the transition to a qualitatively new level of their use in all spheres of socio-economic activity. Significant changes in information and communication technologies affect all aspects of companies' operations.

The impact of technological progress on human resource management became an object of economic research long before digitalization. J.M. Keynes (Keynes, 2009) pointed out the duality of close interconnection: technological changes contribute to both the creation and elimination of jobs. In modern conditions, the development of robotics and artificial intelligence will lead not only to the elimination of some professions, but also to a significant change in the structure of labor demand (Arntz et.al., 2016; Benedikt et.al., 2017), which requires a revision of the entire educational policy, as well as making appropriate changes to the human resource management system.

Digital transformation entails changes in the role and functions of the HR department of the company. First, this division becomes strategic, directly involved in the management of the company. The HR department should propose new solutions with a focus on the company's human resources, give a professional assessment of management decisions by HR, etc. Second, human resource management is shifting closer to knowledge management. In turn, companies create conditions for the creation and exchange of unique knowledge. Thirdly, HR becomes an agent of changes in the company, transforming the behavior of employees in accordance with them.

Along with HR, the company is creating specialized units for talent, knowledge, and digital strategy management. Human resource management processes are being integrated into business processes. In the context of digitalization, HR helps companies adapt to digital thinking by updating basic technologies, developing a technological HR strategy, recruiting a team of specialists, etc.

Human resource management is one of the key areas that are undergoing modernization in the digital economy. The development of digital platforms and technologies, following the reorganization of the labor market, is transforming employment mechanisms (Bögenhold et al., 2017). Moreover, the very approach to interaction between employers and employees is changing. In a team, part of which works remotely, it is necessary to set tasks and exercise control in a

different way. Every year, the possibilities expand and various applications appear, adapted to the tasks of HR-management.

Every year there are more and more opportunities for the digitalization of HR. Companies develop platforms, applications, etc. to automate the daily tasks of HR specialists. Every year conferences are held in many countries where representatives of large companies gather and discuss the development of Digital HR in their organizations.

The use of technologies in HR allows the process of personnel selection, training, and adaptation, payroll calculation, ordering the necessary certificates, etc. to be transferred to the electronic field. All this also allows you to analyze a huge amount of data in order to use it more efficiently and create a personalized approach to each employee.

The dissertation aims to explore how digitalization affects HR and how companies develop their HR services using technology. Based on this, work describes:

- definition of the essence and basic concepts of HR digitalization;

- analysis of digitalization of the main functions of HR;

- determination of the consequences of HR digitalization for the company;

- analysis of trends in digital HR;

- study of the practices of introducing digital HR in the work of foreign and Russian companies;

- organizational and economic characteristics of Russian Railways;

- analysis of the HR services of Russian Railways;

- formulation of recommendations for improving the HR services of Russian Railways and justification of the effectiveness of these measures.

Studying the experience of using technologies in HR in the Russian Railways will reveal the directions of development of HR services for other Russian companies

1.1 Background

The focus of this dissertation work is the study of the application of technologies in the HR of the activities of companies, which was caused by digital transformation.

The digital economy is transforming the main HR processes: it simplifies mass recruitment procedures, the process of corporate training, and opens up new opportunities in the field of human resource efficiency management. In addition, the spread of digital technologies is increasing the demand for digital skills, setting new trends in education. Thus, today a clear competitive advantage is gained by those companies that are able to determine the practice of the future and, in accordance with this, implement new digital solutions, in particular in the field of HR.

However, companies need to determine what processes they can digitize, how they can do it, and how to train their employees. Unfortunately, there is no theory on how to apply technology in the HR, there are no step-by-step instructions. It is necessary to study the experience of companies that have already implemented such technologies, or do everything by trial and error. However, it is worth mentioning that such technologies are quite expensive.

Cooperation with Russian Railways made it possible to study the company's experience in using technologies in its operations in HR and to identify measures to improve HR services. The work also contains a literature review, an overview of trends in Digital HR, an overview of the implementation of technologies in HR in foreign and Russian companies.

1.2 Research gap

There is quite a lot of literature on HR, but there are not many articles on the use of technologies in HR or the digital transformation of HR. Basically, they describe the prerequisites for the transition to Digital HR, what this can lead to and what processes the company can digitize.

Also, some articles consider certain practices of introducing Digital HR into the work of companies. There are absolutely no works that would allow you to look at the Digital HR all over the world, familiarize you with the statistics of the use of technologies in different countries.

1.3 Research questions

To construct the study and convert the suggested aims and field of a review into explicitly defined priorities, two research questions were developed. The first research question this thesis seeks to address is:

Q1. Does digitalization affect the work of HR function?

The dissertation is based on the first research question, which is then expanded. When the current impact of digitalization on HR activities has been identified, it will be possible to identify current trends in this area. That in the future will allow to determine a number of measures to improve the HR services of the company.

Since there are many practices for the introduction of technologies in HR, the second research question is as follows:

Q2. If we say that the HR is changing under the influence of digitalization, then how can companies improve their HR services?

The answer to this question will help you understand how companies can keep up with the changes and improve the operation of their HR services. The answer to this question also involves studying the features of the digitalization of HR in different countries.

Research questions also help to find the connection between the theoretical part and reality. Because theory basically describes what digitization can lead to, not specific methods.

This is important because this analysis aims to identify technologies that can be used for the digital transformation of HR, which can be applied in Russian or foreign companies.

As mentioned earlier, both of the above research questions provide methods for identifying and evaluating a subject and its results. This structure was chosen to form a sequence of step-by-step steps that will lead from studying the theoretical part of digitalization in HR to current trends in Digital HR and to real practices of using technologies in HR and ways to improve them.

1.4 Scope of the research

Despite the fact that the main goal of this study is to propose measures to improve the HR services of a particular company, special attention will be paid to Digital HR all over the world. The

theoretical basis of the final qualifying work will be work in the field of Digital HR through various scientific articles, journals, reports. In addition, a survey was conducted among potential employees of Russian Railways.

The theoretical basis of the final qualifying work will be as follows:

- theoretical foundations of digitalization of HR, as well as various scientific journals;
- reports in the field of HR of international consulting and audit companies;
- the essence and forms of digital transformation of HR at the enterprise;
- features of the mutual influence of information technology and human resource management at the enterprise;
- determining the role of introducing digital HR in the work of modern enterprises;
- key theories of the impact of the digital economy on the HR;
- the methods used by the authors in the field of research;
- HR management in the company;
- analysis of the main indicators of digitalization of the HR services;
- assessment of the economic efficiency of promising areas for improving the HR services using information technology in companies.

Delimitation of the empirical part.

The research will use statistical data from the Federal State Statistics Service, the financial statements and annual reports of “Russian Railways”, survey results, calculations of strategic alternatives.

- Development of directions for modernization of HR services in JSC "Russian Railways";
- Organizational and economic characteristics of JSC "Russian Railways";
- Analysis of HR services of JSC "Russian Railways";
- Assessment of the economic efficiency of promising areas of modernization of HR services of JSC "Russian Railways"

1.5 Structure of the thesis

The framework of this thesis is based on the logic of current research issues, while preserving the same scope of the topic. The study moves from theoretical to world experience in Digital HR, and

then to Russian and to the organization, in order to determine the results of analytical research. However, the aim is to limit and concentrate the area of investigation throughout the entire process and therefore offer the viewer with particular findings that may be supported and justified by the preceding parts of study. The research has a general theory component. The following is the thesis structure:

1. Introduction

2. Literature review

3. Theoretical foundations of digitalization of human resources management

4. Overview of implementing Digital HR on practice

5. Identified and assessed new alternatives for HR services of the company

6. Discussion

7. Conclusions and further studies

The last part contains proposals for further analyzes focused on the nature, limits and even actual research findings of the study. In addition, the future analysis should include an assessment of the findings of companies adopting the options to sum up the outcomes of the present study and offer new methods to improve the HR services inside the selected business.

2. Digitalization of Human resources management

Under the influence of many factors, the business is undergoing major changes, leading to a revision of management models. This is primarily due to conditions such as changes in consumer behaviour: the requirements for convenience and speed of making a purchase of goods/services without leaving home are increasing; the ability to access the assessment of the quality of a product/service by other consumers (purchase after receiving reviews); the ability to pay with modern electronic means of payment; receiving a product/service without visiting a store/company (in a specified place - at home, in an office) - all these requests are satisfied by the shift in the activity of companies from the Internet to mobile applications; the use of gadgets is becoming ubiquitous. There are more and more Internet and smartphone users, technologies are penetrating deeper into all spheres of life. All this stimulates the transformation of the business - the transition from a traditional "product" company to a technological one, the search for new management models, which are based on the formation of the company's digital strategy.

In turn, this encourages companies to change the work of HR as well. As the needs of the staff change in relation to the content and conditions of work (a balance shift towards freedom: the concept of personal and professional life increases the number of freelance workers). HR is becoming an engine for flexible work organization and forms of employment: non-typical organizational structures, temporary teams, project teams, remote jobs, temporary employment.

Digital HR is developing:

- increasing need in access to social networks and corporate resources from personal gadgets;
- development of social networks in corporate systems: social interaction with multimedia opportunities between project members and 360 ° feedback to connect with leaders;
- changing the structure of training: training according to the needs online store;
- availability of all types of training (video, audio, courses, presentations) "tomorrow" from any digital source;
- mobile employer new ways of effective recruiting;
- use and integration of third-party employee and jobseeker data from social media platforms;
- active use of artificial intelligence and big data in talent management;
- integration of Big Data with HR Digital;

- mobile applications as the main platforms for HR tools.

To explore in more detail how digital transformation has impacted HR, a literature review was conducted. Scopus and Elsevier were selected as scientific databases. HR OR HRM AND Digital were the keywords for the search. In general, the search made it possible to select 11 relevant articles (see Tab.1).

Table 1. Statistics on systematic literature review protocol

Database	**Keywords used**	**Search in (abstract, full text, keywords or else)**	**Time interval**	**Number of hits**	**Number of relevant**
Elsevier	“HR” AND services AND digital AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	6	0
	“HR” AND management AND digital AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	22	1
	“HRM” AND service AND digital AND trends AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	129	3
Scopus	“HR” AND services AND digital AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	1583	0
	“HR service” AND digital AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	25	4
	“Digital-HR”	Title, abstract, keywords	All time	15	1
	HRM AND services AND digitalization AND (LIMIT-TO (SUBJAREA , "BUSI"))	Title, abstract, keywords	All time	116	2
Total:				**1896**	**11**

There are quite a few articles about HR in the analysed databases. The main problem when looking for articles specifically about human resources (HR) was that this abbreviation is also used in medicine. Therefore, an initial search for the keyword "HR" yielded a huge number of articles. By adding additional keywords, it was possible to narrow down the search criteria. As a result, we were able to select 11 articles on how digitalization has impacted HR management and what it has led to. As a rule, the authors pay attention to how the HR functions have changed with using of technologies and what trends have influenced this. Few articles focus on specific case studies,

mostly analysis of existing literature. Only one article has conducted a comparative analysis of innovative technologies in HR that are used in companies in the United States and beyond. And one article focused on the fact that not all countries have the same level of technology implementation and therefore this also affects the digitalization of HR in companies.

Total result of the search for relevant papers by the keywords and full phrases within search systems of two databases gave 14 papers. After, excluding duplicate articles, as well as inappropriate articles, 11 articles remained for study. All of them contain information on the digitalization of services in the field of human resource management.

Relevant articles consider digital HR in different countries: India, Denmark, Turkey, USA, etc. Most articles were written in 2007, 2017 and 2020-2021.

There are no scientific articles that would describe the latest trends in Digital-HR and show the applicability of these trends in the work of companies in different countries. Therefore, the study was based on articles that described the impact of digitalization on human resources management in order to study which methods of digitalization of HR exist and which are used most often (see fig.1).

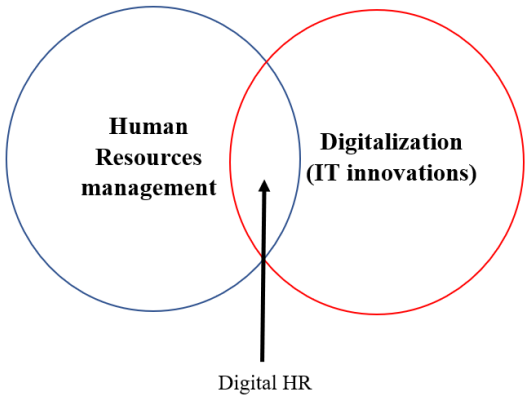


Figure 1. Field mapping

The systematic literature review addresses the question: How does digitalization affect HR services?

Due to the variety of articles about HR to answer the main question I will use additional questions for literature review:

1. What are the trends in Digital-HR?

2. How are trends applied in the work of companies in different countries?

The technique employed by Newbert S.L. in 2007 for his research on the resource-based view of the company inspired the methodologies for our systems review (Newbert, 2007). To avoid working with extremely varied and mainly useless material, Newbert's systemic literature search processes are seen as the most appropriate step by step. The literature search comprises of 8 phases after modification of the technique to our current investigation (see Tab.2)

Table 2. Number of research papers returned from the systematic literature review methodology

Database	**Step 5a**	**Step 5b**	**Step 5c**	**Step 5d**	**Step 6**	**Step 7**	**Step 8. Final**
Elsevier	84867	810	6	-	0	0	0
	84867	295	22	-	1	1	1
	2114	256	223	129	4	3	3
Scopus	656052	7421	1583	-	-	0	0
	117	25	-	-	4	4	4
	15	-	-	-	1	1	1
	28841	15552	116	-	4	2	2
Total:					**14**	**11**	**11**

To define the study field as HR were used keywords “HR” or “HRM” in order to eliminate irrelevant issues. Then to focus on the issues which study services of human resource management were used “HR AND services” or “HR AND management” or “HRM and services” depending on the number of search attempts. To focus on the issues that are considered when digitalizing the HR services search was provided with full phrases like: “HR AND services AND digital” or “HR AND management AND digital” or “HRM AND services AND digitalization” depending on the number of search attempts and database. And for 1 database one additional step was used: “HRM and services AND digital AND trends”.

The total result of the search for relevant papers by the keywords and full phrases within search systems of two databases gave 14 papers. After the elimination of 3 duplicates at step 7, the final number of relevant papers of the systematic literature search became 11.

Relevant articles were published in 2006, 2017 and 2020-2021. Most of it has been published in the last 2 years. Therefore, the authors of these articles pay special attention to the impact of the COVID-19 pandemic on the development of technologies and digital in HR in particular.

The synthesis technique was used by quality criteria in order to better grasp the major concepts in existing literature and to compare and summarize the results of the prior study about the digitization of HR services. Thorpe R. et al. recommended in the study on small and medium-sized businesses in 2005 the form of a quality synthesis used here. The technique required that all relevant research be divided into lists A, B and C. "A" has been classified as clearly significant studies. "B" is defined as research that a priori did not show its significance. 'C' was classified as less relevant or ambiguous investigations of the nature of the research (Thorpe R. et al., 2005).

Because adaptation and interpretation of Thorpe R. et al. method for current research required significant changes, description of quality criteria for including papers to A, B and C groups is considered below in an effort to identify distinct quality characteristics at the most beginning of the analysis. So, in our sample list A includes definitely relevant research papers that meet the following requirements (both of them):

- the article considers trends in Digital-HR;
- the article considers practices of Digital-HR in companies from different countries.

List B consists of partially relevant studies

- the article considers trends in Digital-HR OR practices of Digital-HR in companies from different countries.

Finally, list C includes less relevant studies with:

- the article contains general facts about Digital-HR.

According to the quality selection criteria by reading remaining abstracts and full papers the following distribution of research articles was determined:

1. List A – 3 papers.
2. List B – 5 papers.
3. List C – 3 papers.

Let's look at the main findings from 11 relevant articles.

1. Title: "Global reverberation and prediction for HRM amid and after COVID-19: A technological viewpoint".

Author(s): Sagaya Aurelia, Mujtaba M. Momin.
Year: 2020.

Country (s): India.

Source: Elsevier.

Code: DOI: 10.1016/j.matpr.2020.11.544

Analyzed sample: Worldwide companies.

The authors note that the covid-19 pandemic played the role of a catalyst and accelerated the introduction of technologies in all spheres of life, and the HRM was no exception. It was also noted that HRMs were not ready for such changes, however, many companies have made changes in their work. The following examples were presented of companies that have changed the HR process and introduced technology:

- DHL Freight Management has established a dedicated email touch point to answer the questions and complaints of employees. Coca-Cola organizes virtual team events, "Town Hall" and immersive meetings with key executives.
- With regard to the well-being of workers, Infosys (the Swiss office) has officially restricted all non-essential traffic and ordered that not less than 70% of its staff be allowed to operate from home. DHL Freight Management has also made teleworking official to shield its staff from infection risks.
- By developing Desk Yogi as a tool for stress relief, Takeda took control of the mental wellbeing and inspiration of its staff. Similarly, HR uses Headspace (meditation apps) at Sprinklr.
- In its Corporate WeChat IM Channel, Covestro has taken steps to motivate employees with quick queries.

Companies will have to continue integrating technologies with HR to concentrate on staff wellbeing and good health, versatility in the workplace, support learning process, enhancement of skills, and more.

2. Title: "The diffusion of human-resource information-technology innovations in US and non-US firms".

Author(s): Gary W. Florkowski, Miguel R. Olivas-Luján.

Year: 2006.

Country (s): USA, Mexico.

Source: Scopus.

Code: DOI: 10.1108/00483480610702737

Analyzed sample: sample of US, Canadian, UK and Irish firms

The authors identified 8 information technologies that are transforming the provision of HR services:

- functional HR applications;
- integrated HR package applications;
- interactive voice response system (IVR);
- HR intranet applications;
- self-service applications;
- HR extranet applications;
- HR portal applications.

On the basis of these forms of IT, the expertise of applying these technologies in companies in the US, Canada, Ireland, and UK were studied and subsequently analyzed. This is because the distribution of IT in HR in countries and among countries is not very well understood. The tendency and obstacles to the use of special technology may also vary locally.

The analysis showed that the number of acquired HRIT is directly related to the size of the company and there are peculiarities in the implementation of these technologies. However, there is a gap in the dissemination of data and the authors could not fully compare and justify the spread of IT in HR within the countries.

3. Title: "Digital transformation of human resource management: Digital applications and strategic tools in HRM".

Author(s): Pelin Vardarlier.
Year: 2020.
Country (s): Turkey.
Source: Scopus.
Code: DOI: 10.1007/978-3-030-29739-8_11
Analyzed sample: Scientific articles and books, reports of companies in the field of audit, data of Turkish companies.

Today the use of digital HRM is required for all businesses and calls for a reform of the guidelines for managing human resources. The digitization of the HRM calls for the digitization of the whole work, not just the use of computers. This includes digitalization of operations such as market analysis and assessment, salary processing, education and training management, corporate relations, data and information managing, recruiting, efficiency and brand management. However,

not all companies can implement digital solutions, in the same way, it also depends on the level of development of the country.

The author also highlights the rules of HR, which should change under the influence of digitalization (see fig.2).

Table 11.2 Changing rules of human resources

Old rules of human resources management	New rules of human resources management
HR departments focus on process design and integration to create standard HR applications.	HR departments focus on optimizing employee productivity and commitment, team work.
HR chooses ready-to-use applications to track the system with the cloud computing system. It uses the cloud management model.	HR creates software programs that follow the learning process from an innovative perspective and develops new applications.
HR technology teams focus on integrating ERP applications.	The HR technology team focuses on developing digital capabilities, competencies and mobile applications aimed at "productivity at work".
HR excellence centers focus on process design and process excellence. Process management ensures the correct structuring of human resources functions.	HR excellence centers take advantage of chat applications and other advanced technologies to evaluate and strengthen employees. It is expected that the number of messaging applications will increase.
HR programs are designed to meet and maintain scale requirements worldwide.	HR programs create career maps related to careers and career management by targeting employee profiles.
HR focuses on "self-service" as a way to scale services and support.	HR focuses on "activity" to help people do things in more efficient and productive ways.
HR creates a "self-service portal" that runs as a technology platform that makes it easier to find process requirements and schedules.	HR creates an integrated "employee experience platform" using digital applications, case management, AI and bots to support continuous employee needs.

Figure 2. Changing rules of HR (Vardarlier, 2020)

4. Title: "Disrupted HR?".

Author(s): Dana B. Minbaeva.

Year: 2020.

Country (s): Denmark.

Source: Elsevier.

Code: DOI: 10.1016/j.hrmr.2020.100820.

Analyzed sample: Scientific articles and books, reports of companies in the field of audit and consulting, Nextdoor, Nokia, IBM.

The author says that everything in our world is undergoing changes, and the Covid-19 pandemic has impacted everything, especially on business. And HR as a functional element of any company also needs changes. However, at the moment, the situation is such that there is a huge gap between technological advances and the current skills of employees, and it continues to widen.

Dana Minbaeva identified 3 global mega-trends that influence the formation of the "future of work" and create "disruptions" in the work of HR because they require changes of the traditional approach.

1. The flexible workforce. As there is a misunderstanding, that working relationships must be kept in a small space and organized time.
2. The digitalization of business models. Need to make radical improvements to how HR generates value while converting the current center digitally.
3. AI and machine learning. HR lags behind other functions in the adoption of analytic technologies and big data analytics.

5. Title: "Gamifying employer branding: An integrating framework and research propositions for a new HRM approach in the digitized economy".

Author(s): Denise Marie Küppera, Kristina Kleinb, Franziska Völckner.
Year: 2021.
Country (s): Germany.
Source: Elsevier.
Code: DOI: 10.1016/j.hrmr.2019.04.002
Analyzed sample: Shell Explorer game.

As people live in a digital environment, companies are now increasingly thinking about how to attract, motivate and retain employees using digital tools. Therefore, companies are resorting to creating games. The gamification of the brand happens through the creation of "Serious Game". The authors define it as "a digital game that aims at educating players, where uses game elements to create an educational and entertaininggame experience and promotes cognitive lower- and higher-order thinking skills as well as affective learning, with the goal ofinducing positive behavioral changes in players".

These games allow you to familiarize a potential or current employee with the company and attract or retain him. The authors identified the following game elements that are important to work through when creating a game: goals (motivation, feedback, achievements), rules, choice (determining the degree of freedom of action), challenges (tasks for players that correspond to the tasks of a company employee), imagination (themes and plots of the game).

The article also provides a framework that can be used to create a game (see fig.3). It allows you to step by step define and prescribe the main points that are laid down in the concept of the game.

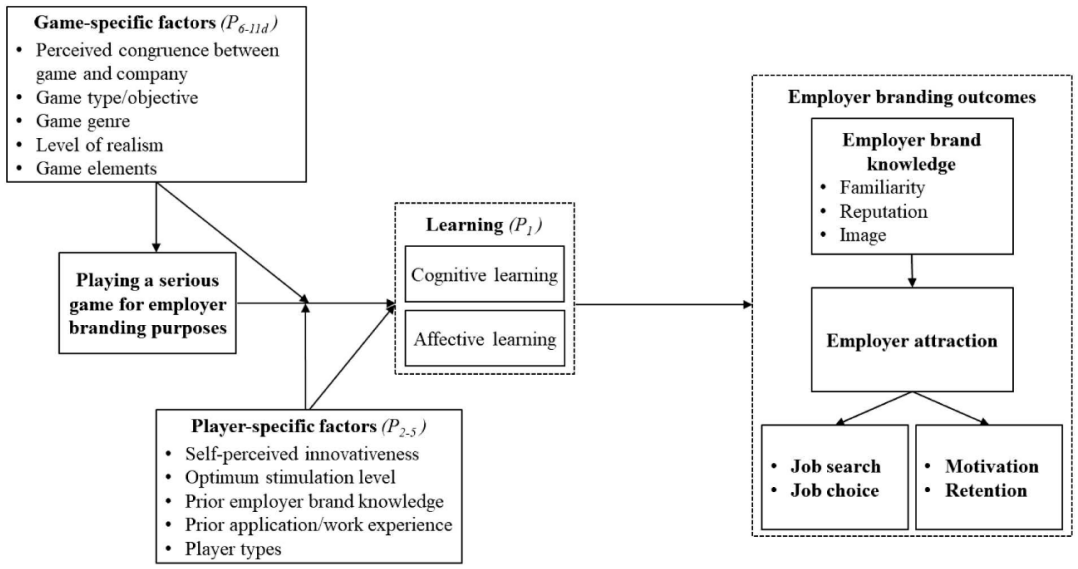


Fig. 2. Conceptual framework.

Figure 3. Conceptual framework of "serious game"

6. Title: "Do big data-driven HR practices improve HR service quality and innovation competency of SMEs".

Author(s): Surabhi Verma, Vibhav Singh, Som Sekhar Bhattacharyya.

Year: 2020.

Country (s): India and Denmark.

Source: Scopus.

Code: DOI: 10.1108/IJOA-04-2020-2128

Analyzed sample: 41 journal papers, responses collected from 148 SMEs in India.

Big data is now a competitive opportunity and commitment for companies in today's market. The use of "data" in HRM is necessary for the analysis of internal data (HR function) and external data (organization or market). This facilitates and justifies decision-making regarding personnel, for example, in hiring, talent management, etc.

There is currently not much literature on the use of big data in human resources management. However, the authors have proven that high-quality big data contributes to the development of innovative competence and methods of working with personnel. It also improves decision-making processes and reduce bias in HRM (improves HR policy and quality of services).

7. Title: "Digital human resource development: where are we? Where should we go and how do we go there?".

Author(s): Mohan Thite.

Year: 2020.

Country (s): Australia.

Source: Scopus.

Code: DOI: 10.1080/13678868.2020.1842982

Analyzed sample: Scientific articles and books.

Research results show that new technologies are not a key driver of progress in technology project management. Success depends on social and organizational factors. Technology is just a platform and cannot fix faulty systems or replace management skills. Therefore, it is important to analyze opportunities and threats, to determine strategic goals.

The author has identified 2 aspects that describe the state of the organization at a given time (see fig. 4). Thus, internal factors can both contribute to the successful and smooth implementation of technologies in the HRM and hinder. The same goes for external requirements. For example, if the company is multinational, it is necessary to take into account the specifics of different countries.

The author also pays special attention to the strategic side of digital HR and the consequences.

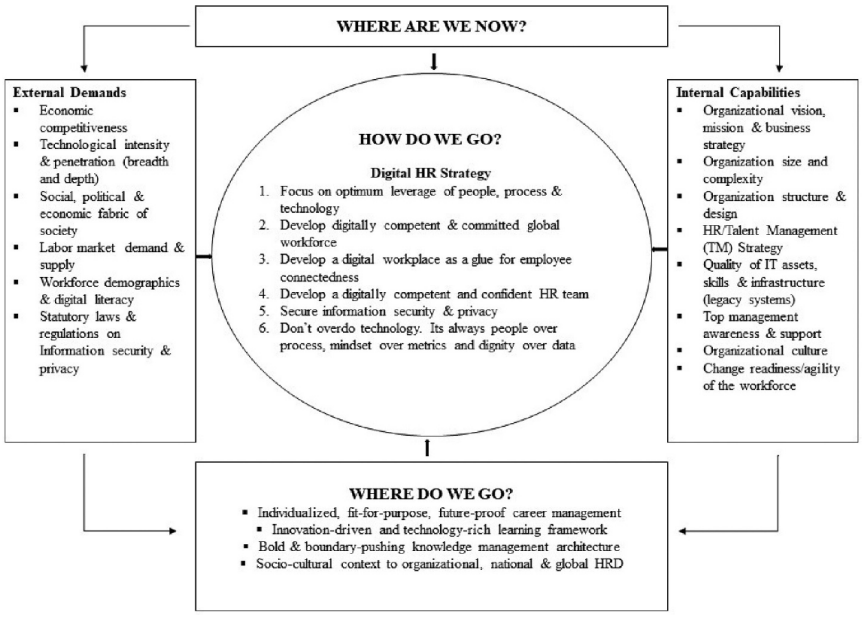


Figure 4. Framework of digital HR strategy (Thite, 2020)

8. Title: "Taxonomy of business value underlying motivations for e-HRM adoption: An empirical investigation based on HR processes".

Author(s): Placide Poba-Nzaou, Sylvestre Uwizeyemunugu, khadija Gaha, Mélanie Laberge.

Year: 2020.

Country (s): Canada.

Source: Scopus.

Code: DOI: 10.1108/BPMJ-06-2018-0150

Analyzed sample: online case stories of 146 firms.

The global market for e-HR applications is young, but growing. Despite the widespread adoption of electronic HRM in organizations, there is a lack of theory and research on these topics. The authors conduct research on the cases of 146 companies around the world that use electronic HRM in their activities. For this, 9 main processes of personnel management and key activities were identified (see fig.5).

Effect of e-HRM	HRM business process	Illustrative activities
Automate/ Informate	Analysis of work and design	Work analysis; job design; job descriptions
	Recruitment and selection	Recruiting, job postings; interviewing; testing and making hiring decisions; coordinating use of temporary labor
	Personnel policies	Policy creation; policy communication; record keeping
	Compensation and benefits	Wage and salary administration; incentive pay; insurance; vacation leave administration; retirement plans; profit sharing; stock plans
	Compliance with laws	Policies to ensure lawful behavior; reporting; posting information; safety inspections; accessibility accommodations
	Training and development	Orientation; skills training; career development programs
	Employee relations	Attitude surveys; labor relations; outplacement and relocation services
	Performance management	Performance measures; preparation and administration of performance appraisals; discipline
	Support for strategy	HR planning and forecasting
Transform	HR function	Restructuring the HR function

Source(s): Adapted from (Mooney *et al.*, 1996); (Johnson *et al.*, 2012); (Noël *et al.*, 2013); (Ulrich, 1997); (Ruël and van der Kaap, 2012); (Zuboff, 1988)

Figure 5. Initial framework of HRM (Poba-Nzaou et al., 2020)

The results of the study showed that 50% of the cases of e-HRM application fall on the automation of the HRM processes, 33% - on informing the HRM processes, 14% - the transformation of the HRM functions, 5% - the transformation of the entire organization.

The authors note that when introducing an electronic HRM, it is important at the initial stage to define a clear vision and "strategic goals", otherwise the strategic potential of these activities will not be realized.

Based on the 4 roles of Ulrich, the following models were identified, which reflect the main activities that underlie the motivation for the implementation of electronic human resource management:

- The role of an “Administrative expert” (work analysis, salary and compensation payments, recruitment and selection of personnel) - 44% of cases;

- The role of “Employee champion” (training and development, relations with employees) – 16%;
- The role of “Chsnge agent” (HR function, organistion) – 19%;
- The role of “Strategic partner” (strategy support) – 21%.

Thus, in the main, electronic HRM is implemented to build an effective infrastructure, and only then to create a renewed organization and implement a strategy.

9. Title: "Reinventing HR functions with SMAC technologies- an exploratory study".

Author(s): Anand Sengupta, Shweta Lalwani, Shubham Goswami, Prateek Srivastava.
Year: 2020.
Country (s): India.
Source: Elsevier.
Code: DOI: 10.1016/j.matpr.2020.10.875
Analyzed sample: Scientific articles and books, reports of companies in the field of audit and consulting, survey of 93 HR managers.

The Industry 4.0 Revolution is a driving force in changing how HR works. Now the digital transformation of HR can provide companies with a competitive advantage, as it allows them to work quickly and efficiently with all available information. So, it was revealed that the most common functions, the implementation of which has passed into the virtual field, are recruiting, training and development, performance management, compensation. There are also such functions as team management, employer branding, talent management, etc., whose activities are just beginning to undergo digitalization.

For 2018, the following trends in HR technology were identified: HR analytics, Gamification, Skyrocket (career tool), virtual and augmented reality, learning and development for global teams, etc.

10. Title: "Electronic HRM: four decades of research on adoption and consequences".

Author(s): Tanya Bondarouk, Emma Parry, Elfi Furtmueller.
Year: 2017.
Country (s): Netherlands, UK, Austria.
Source: Scopus.
Code: DOI: 10.1080/09585192.2016.1245672
Analyzed sample: scientific articles about e-HRM from 1970 to 2010.

E-HRM may, without any doubt, simplify and enhance; direct, manage, minimize and speed up the pursuit of the company and the employees' objectives. Based on literature review, the authors distinguish the following consequences from the using of e-HRM: operational (efficiency of personnel management, saving money and time), relative (improvement of personnel services, new communication channels with HR), transformational (globalization of HR within the company). The following considerations, however, should be weighed during the implementation of technologies: technology (business requirements and capability analysis), organization (company size, data access, resources), personnel (culture, communications, skills and experience).

11. Title: "Digitalization of Human Resources: e-HR".

Author(s): Elif Baykal.
Year: 2020.
Country (s): Turkey.
Source: Scopus.
Code: 10.4018/978-1-7998-0035-4.ch013
Analyzed sample: Scientific articles and books.

With e-HR, businesses are transferring their HR work into an easier and more systemized, digital format. The human resources role will better adapt to your company's higher strategies. Thus, the highest aim may be achieved in all operations in the company. However, e-HR or e-HRM is not just a use of the Network, but the creation of activities and structures which are consistent with the new tech.

The author emphasizes that the supporters of the use of technologies in HR argue that, in principle, all functions of HR can be supported by technologies. Some of the important and most common are electronic recruiting, training, mentoring, compensation, job evaluation, and e-career management.

Most of the authors in their works referred to the reports of companies such as Deloitte, PWC, Entertainment Software Association. Also, the experience of companies in the implementation of technologies in HR was studied from open sources. In the articles "The diffusion of human-resource information-technology innovations in US and non-US firms" and "Reinventing HR functions with SMAC technologies- an exploratory study", a survey was conducted among Czech managers to study the practices of implementing digital HRM in companies. To identify any relationship between technology adoption and company performance, etc. correlation analyzes were carried out.

I would give my preference to studying the reports of audit companies. Because the authors themselves noted that when conducting a survey among managers from different countries, incomplete answers or even deviations from answers from some countries could complicate the entire analysis.

The analysis of the articles made it possible to find out how the HRM has changed recently under the influence of technology, what factors influenced and what are the consequences of all this.

In general, the authors considered the automation of HR functions such as recruiting, training, compensation, communications, and performance management. Almost all authors noted that the introduction of technology in HR should be inextricably linked with the strategy of the companies. With digitalization, a strategy and goal must be defined, otherwise it is difficult to assess the impact and effectiveness of activities. Technology is not the main factor in the performance of technological project management. The performance instead is conditioned by organizational and social elements and actors, such as machine thought, resilience, user participation and approval, managing skills, teamwork, governance and cooperation of stakeholders. Therefore, it is important to approach this issue in a comprehensive manner.

Not all countries have the same level of IT development and this is important to consider when developing a digital HRM. The experience of employees and their openness to new things are also important, since the use of technologies in personnel management is not such a common practice. Most often, this can be done by large firms, where there are a large number of employees, and where the use of these tools will be justified. However, the COVID-19 pandemic has accelerated the process of digitalization of the HR activities and this has also influenced the fact that many companies, even the smallest ones, have automated their HR processes, even if not all of them

3. Theoretical foundations of digitalization of human resources management

3.1 The essence and basic concepts of digitalization of HRM

Accelerated technological development has revolutionized society and continues to influence and change the way organizations operate. This forces organizations and people to adapt to a rapidly changing world and leads to increased digital innovation. Digitization has become a buzzword and is seen as something that organizations need to embrace to stay relevant. However, despite the hype around the digital world, there is still no clear definition of what “digital” is. As Andersson, Lanvin, and Van der Heyden (2016, 52) have stated, “it is clear that the term digital is currently defiant... The lack of a clear definition of the meaning of this term suggests that questions regarding the required competencies, abilities, talents, and resources (including human resources) are surrounded by a similar veil of ambiguity".

Digitalization affects the organization at all levels and human resource management (HR or HRM) is no exception. Today's HR work includes simplifying and enhancing the employee experience through the integration of digital technologies, which has led to a new approach called digital HR, or Digital-HR, or e-HRM. In the Table 3 consider the approaches of different authors to the definition of these concepts.

Table 3. Analysis of the existing definitions of the concepts "Digital-HR" or "e-HRM"

Author(s) (source)	Definition
N. Verlinden (Verlinden, 2018)	Digital-HR is the use of social, mobile, analytic and cloud (SMAC) technologies aimed at improving the efficiency of personnel management and optimizing its functions.
T. V. Bondarouk and H. J. M. Ruël (Bondarouk and Ruël, 2009)	e-HRM as an umbrella term covering all possible mechanisms of integration and communication between HRM and information technology (IT) with the aim of creating value within and between organizations for target employees and management.
J. H. Marler and E. Parry (Marler and Parry, 2016)	e-HRM as a set of configurations of computer hardware, software and electronic network resources that enable planned or actual HRM actions (e.g. policies, practices and services) to be carried out by coordinating and controlling data collection at the individual and group level and the creation of

	information and communication within and beyond organizational boundaries.
S. Strohmeier (Strohmeier, 2007)	e-HRM is defined as the planning, implementation and application of information technology both to create networks and to support at least two individual or collective participants in their joint implementation of HR activities.
Forbes (Forbes Insights, 2016)	Digital-HR is an automated or online administration and provision of a range of services and data for human resource and human capital management.
E. Vulpen (Vulpen, 2018)	Digital-HR is a process optimization that uses new technologies to improve HR efficiency.

Based on the analysis of the existing concepts of "Digital-HR" and "e-HR (M)", it is clear that there is no single approach and the authors have different approaches to concretizing these concepts. Based on the definitions from the table, we can conclude that Digital-HR is the use of technology in personnel management to improve the effectiveness of HR and the collection, exchange, and control of information inside and outside the organization.

In addition to the above definitions, you can find several more concepts that clearly refer to the same phenomenon in earlier works. Commonly used terms are virtual HR(M), web-based HR(M), HR information systems (HRIS), or business employees (“B2E”).

Digital HR is the result of digital business transformation. HR digital transformation is the transformation of the way HR works using data to manage all HRM processes: work analysis and design, recruitment and selection, HR policy, compensation and benefits, legal compliance, training and development, employee relations, performance management, and strategy support (Noel et al., 2013).

There are two things to distinguish here: digitization and digitalization. Digitization is about moving from manual to digital processes. As a result of digitization, digitalization involves becoming a digitally-driven organization that uses digital tools in its daily activities. Digitalization involves the formation of a culture of using technology for doing business.

Studies have shown that the factors that determine the success of HRM digitalization fall into three categories (Bondarouk and Ruël, 2009). Table 4 shows and describes these factors: technological, organizational, and human factors.

Table 4. Factors influencing the success of digitalization of HRM processes

Factors	Description
Technological	1. Technological characteristics • Ease of use; • Versatility; 2. Data integrity; 3. System integration
Organizational	1. Organizational characteristics • Size of the organization; • Industry; • Size of the HR department; • Geography of activity; 2. Capabilities •Financial resources; • Planning and project management; • Data access, security, and privacy
Human	1. Support from senior management; 2. Acceptance by users • Age, educational level, gender, work experience; • Customer engagement

Sometimes certain tasks in a company, the industry in which it operates, affects the use of technology. For example, if a company has too much paperwork, or the geography is too large, or there is quite a lot of sweat of employees, then such an organization may more often use electronic HR. This simplifies work, makes all processes transparent, saves time and effort of employees.

The organization's size is also important when HRM services use technological tools. In deciding the usage of electronic HRM, the number of employees working inside a company, the level of control, the number of departments, and the organizational structure. Larger enterprises with too many staff, many hierarchy levels, and many managers are obliged to adopt e-HR online processes to facilitate the complicated and tiresome duty faced by human resources specialists working on a number of individuals and procedures simultaneously. The bigger the scale of the firm, the greater the workload. Mechanisms and techniques are needed to facilitate the job of human resources professionals.

Moreover, e-HRM is used increasingly frequently by organizations participating in global competition, in particular foreign firms. For the implementation of digital HR services, the requirements to cooperate with their partners and divisions in other locations and provide a higher degree of training to their staff are beneficial. We can experience reduced failure rates in e-staffing in such organizations since the staff is adequately trained and the features of their duties are compatible with networking processes.

The pressure from other rivals in the market at the industry level also may influence impacts the usage of e-HR. While many firms in the sector employ HR technologies, the rest of the firms also start using digital HR services to equalize opportunities. The workers of those organizations and other stakeholders would undoubtedly compare their business with other organizations adopting digital human resources, and this will lead the firm to undertake digital HR transformation.

Nevertheless, the efforts for digitalizing HR functions should not only not contradict, but also support the company's development goal. For example, it would be inutile to implement new job portals at enormous costs un a firm that has taken a cost-cutting approach. The HR Department should handle this issue more strategically by use of internal sources such as its own IT department. Indeed, strategic alignment needs to be achieved throughout the whole organization (both horizontally and vertically), particularly in essential areas like human resources, where the lives of employees and managers are very essential strategic goals.

Digital-HR is positively associated with both efficiency and effectiveness. By decreasing the time needed for documentation processing efficiency is obtained. The accuracy of the received and stored data is also improved. Efficiency is also a digital HR product, on the other hand. With the newest technology and fresh know-how, e-HR firms have the capacity to better, more timely, and more significant choices as Digital-HR has increased their organization's and its Members' potential.

So, the function of HR is becoming a strategic instrument that enhances the adaptability, flexibility, and competitiveness of firms that benefit from the latest HRM technology, HR apps, and computer programs. These tools are helpful in integrating daily tasks with an organization's strategic objectives. Using state-of-the-art technology for the HR function, firms may learn about the newest developments in HR and successfully integrate them with other organizational activities.

3.2 Digitalization of the main HR functions

If a company intends to digitize HR, it must also select the procedures that will be digitized by technology. Some firms can transform all processes, others selectively. Let's take a look at the most important and common HR functions that technology most often uses (Baykal, 2020).

1) Electronic (digital) recruitment (recruiting).

Due to its benefits in making it possible for HR departments to attract a large number of candidates at minimal costs, e-recruiting platforms have been quite trendy in these latter days (Faliagka, Tsakalidis, & Tzimas, 2012). Electronic recruitment performs the function of recruiting through Internet technology. The posting of vacancies, access to an online application form, and an existing Web database to store applicant's summary information, are all part of electronic recruiting (Brandão, Silva, & dos Santos, 2019). Also, large companies create their own career portals (Google, PWC, Russian Railways, Sberbank, etc.)

Advanced technology may be used to effectively evaluate the prospects via the recruiting process. Special screening tests, for instance, can be used through the internet, such as knowledge tests and personality assessments which give personalized recommendations on applicant competence to HR specialists and potential employees. Moreover, numerous preparatory methods can be used in electronic recruiting through the Internet to exclude candidates who are inappropriate. (Brandão, Silva, & dos Santos, 2019).

2) Electronic learning.

E-learning allows employees to gain the necessary knowledge in specific subjects, or specialties, using the Internet and distance learning platforms (companies create them themselves or buy subscriptions from third parties). This can be achieved through computer technology, podcasts, videos, multimedia, electronic books, email, and discussion panels (Amara, & Atia, 2016).

There are various terms for e-learning such as distance learning, virtual learning, online learning or network learning. Sometimes firms integrate knowledge sharing and virtual cooperation in their e-learning initiatives, usually incorporating any information-generation, communication, and enhancement systems. (Welsch et al., 2003).

Electronic learning enables flexibility during the duration that the student wishes to take advantage of training resources, simplicity of access, delivery on time, cheap costs, and great value (Esterhuyse & Scholtz, 2016).

In fact, the organization of this process requires 6 elements (Riahi, 2015):

- computer with Internet access;
- use of the system by employees and HR department;
- development of a training program for specialists;
- content creation by a teacher (often a specialist in the field);
- content management;

- management of learning, implementation of educational programs, and development of programs.

These processes are typically conducted by the human resources department or a specific institution or training organization specializing in the corresponding field.

3) Electronic mentoring.

Electronic mentoring provides flexibility in time management and scheduling through technology-based programming. It also helps to reduce the problem of geographic barriers. Using a computer or smartphone with Internet access allows you not to restrict people: it does not tie them to a specific place and time.

In classic mentoring, employees are assigned specialists with more experience, higher status, etc. These circumstances can influence the interaction between the mentor and the ward. In e-mentoring, most often the status is not indicated, which makes the interaction more comfortable (Baykal, 2020).

4) Electronic Career Management.

Computer and networked career management methods are key tools to detect and address staff development requirements. These arrangements allow chances to compare employees' knowledge and skills with the talents and qualifications necessary to accomplish current or prospective jobs (Rothwell et al., 2005). HR specialists aim to understand the qualities and skills of workers in standard career management programs, and normally categorize them according to their productivity, ambition, and career aspirations.

In addition, the staff is able to follow their individual working life activities through e-career management. Users can store their personal information, update their responsibilities, roles, or job change information. With the internet, people may search their companies for available roles that, if considered fit, will pave the door for advancements.

HR experts may maintain the necessary data for individual employees using e-career management solutions and collect the relevant information for building a pool of candidates for a given role.

5) Electronic compensation.

Electronic compensation, as it is called in foreign practice, can be described as the use of computer and networking technology to manage employee compensation (Swaroop, 2012). As a way to improve the functioning and disclosure of information, compensation and benefit assignment

processes in an organization, Dulebohn and Marler (2005) describe e-compensation using web-based apps.

The adoption of electronic compensation methods allows HR and line managers to access higher levels of data that can make compensation efforts more effective and accurate. The HR professional may also quickly address the employees' paperwork demands by having the information they need when they are needed, without having to wait lengthy times. The mistake rate of the HR compensation function may be reduced via electronic compensation as well. In companies with electronic compensation systems, for example, wages or other kinds of workers' benefits are less likely to be misinterpreted.

6) Electronic performance appraisal.

Electronic performance appraisal system may be characterized as methods for evaluating employee potentials, competence and productivity through the Internet by using online channels and apps of a corporation (Swaroop, 2012). All operations are online via electronic performance assessment systems.

All stakeholders involved in performance management have access to a web performance module in an electronic performance evaluation. It is the employee whose performance is evaluated, the line manager who assesses performance, and the HR specialist who able to produce the required workflow. But they can access and control only the part associated with their own tasks.

Digitalization of HR operations may make organizational data and data from HR simpler and faster access for different stakeholders, such as workers, HR experts, and managers. E-HR speeds up HRM operations and makes transactions more precise and transparent. In digital HR we can discuss in an organizational setting about full support and full dependency on online technology. It is not just about the use of the Internet or the computer to accomplish personal work, but also the development of the newest technological tasks and procedures. After implementing electronic HR, most companies re-evaluate their tasks and processes and adopt more updated versions of their procedures, which makes e-HR implementation easier and more convenient.

Technology in HR services makes it possible for all organizations to adopt more streamlined, comprehensive processes. Since the introduction of e-HR, many stakeholders that have something to do with HR have access to several tools and platforms. For example, the line manager must not call the HR department to find the proper personnel. He can just use career sites or portals to find out about fresh applicants. In this manner, the daily tasks of both the HR and other functional departments may be accelerated.

3.3 The consequences of digitalization of the HRM

Many additional developments were initiated and accelerated by the major transformations in HR. Most writers highlight the necessity of digitalizing in the workplace. Some feel that the way human resources have changed totally, as well as others that digitalization has always evolved in time. However, both good and bad repercussions may result from the digitization process. The authors believe that digitalization and technological change are unavoidable and that investments are crucial in this respect. Everything is in motion when the world is spinning.

Table 5 contains the pros and cons of HR digitalization, which the authors highlight (Mosca, 2020).

Table 5. Pros and cons of HR digitalization

Pros	Cons
Cost reduction	Security
Efficiency – saving time; – productivity; – the effectiveness of HR activities; – reduction of paperwork	Lack of required skills
Performance – quality of management; – HR flexibility; – reducing the level of bureaucracy	Existing digital HR tools are not fully utilized
Relations with employees – cooperation; – quality of communications; – the employee receives more information about organizational issues; – employee motivation	Difficulty workers' use of new technology
Digital HR opens up new vacancies	

Note. Adapted from Digitalization of HRM: A study of success factors and consequences in the last decade, by M.Mosca, 2020

With regard to the advantages, cost reductions are the positive element that most of the articles reviewed emphasize. By using digital technologies, companies may save money by accelerating operations and collecting data.

Thus, according to Syngenta, it achieved a 30% reduction in operating personnel costs in the period 2012-2015, followed by an additional 40% reduction in costs as a result of the HR Next Generation program (Capgemini, 2019).

In their analysis, Deloitte and Paylocity (2021) stated that organizations may save considerable cost savings through a range of HR activities through automation. In order to calciate and quantify labor expenses, researchers questioned around 1450 HR practitioners to assess the time that they spent for different manual HR jobs. Specifically, time management was determined to be an area in which automation may save a large price - roughly $54,709 per year on average. This report describes timesheets, collected and ensured that attendance cards have been accurately collected, error correction made, leave requests submitted, shipping balances calculated, leave requests responded to and holidays tracked. Automated time attendance would be the largest savings in this area: the company's yearly net revenue is $14,000. In addition, the investigators uncovered considerable possibilities with predicted savings of $ 37,000 apiece in cost management, wage and taxation.

The digitalization of HR also leads to better efficiency. In particular, numerous examined researches have shown that digital transformation leads to time savings that lead to enhanced HRM performance.

HR processes are also being simplified and speeded up. As far as recruitment is concerned, the intensity of recruitment was reduced by digital human resource management procedures, the qualifications of them in respect to vacancy criteria were revised and the recruiting topics were selected. This has led to a time reduction and an increase in the capabilities of the organization to address other major concerns.

The investigation reveals that digitization of human resources operations leads both to increased administration quality and flexibility in the management of staff, as well as to a reduction in bureaucracy within the function. For example, when HR managers can use digital tools to accomplish their job from home, less administrative work is done, which makes them less worried and more productive. In other words, HR employees may concentrate on more strategic duties with high value-added if they don't have to execute low-level administrative activities.

In addition to these consequences employee relations also arise: motivation of employees, involvement of employees, communication effectiveness, routes of communication (Mosca, 2020).

A survey carried out by Murphy (2018) shows that scanning enhances the dedication of employees who feel more connected. The poll showed 56% of survey respondents who have implemented digital technologies related with their employment.

The development of new types of work has been likewise brought about by digitalization. This new and ongoing trend demands HR managers to deal with new issues such as fixed-term contracts to combat future uncertainty or job flexibility.

Problems linked to information security and handling of sensitive information about employees were among the downsides of the digitalization of HRM. The necessity to maintain the secrecy of particular data may hinder the digitization of the administration of human resources.

In order to maximize the digital potential, digital skills are necessary. However, numerous experts point out that the employees in most situations lack appropriate abilities.

4. Overview of implementing Digital HR on practice

4.1 Digital HR trends

The management of human resources is changing quickly with a steady range of new digital technology and solutions. By 2020, several organizations have found digital solutions that made them operate remotely as a consequence of this COVID-19 epidemic have seen a huge upheaval. This crisis has had a catalytic function, speeding up technological introduction in many sectors of life.

Although most firms are probably on their way to digital HR transformation, 2020 was a shocker for those who haven't done so. The problems of managerial management in the context of a worldwide pandemic have demonstrated the necessity for each company to adopt digital procedures and best practices in the administration of human resources. Companies need the proper HR tools to take the digital leap, from hiring to training and management.

Whether a company is fully digitalizing HR or just getting started, it's important to know what digital technologies exist and which ones are best for them.

Consider 10 trends in HR using new technologies that will actively develop in 2021 and subsequent years.

1) The influence of the epidemic on mental health was one of the most tangible impacts. The 2020 pandemic certainly has greatly affected individuals and has made the well-being of employees a priority for 2021.

Limeade, an employee experience software company, polled 1,000 employees during the pandemic in late 2020 on mental health (Survey Results: Employee Experience During the Pandemic, 2020). The results have shown that up to 35% of the personnel polled commonly have depressive symptoms, while 41% claim burnout and 45% feel "emotionally depleted."

By growing applications and specialized digital HR services, companies focus on the emotional wellness of employees. In Sprinklr (an innovative American customer experience management platform), HR, for example, use a Headspace (see Fig. 6), conscientiousness and meditation tool, which enables employees to perform guided meditation sessions using a simple smartphone interface (Aurelia and Momin, 2020).

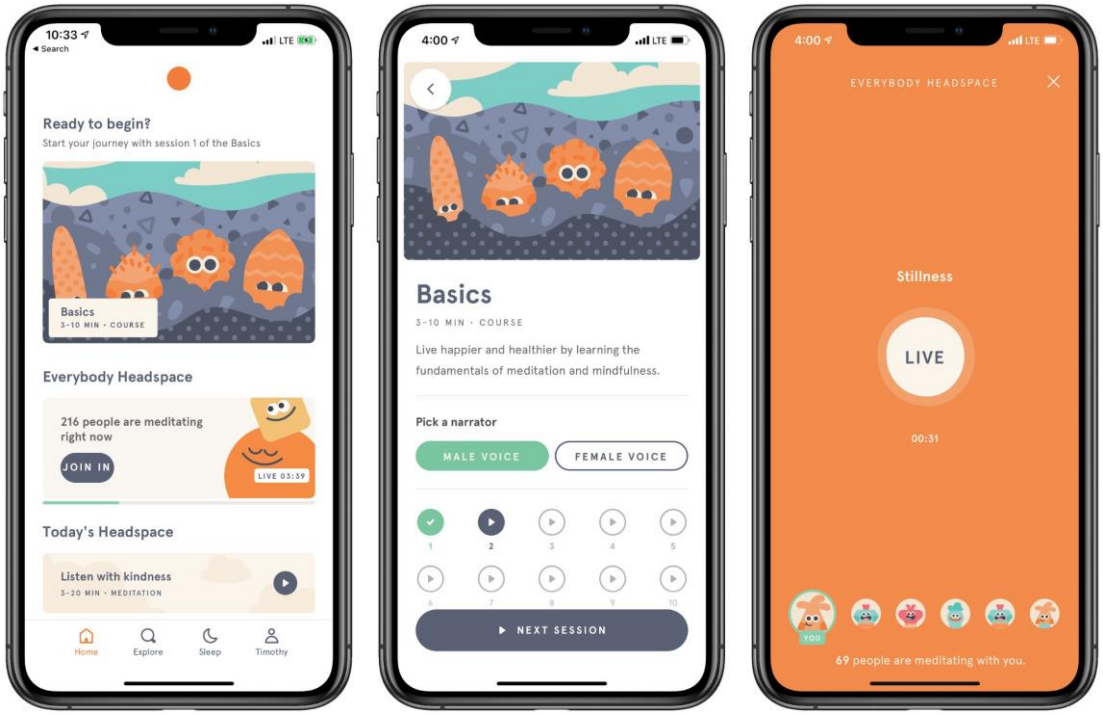


Figure 6. Headspace app interface

Fluor Canada (an American multinational engineering and construction company), for example, is among those who offer fitness trackers to their employees.

2) Hybrid employee experience management. In 2021, although the station is split by offices and the house and contains a big number of external employees, it will need to retain a high degree of commitment and a strong experience among its personnel. In order to handle that hybrid workforce, the digital support requires a wide number of procedures - from on-board through benefit plans, evaluations and talent management.

3) Continuous development and learning. Professional development will be one of the most significant jobs for firms in the next few years. There is such quick development of the abilities necessary in the workplace that it needs a dynamic and ongoing approach to "soft" and "hard" learning. The most mechanized and repetitious jobs are undertaken by technology and the focus is creative and strategic.

The prospect of learning throughout work is also worth considering. In 2012, McKinsey said that the time of staff need for looking for information was 1.8 hours per day, which had been up to 2.5 hours by 2015. (Stringer, 2020). The objective of the organization is to offer employees the tools they need for getting information faster. Allow individuals to study while working.

4) The development of artificial intelligence (AI) continues. Back in 2017, the usage of artificial intelligence in human resources was among the most previewed tendencies. This illustrates that it takes a long time to grasp and enhance new technologies.

Recruitment software utilizes a number of methods, for example, the evaluation of individual job applicants, the evaluation of social media, and the efficiency of hiring techniques through Q&A and video interviews.

While applicants finally need face-to-face interviews, the recruiting process is aided by artificial intelligence. AI minimizes the work requirements to discover new employment and time-cutting for unacceptable applicants.

For example, VCV is developing a service that analyzes the responses to tests and video interviews of candidates using AI (see Fig. 7).

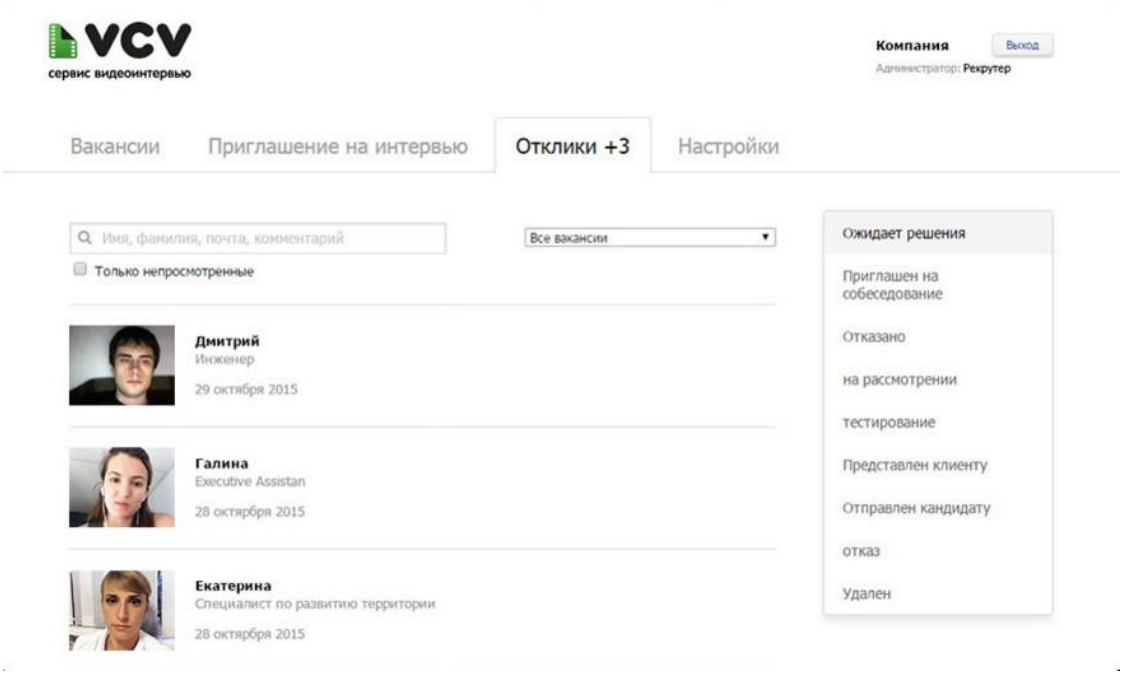


Figure 7. An example of a recruiter's personal account on the VCV platform

As a result, the HR specialist receives information about the candidate, which, according to the startup, doubles the speed of the search process and increases its efficiency by 75% (Akhverdyan, 2019). Among the clients of VCV.ai there are more than 50 large companies and corporations like PwC, Danone and others.

5) HR management cloud software. Cloud-based software has definitely been more prominent than on-site solutions in both HR and other company domains with the growth of intelligent work.

There are two further benefits to Cloud HR. Cloud auto-service technologies enable workers to access employee data in real-time, to decide appropriately and to better monitor their data by workers. This facilitates the measurement of performance and commitment for business.

6) Data-driven decisions. No errors can be made in times of crisis. This is another rationale for speeding up the usage of HR analytics to help decision making using the enormous volumes of data contained in HR software. HR analytics delivers helpful insights into absenteeism, staff turnover, wages and more. For example, the HR department can keep an employee who is on the verge of leaving complex systems.

7) Understanding and engaging Gen Z employees. The generational problem might also be seen within the talent trends for 2021. Gen Z will be more and more present in the working world and will bring up to 4 or 5 generations in office. Gen Z has its own values and objectives, just like any new generation.

The HR department will thus update career options, advantages and policies and discover the proper way of motivating new staff and taking them on the purpose of the organization. Corporate accountability and sustainability will receive great focus. Generation Z is business and engineering. In the digital age, they have grown up and networking is a global trend.

This can include gamification (attraction, training, etc.). Since computer games for generation Z are no longer just a hobby, but an important part of life.

8) The gig economy is growing and improving. The uncertainty generated by a crisis and closures in the office accelerated already begun a process which, according to some estimates, can yet outstrip 40% of the company's staff, which is a growing number of atypical and independent workers in the gigantic economy (Mentamore, 2019). Appropriate regulations, compensation systems, and relationships will need to be examined and HR technology developed to fulfill these demands. The following elements should be considered by quality technologies (Lanteria, 2020):

— cloud data tracking of multinational giants across the business;

— state labor regulatory organization in connection to giant employees;

— integration with social networks for connecting transnational giants and creating groups;

– configuration research (the capacity to modify and adjust the gig worker's settings).

9) The technology, which Bitcoin has made famous, is useful in data tracking and privacy protection. HR teams are able to establish safe, complete employee records, automate procedures

of data-intensive use, such as wage or tax administration, and verify employment history and applicant identification using the new blockchain developments and technology (Pentabell, 2020).

Basic blockchain technologies such as a smart contract (a monitoring and enforcing commitments computer program), management adjustment for HR teams. These contracts allow the recording, monitoring, and follow-up of modifications by all parties concerned. These agreements also reduce the need for manual involvement for each transaction in the approval process

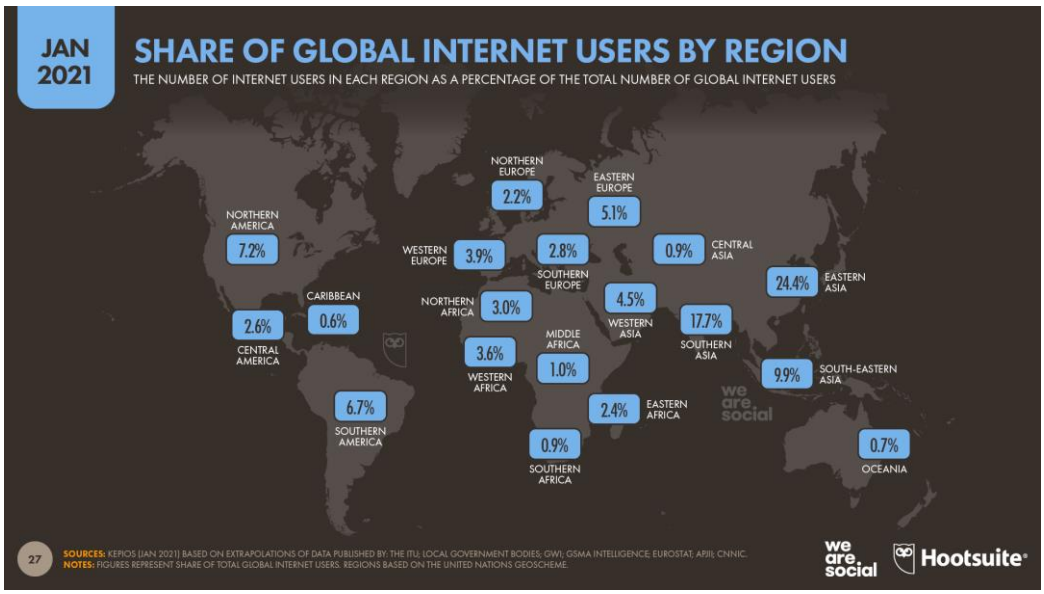
10) New virtual reality applications. Also, in times of clever work, VR might prove suitable. The technology of virtual reality is a strong means of recruitment and learning (PossibleWorks, 2020). This technique is very effective for testing practical staff. It also provides managers with regulated and safer inclusion of new employees in their work environment.

Substantially, the requirement for digitalization in 2021 for companies to remain competitive on the market and appealing for applicants is becoming urgently needed.

In recent months, the world has evolved quickly. While this may seem transitory, it might lead to behavior, which will affect the future of work forever. HR technology can also adjust to such changes in such a circumstance. Some common feature of all sectors of HR technology – whether it is artificial intelligence, a gigantic economy, or virtual reality – is that they are going to help in this change. The development of digital HR tools will play a critical role in maintaining employee engagement in the face of rapid change across many industries.

4.2 A view at the implementation of digital HR in foreign countries

Every year the Internet more and more penetrates into all spheres of human life. Many processes are automated, more and more services are available online. According to We Are Social and Hootsuite, at the beginning of 2021, of the 7.83 billion people living on our planet, 4.66 billion people use the Internet (316 million more than in 2020) (Kemp, 2020). 5.22 billion people are active mobile phone users and 4.2 billion people are social media users. Statistics show that the largest number of Internet users is in Asia and Oceania, 53.5% of the total number of Internet users worldwide. Next comes America (17.1%), Europe (14%), Africa (9.9%), and the Middle East (5.5%).

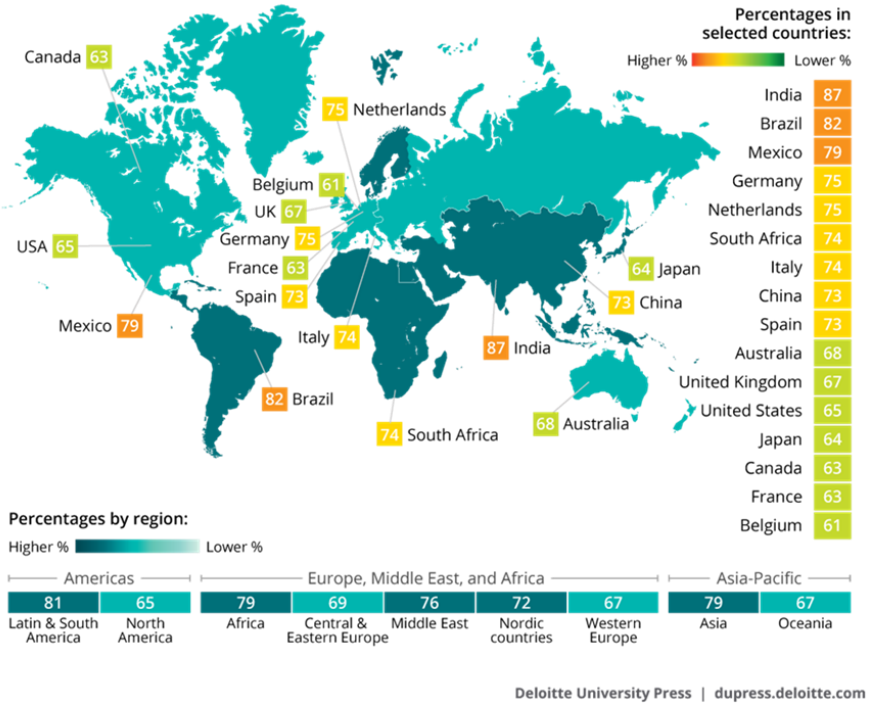


Source: Datareportal.com, 2021

Figure 8. Number of Internet users by region

In 2017, as part of a study of global trends in human capital, Deloitte conducted a survey among HR professionals from various companies. The question was about the importance of implementing Digital HR in the company (see Fig. 9). This is the most recent study available in the public domain.

Figure 1. Digital HR: Percentage of respondents rating this trend "important" or "very important"



Source: Deloitte Insights, 2017

Figure 9. Distribution of respondents' answers regarding the importance of implementing Digital HR in the work of companies

Thus, the survey showed that respondents from Asia, the Middle East, Africa, and South America noted the greatest importance of technology implementation in HR. It is noteworthy that it is impossible to trace a direct link between the use of the Internet in these regions and the attitude towards the implementation of Digital HR. So, America and Europe rank 2nd and 3rd in terms of Internet use, respectively, however, for respondents from these regions, it is not so important to introduce technologies into the field of human resource management.

As Gary W. Florkowski and Miguel R. Olivas-Luján (2006) noted in their research, there is no data on HR technology use within and between countries. At the moment, only data on the implementation of Digital HR in individual companies or on the digitization of individual HR functions are available in the public domain. This may be due to the fact that the use of new technologies in human resource management is available only to large companies due to the rather high cost and the presence of a large staff. As a rule, these are international companies, and in this case, the measures for the implementation of technologies in HR are the same in the countries in which they are present.

Consider the results of research in various regions of the world regarding the implementation of Digital HR in the activities of companies. For some regions, data is only available for 2018. Thus, we can only get acquainted with the trends in the introduction of technologies in HR in certain regions. Comparative analysis requires data for all regions for one period, since a difference of 1-2 years can have a large impact.

Asia.

Digi and Vase.ai conducted a survey of 268 HR professionals in Malaysia in 2020 (altHR, 2020).

As a consequence, 36% of employees who presently have no experience on a digital HR platform do not know whether their firms aim to do so. But 28% believe they are moving in this direction without any particular plans.

The reason was a high cost (44%), while 28% of firms did not perceive a need because of their small size and 17% claimed the system was useless, and there was an issue regarding consolidated duties. Companies that carried out digital HR services and returned to traditional methods did not. A minor portion (15%) is concerned about the redundancy of digitization.

Even after the digital HR platform shift, however, difficulties still exist. The poll revealed that employees presently using digital HR platforms and applications experience problems such as inaccessibility of offline data that cause power outages to be restricted (29%), lack of developer

assistance for usage (23%), and the time needed to educate employees to operate on the platform (23%).

America.

In 2020, Gallagher conducted a survey among 400 American companies in order to study the experience of implementing HR technologies (Gallagher USA, 2020).

The poll shows that more than 50% of firms have deployed HR technology since 2018, yet only 38% can successfully call this experience a success. The outcome is somewhat satisfied by 47% of respondents, their neutral stance is defined by 14%, and the experience is failed by just 5%.

The respondents stress that the impact of Digital HR on the net profit is difficult to quantify. A certain amount of influence on the work of 93% of firms has been discovered, only 31% were able to quantify the outcome and define it as important.

52% of HR professionals reported using mobile technology to work with employees: SMS messaging and a mobile site.

Experts have highlighted the following as the obstacles in implementing HR technologies:

- management of the necessity for HR technology investments is tough to persuade;
- the contribution from the use of technology to the net profit is difficult to determine;
- difficulties during its deployment in connection with the technology supplier;
- absence of preconditions for technology implementation.

Europe.

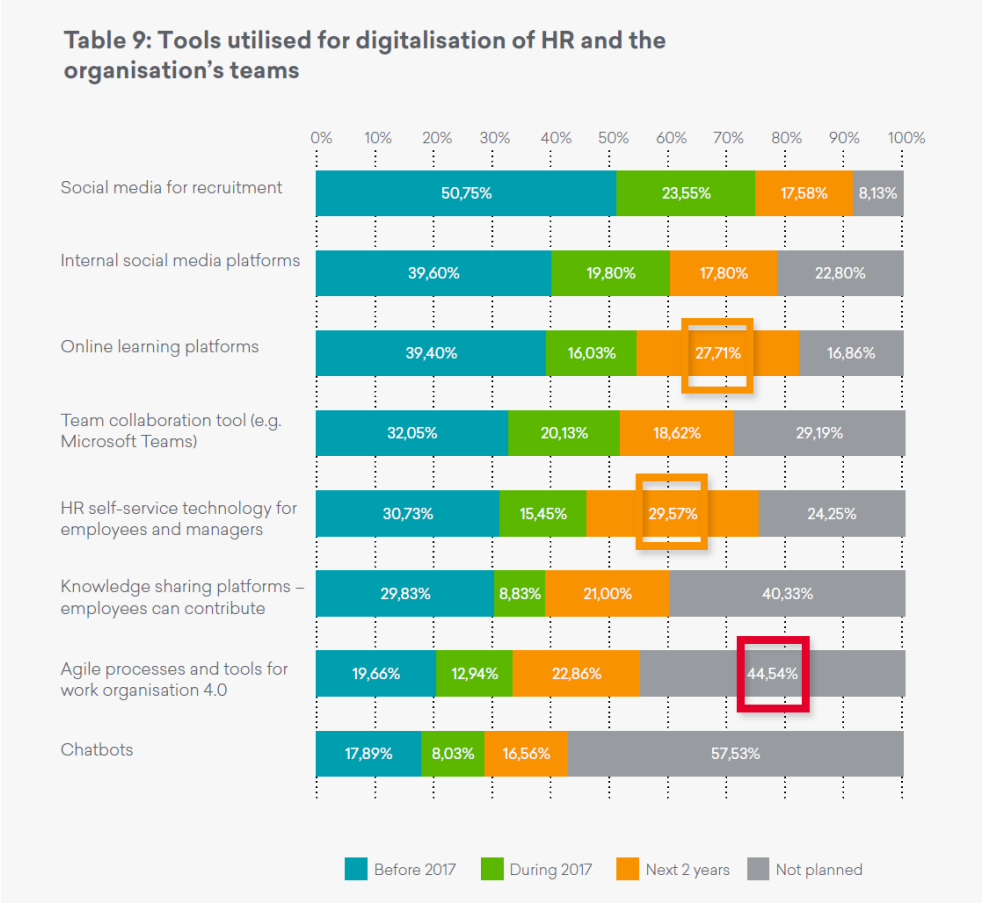
At the end of 2018, Great Place to Work conducted a survey of 674 HR professionals from 13 European countries to identify current and future HR trends. The respondents identified 5 main strategic directions in human resource management:

- innovation;
- growth (internationalization, market development);
- digital transformation;
- agility (flexible approach) and efficiency;
- attraction and creation of personnel.

However, they also illustrate the obstacles facing the business in providing strategic HR value. The largest concern is the absence of internal communication for most of the businesses assessed (out of 100% of the respondents, 36,63% consider this an obstacle). There is then the absence of

HR technology and tools (29,95%), the absence of excellent job applicants (28,86%), the discrepancy of departments (27,84%), and the lack of skills among HR experts (27,29%).

They also replied to the issue of how their firms utilize to digitize human resources activities (see Fig. 10).



Source: Greatplacetowork.dk, 2018

Figure 10. Tools used to digitize HR in Europe

The most requested are self-service platforms for employees and managers and an online learning platform, according to the poll results. It should be noted that many businesses utilize social networks and internal social networks already (over 50%).

The digital HR transformation is defined as one of the strategic growth directions by European firms. Some 40% of companies will spend on digital instruments and effective human resources procedures.

Africa.

In 2018, Barometer HR Africa conducted a survey among companies to examine HR digital transformation practices (Africatech, 2018).

Among the practices that can have the greatest impact on the HR organization's compliance with digitalization trends, companies identified the following:

- digital culture support and education (72%);
- internal collaborative solutions (58%);
- HR big data decision-making (51%);
- remote working policies (40%).

Furthermore, as a result of this survey, 74% of respondents did not utilize mobile applications to arrange the administration of employees, although 35% thought about them.

According to Ayaan Chitty (2018) research, payroll, talent acquisition (43,75%) and performance management are the most prevalent areas of HR in which technology adoption is applied (34,38%).

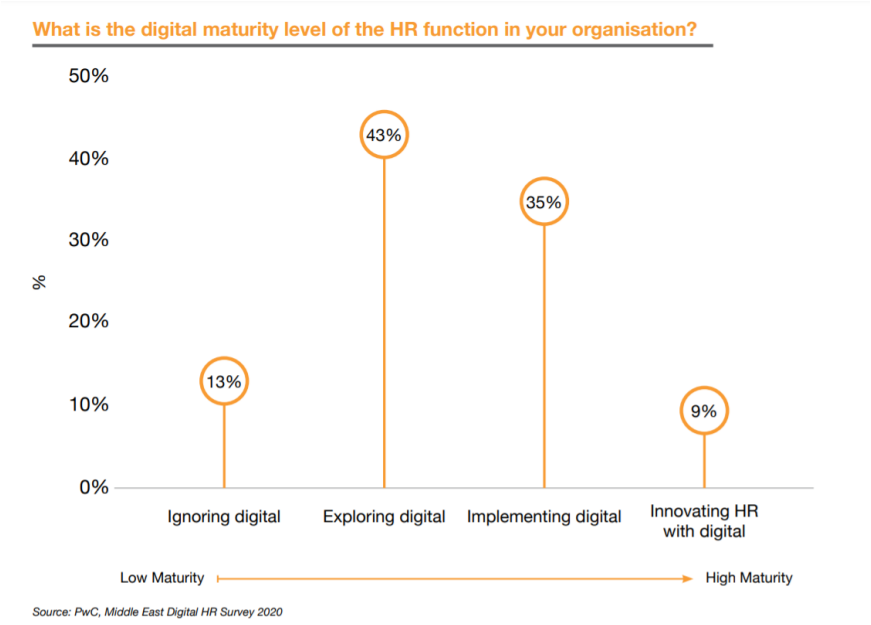
The following reasons have been noted as obstacles to the extensive adoption of HR technology:

- the costs (65,63%) of implementation systems;
- the expenses of operations: subscriptions, licensees, maintenance, etc. (37,5%);
- HR is not seen as a strategic business partner; (31,25%).

Middle East.

In 2020, PwC surveyed 698 executives and HR professionals in Middle Eastern companies (PwC, 2020). The aim of the study was to better understand what steps organizations need to take to transform the role of HR into a more strategic function.

The question regarding the current practice of introducing Digital into HR work allows us to assess the level of digitalization of the human resource management function in the company (see Fig. 11).



Source: PwC Middle East Survey 2020

Figure 11. Distribution of respondents' answers regarding the level of digital maturity of the HR function in their organization

The respondents said that more than 50% of enterprises have not yet done digital HR, while 43% plan to do so and explore prospects. Nine percent feel their HR department is leading or pioneering with support from digital technology. Only 44% are already active users of Digital HR.

The survey results also helped highlight a number of hurdles to be addressed so that HR becomes a business role using digital technologies to drive HR strategy rather than a provider of regular HR and HR functions. The main hurdles to digital transformation in a company (55%), followed by financial limitations (51%), and a lack of clarity on what digital transformation actually means are thought barriers and reticence to change (48%).

To summarize and compare the results for all 5 regions, Table 6 was compiled.

Table 6. Experience in implementing Digital HR in different regions of the world

Region	Rating by number of Internet users	% of companies that have implemented HR technologies	Problems in the implementation of Digital HR
Asia	1	64	High costs, dependence of the system on electricity, lack of communication with the developer, training

America	2	Over 50	Investment, difficult to assess efficiency, lack of communication with the developer, lack of prerequisites
Europe	3	Over 50	Lack of internal communication, lack of skills
Africa	4	-	Cost, additional costs, the role of HR in the company
Middle East	5	44	Unwillingness to change, budget constraints, lack of knowledge about digital transformation

According to the data obtained, there is a direct relationship between the number of Internet users in the region and the number of companies using HR technologies in organizing the work of the company. This hypothesis takes place only with a uniform increase in the number of Internet users every year. Also, the most common obstacles in implementing Digital HR are high cost, lack of support and communication with the developer, and the need for additional training.

4.3 Practices of implementing Digital HR in the work of foreign companies

Let's consider the most well-known practices of implementing the latest trending technologies in Digital HR in foreign companies. The problem of researching this issue is that many companies do not advertise these events.

TRANSFR, the virtual learning company, partners the Alabama Recruitment Agency and Community College System. JumpstartAL is the project of this cooperation. Employees around the state may obtain training based on simulation to prepare for employment in rapidly developing industries, like automotive and construction, as well as other specialized areas. A job was provided to all the candidates who finished the TRANSFR training and acquired the essential abilities and made the program very successful.

For Lockheed Martin (an aerospace, defense, military, safety and advanced technology firm) TRANSFR also created a training curriculum. It is essential to obtain training in order to be granted a position in such company. An applicant must have the abilities to do their work properly to get hired.

90 per cent of TRANSFR-trained staff moved to Lockheed Martin kept their employment a year later in a pilot trial (Businesswire, 2020).

Trainees noticed the unique blend of one-to-one technology and quick-acquisition skills:

- secondary career development from 82.6% to 91.1%;
- 80% of trainees find immersive learning pleasant using TRANSFR;
- 75% of trainees are in favor of traditional ways as a virtual reality technique.

Walmart is using virtual reality technology to prepare employees to deal with the crazy Black Friday sales. Simulations using past experience and data demonstrate how the crowd responds to items on sale by measuring the flow of shoppers in the store, as well as how to respond to confrontation and crowd control. This gives new hires first-hand information about what it means to deal with real-world scenarios before heading out into the field. Previously, the company conducted one-day training sessions that included e-courses, hands-on labs and starter kit training at each new location. Thanks to VR, training time has been reduced from 8 hours to about 15 minutes (Walmart, 2018).

With the start of a worldwide digital training effort for its workers, Henkel, a German chemical firm, has introduced a fresh approach to digital transformation. A detailed study of the existing level of knowledge is the first phase of the program. Henkel can utilize anonymous internet surveys to find out how well digital technology is known to the people. This comprises a fun examination of broad knowledge ("Digital BaseFit") and an extended evaluation of corporate specific qualification ("Digital ExpertFit"), taking into consideration their degree of employment (Henkel, 2019)

At the beginning of 2020, McKinsey's advisory business removed paper-tests from the consultants, and instead started using California-based company Imbellus' Digital Assessment game (Ripa, 2020).

This player has to address the difficulties of the environment, such as building a coral reef system that can live under poisonous conditions, or developing a strategy to prevent a natural disaster from local wildlife. The system examines the player's behavior during the game: how (and how fast) they made judgments and if they were reasonable. Here, every time the situations change, just one effort will be made to finish the applications. Once the game is over, the system delivers the results of the applicant to the company. The firm then calls him for the next phase if he is higher than some indication — the particular outcomes of the game are not reported to the applicant for interviews with advisors. If the player has not gained the requisite amount of points, the game will be closed 1-2 years for him.

The reasons the firm opted to replace the traditional game tests:

1) The game decreases stress. Candidates can take it for them and from anywhere at any time.

2) The game produces a unique scenario for each player, so that nobody has the advice of past participants to take advantage of.

3) No single response is right in the game - the algorithm evaluates the whole of a candidate's tested characteristics.

Ellen is famous platform used by an expanding number of big organizations in the world, including the United States and Asia, launched by NextPlay.ai in San Francisco (Galer, 2019). With information from the application, employers may get to know the employees' needs, including knowledge gaps or personal achievements. Data may also be used to assess the skills and significant effects of mentors.

Filtered platform recruits engineers online. The platform uses unique tools for selecting engineers and developers. To evaluate candidates, it uses live video coding, imitation of the workflow on real company tasks, recognition of a candidate’s deception, synchronization of data with social networks and other features. The Filtered platform decreases hiring costs (-36,000 USD), undetected fraud (-28%), refusal to offer (-20%) and vacant jobs (-30 days) while the rates of hiring interviews increase by 56% (hrtechfeed, 2021). Among the companies using this technology, you can find Delta, Bayer, Redfin, Cigna, Coca-Cola, Quicken Loans, TransUnion, Georgia Pacific, Enterprise Holdings, Informatica, and more.

4.4 A view at the implementation of digital HR in Russia

According to We Are Social and Hootsuite, at the beginning of 2021, there were 118 million Internet users in Russia, which is 80% of the population of Russia and 2.5% of the number of Internet users around the world.

At the end of 2020, the recruiting company Antal Russia conducted a survey among 206 companies to study the level of automation of HR processes (see Fig. 12).

Source: Antal Study, 2020 (translated into English)

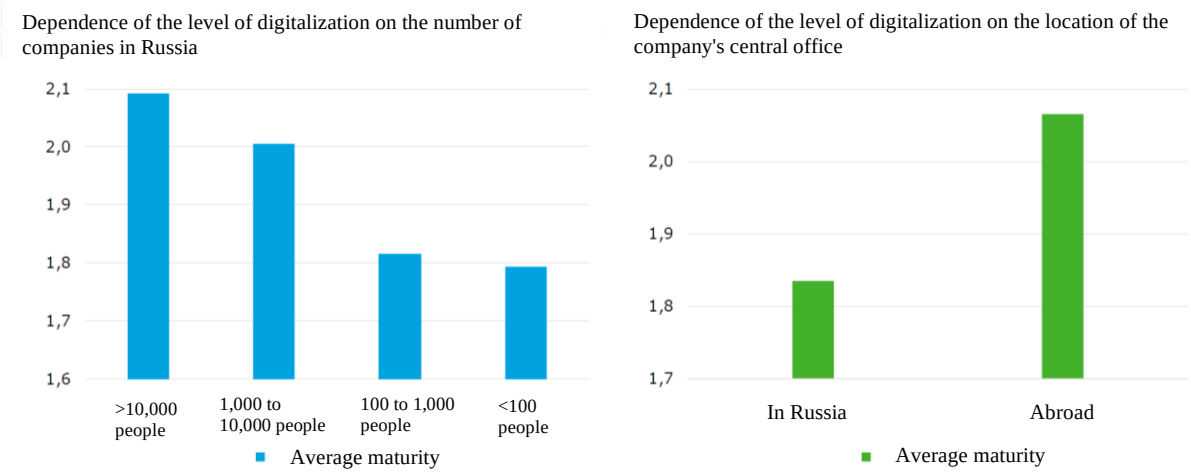
Figure 12. The level of automation of HR processes in Russian companies

The most fully automated are the assessment of satisfaction (33%), HR administration and compensation (23%). Functions such as recruitment (51%), internal communications (50%), training and development (49%) are gaining momentum.

The most non-automated process in most companies was the adaptation of employees (63%), which significantly complicated the hiring of new employees during a pandemic.

In 2019, SAP and Deloitte conducted the Leading Trends in Russian Digital HR study. 496 respondents took part in the survey: 364 representatives of Russian companies, 132 - foreign ones. According to the report, 50% of surveyed companies are actively using HR automation.

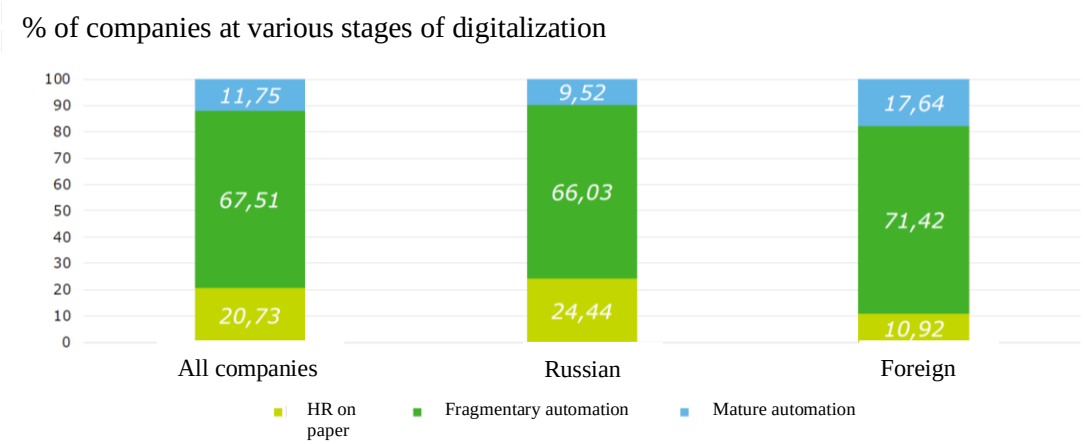
For the study, companies developed a Digital HR maturity model (Appendix 2), thanks to which all companies were divided according to the level of development of digital human resource management (see Fig. 13).



Source: SAP and Deloitte Survey Results 2019 (translated into English)

Figure 13. Dependence of the level of digitalization on the size of the company and the location of the central office.

As can be seen from the results of the study, there is a direct relationship between the headcount of the company and the level of HR digitalization: the more the staff, the more digitalized the human resource management processes. The same applies to the location of the company's central office: organizations with an office abroad are more actively using technologies in organizing HR work. This is due to the different levels of HR digitalization in Russian and foreign companies (see Fig. 14).



Source: SAP and Deloitte Survey Results 2019 (translated into English)

Figure 14. Differences in the degree of HR digitalization of Russian and foreign companies

As can be seen from the graphs, the number of Russian companies where “mature automation” is practiced is half that in foreign companies (9,52% versus 17,64%). A quarter of Russian companies still practice HR on paper. But despite this, the Russian practice of digitalization of HR activities

cannot be called unsuccessful. On the contrary, Russia is trying to catch up with foreign colleagues and every year the number of companies that have implemented Digital HR is only increasing.

The innovative recruitment agency Rekadro (2020) presented the report “HR-DIGITAL: solutions for the automation of personnel management. Dynamics 2019-2020 ". According to this study, the main problems in the digitalization of human resource management are a lack or lack of a budget, a lack of knowledge and information about the availability of a suitable system or platform on the market, the complexity of implementation and a long transition period.

4.3 Practices of implementing Digital HR in the work of Russian companies

Let's consider the most recent practices of technology implementation in the work of HR of Russian companies.

Shoe Company "ECONIKA" operates in the segment above the average - customers expect a high level of service from the staff. To do this, employees need to quickly and efficiently train the product and sales standards. The problem is that there is traditionally a lot of turnover in retail. Shops are scattered throughout the country, and everyone needs to be trained. At the same time, sellers work in shift mode and it is difficult to gather everyone for full-time training. We found a solution and launched a mobile app for training. As a result, they have built a process in which employees receive information in small portions and assimilate it more easily.

The Corporate University of the Russian Post together with the Preaktum company launched an online simulator to get acquainted with the services and activities of the Post. Now he helps to study the structure of the company for students of educational organizations participating in the competition of projects "Entrepreneurial Case of the Russian Post" in Velikiy Novgorod. In the future, with its help, the Post will be able to train employees and improve their competencies. The online work experience simulator is a series of theoretical and practical tasks that allow you to learn more about the principles and specifics of the Russian Post's work, acquire useful skills and test your knowledge. The assignments are divided by topic: e-commerce, services for individuals and online stores, ground, and aviation logistics, as well as the operational block. Such training helps to form a detailed understanding of the company and its development prospects (hr-director, 2021).

The federal network of stores for personal care and home care "Ulybka radugi" has developed and launched "Mobile Auction" - a new online service for staff that allows employees to independently choose a convenient place and work schedule. In 2021, the service became available to employees in all regions of Russia and made it possible to double the number of jobs in the network.

The Russian retail chain Magnit has implemented a corporate chatbot platform in the company's business units. All bots were developed on the basis of the Russian AI-solution CraftTalk. They function as text-based contact centers. In total, the platform includes 17 chatbots. For example, in the network system operate HR-bot: advice on the payment of salaries and vacation pay, assists in the preparation of personnel documents; chatbot of the electronic document management system: it helps to get prompt answers to frequently asked questions about the system, etc. Magnit's corporate chatbots work in Telegram and Viber. They are integrated with work mail, corporate web chat, and the retailer's internal systems: HelpDesk, Active Directory. In the future, bots are planned to be integrated with WhatsApp, MS Teams, and the network's mobile application. Employees of "Magnit" can connect to any bot using direct links from instant messengers and special QR codes (hr-director, 2021).

MTS announced that it has successfully completed the SkyTrainer pilot project and is now looking to scale it up. SkyTrainer is a voice trainer for developing communication skills with clients. It will be used to train interns at the company's call center. According to MTS, the simulator will increase the effectiveness of practical training and, at the same time, reduce its duration by 40%. The introduction of the pilot according to the plans of the company will reduce the outflow of specialists during the probationary period due to their gaining more practical experience during the internship. The simulator uses AI to analyze student errors and gives recommendations on how to improve communication with the client. The robot speaks in simple language and is able to express emotions by changing the rate of speech. According to MTS, the simulator will prepare an employee for various scenarios of the development of the situation. In the long term, the implementation of the solution will allow MTS to save hundreds of thousands of rubles a month (hr-director, 2021).

The data on the number of companies that have already implemented Digital HR in their work around the world and in Russia, the problems that experts highlight in HR, allow us to conclude that, on average, about 50% of companies have already implemented technologies in HR. Implementation challenges vary slightly from region to region, but all highlight the high cost, communication difficulties with developers, and the need for additional training.

According to the latest practice, foreign companies are already actively introducing trends in Digital HR into the work of their company. Russia is also not lagging behind them. Russian companies are actively developing in Digital HR, trying to introduce various new technologies. Therefore, the tools that are used in foreign companies can be easily introduced into the work of Russian enterprises.

5. Overview of Digital HR services in JSC “Russian Railways”

5.1 Economic characteristics of JSC “Russian Railways”

Open Joint Stock Company "Russian Railways" is the largest Russian railway carrier; the company also builds and owns a public railway infrastructure. The company provides transportation of vital goods to the most remote corners of the country and provides the most accessible transport for millions of citizens. The company provides transportation of goods even to the most remote corners of our country and provides the most affordable transport for millions of citizens (Annual report of JSC Russian Railways, 2019).

The founder and sole shareholder of Russian Railways is the Russian Federation (Annual report of JSC Russian Railways, 2019).

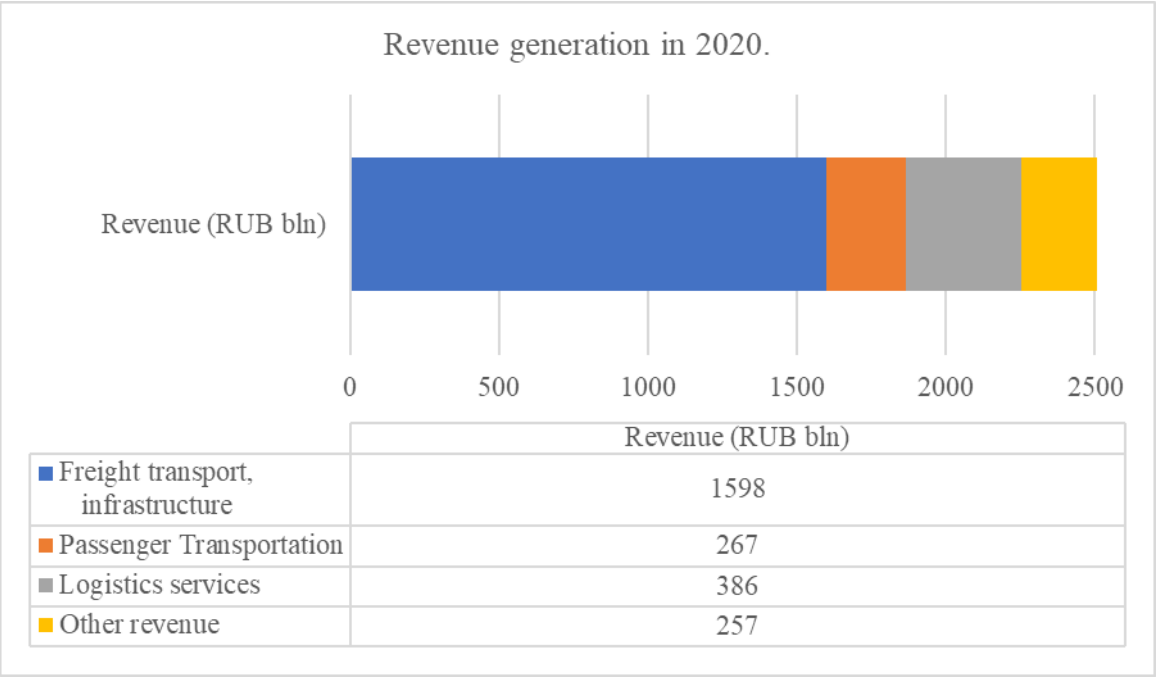
JSC "Russian Railways" has 85.5 thousand km of the operational length of railways, which allows the company to be in third place in this criterion after the United States and China (International Union of Railways, 2021).

The company carries out a huge number of activities, but the main one is “railway transport activity: intercity and international passenger transportation”.

The range of services provided by Russian Railways:

- rail freight transport, locomotive traction and infrastructure;
- container transportation;
- long-distance and suburban passenger transportation;
- logistics;
- repair of rolling stock;
- engineering;
- research and development work in the field of railway transport.

The formation of the company's revenue by the types carried out is as follows (see Fig. 15).



	Revenue (RUB bln)
Freight transport, infrastructure	1598
Passenger Transportation	267
Logistics services	386
Other revenue	257

Source: Created by the author based on the statements of JSC Russian Railways under IFRS for 2020

Figure 15. Formation of proceeds of JSC "Russian Railways"

Thus, we can conclude that the provision of services in the field of freight transportation determines the bulk of income (63.7% of total revenue).

In the country as a whole, the infrastructure of Russian Railways accounts for:

- 45.9% of cargo turnover (see Tab.7);
- 23.4% of passenger turnover (see Tab.8).

Table 7. Freight turnover in Russia by type of transport

Type of transport	**2019**		**Share in total cargo turnover,%**	
	Billion tkm	**Change 2019/2018, %**	**2018**	**2019**
All transport	5670,9	+0,6	100,0	100,0
Railway	2602,5	+0,2	46,1	45,9
Automobile	275,4	+6,3	4,6	4,9
Nautical	36,5	-1,0	0,7	0,6
Inland water	62,8	-4,9	1,2	1,1
Air (transport aviation)	7,4	-5,4	0,1	0,1
Pipeline	2686,2	+0,7	47,3	47,4

Source: Created by the author based on Rosstat data for 2018-2019.

According to Rosstat data on cargo turnover in Russia, in 2019 it grew by 0,6% to 5,670.9 billion ton-kilometers compared to 2018 data. The share of railway transport in the overall structure of freight turnover in the country's transport system was 45,9% (0,2% lower than in 2018).

Table 8. Passenger turnover in Russia by type of transport

Type of transport	**2019**		**The share of modes of transport in the total passenger turnover,%**	
	Billion pass.-km	**Change 2019/2018, %**	**2018**	**2019**
Passenger traffic in public transport	570,5	+7,2	100,0	100,0
Railway	133,6	+3,1	24,4	23,4
Automobile (Busses)	113,3	-1,3	21,6	19,9
Inland water	0,54	-5,4	0,09	0,1
Air	323,0	+12,6	53,9	56,6

Source: Created by the author based on Rosstat data for 2018-2019.

In 2019, passenger traffic in Russia increased by 7,2% to 570,5 billion passenger-kilometers compared to 2018 data. Railway passenger traffic also increased by 3,1%, but its share in the total passenger traffic decreased to 23,4% (-0,1%).

Both in Russia as a whole and within the company, cargo turnover and passenger turnover increased in 2019. Thus, the key performance indicators of Russian Railways showed the following dynamics (see Tab.9).

Table 9. Key performance indicators of Russian Railways

Indicator	**Unit**	**2017**	**2018**	**2019**	**Change 2019/2017**	
					+/-	**%**
Shipment	Million t	1261,3	1289,6	1278,1	+16,8	+1,33
Freight turnover on the infrastructure of JSC "Russian Railways" and JSC "AK" ZhDYa "	Billion tkm	3176,7	3304,8	3305,0	+128,3	+4,04
Passenger turnover	Billion pass.-km	122,9	129,4	133,4	+10,5	+8,54
Sent passengers	Million people	1117,9	1157,2	1197,8	+79,9	+7,15

Source: Created on the basis of data from the Russian Railways Annual Report 2019 and the Russian Railways Annual Report 2018

Every year the company improves the value of its key performance indicators. 2019 for several indicators became the year of reaching maximum values:

- loaded cargo turnover - the maximum in the history of the company 2601.9 billion t-km (+ 0.2% compared to 2018);
- departure of passengers - the highest in 11 years 1197.8 million people (+ 3.5%);
- passenger turnover - the best indicator over the past 6 years - 133.4 billion passenger-kilometers (+ 3.1%);
- investment program 674.1 billion rubles. (1.3 times more than in 2018);
- reduction in the overall occupational injury rate -10% by 2018;
- growth rate of labor productivity in transportation activities + 3.3%;
- growth of the average monthly wages of employees + 6.5%;
- 8.1 billion rubles were allocated for the protection and restoration of nature in 2019.

5.2 Organizational characteristics of JSC "Russian Railways"

The Russian Railways holding is gradually transitioning to functioning in the form of a complex of vertically integrated structures specializing in specific types of activities.

The corporate governance system of the company is built in accordance with current standards and taking into account the specifics of the functioning and management of Russian Railways as a “single economic entity”, as well as a company with 100% state participation.

According to the management structure, the general meeting of shareholders is the supreme governing body of Russian Railways. The sole shareholder of the Company is the Russian Federation, on whose behalf powers are exercised by the government of the Russian Federation (Corporate Social Report of Russian Railways, 2019).

The main task of the board of directors of the company is to pursue a policy that would ensure the dynamic development of the company, increase the stability of its work, as well as increase profitability. The board of directors also determines the priority areas of activity, approves long-term plans and main programs of activity, including the budget and the investment program,

determines the general principles and approaches to organizing the risk management system at Russian Railways. At the moment, the council consists of 11 representatives from the Russian Federation and 3 independent representatives (Corporate Social Report of Russian Railways, 2019).

For preliminary consideration of the most important issues and preparation of relevant recommendations to the Russian Railways Board of Directors, special committees have been formed: for strategic planning, audit and risk, personnel and remuneration, digital transformation and innovative development.

Corporate Secretary - a special official whose task is to ensure that the bodies and officials of Russian Railways comply with the requirements of the legislation of the Russian Federation, the Charter of Russian Railways and internal documents of the company, as well as organize measures to resolve conflicts related to violation of shareholders' rights, organize interaction between Russian Railways and its shareholders, between management bodies (Annual report of JSC Russian Railways, 2019).

The Management Board of Russian Railways, as a collegial executive body, exercises general management of the Company's business activities. The main tasks of the Management Board are the development of proposals on the strategy of the company's activities, the implementation of the company's financial and economic policy, the development of decisions on the most important issues of its current economic activities and the coordination of the work of its divisions, improving the efficiency of the internal control system and the risk monitoring system, ensuring the observance of the rights and legitimate interests of the shareholder (Annual report of JSC Russian Railways, 2019).

The Audit Commission is created to monitor the financial and economic activities of the Company. Members of the Audit Commission are appointed by the General Meeting of Shareholders.

The mission of the Russian Railways holding is the effective development of competitive transport activities in the Russian and world markets, the essence of which is the effective implementation of tasks as a domestic freight and passenger carrier and the owner of public railway infrastructure.

Despite the fact that the company is one of the largest transport companies in the world, Russian Railways is constantly developing (Gudok, 2018). This is how the company's mission is realized through the achievement of strategic goals in five key areas by 2030 (see Tab.10).

Table 10. Key areas of activity of Russian Railways

Key areas	**Strategic goals until 2030**
Transport and logistics services	maintain a leading position in the field of freight transport in Europe; enter the top 5 companies in Europe in terms of the volume of logistics business; increase the level of customer satisfaction with the quality of services provided, provided that the cost of transportation remains competitive; provide efficient service to global supply chains.
Passenger Transportation	implement projects for the development of high-speed and high-speed transportation; to maintain the existing share in the passenger turnover of the transport system of the Russian Federation.
Rail transport and infrastructure	maintain a leading position in the world in terms of efficiency, safety and quality of services; ensure the renewal of assets using innovative technologies.
Foreign activity	become one of the world's leading companies in infrastructure construction; to ensure the formation of a long-term portfolio of orders and the highest level of project implementation.
Social politics	enter the top 5 most attractive large companies-employers in the Russian Federation; to attract the best specialists to the Holding with a guarantee of competitive wages, improved working conditions and the provision of modern social packages.

Source: Russian Railways Annual Report 2019

Also in 2019, the company approved the Digital Transformation Strategy of Russian Railways until 2025 (annual report of Russian Railways, 2019). The objectives of this strategy are:

- Enhancement of the company's market position and increase its consumer appeal by adding a range of high-tech services to its core business (freight and passenger transportation);
- Enhance internal business process efficiency of the organization;
- Establishment of circumstances of revelation of employee professional potential: release from substantial portions of regular activities with simultaneous introduction of "digital economy" high-tech employment.

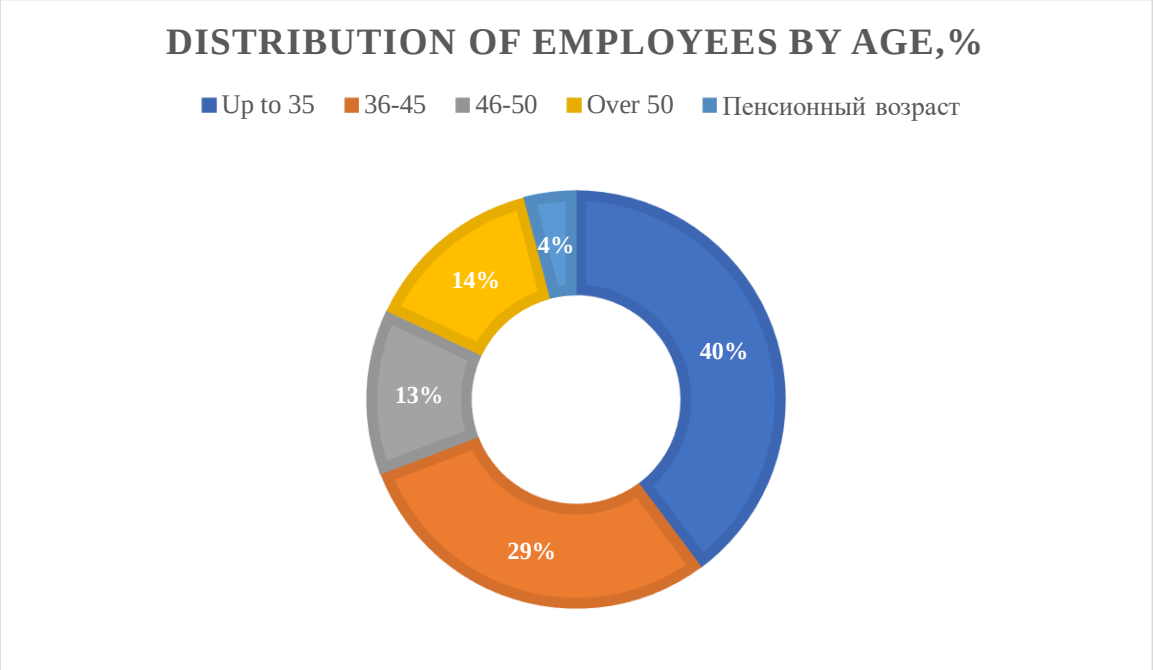
The company has developed, together with the HR department, a special training program which will provide employees with special training in their digital transformation process, establish a special institution of "change agents," directly engaged in change management, generalization and dissemination within the company.

Key projects in the field of non-production processes are digital HR, services for potential employees, electronic document management and tax monitoring.

As of the end of 2019, Russian Railways employs 743,1 thousand people (Corporate Social Report of Russian Railways, 2019). The share of categories of personnel in the total headcount is distributed as follows:

- 63,1% (468,6 thousand people) - workers;
- 29,2% (217,3 thousand people) - specialists and employees;
- 7,7% (57,3 thousand people) - managers.

The average age of employees is 39,5 years (see Fig. 16).



Source: Corporate Social Report 2019 of Russian Railways

Figure 16. Distribution of employees of Russian Railways by age

The company maintains an optimal age ratio, which ensures continuity, knowledge transfer and company renewal (see Tab. 11).

Table 11. Total number of employees hired during the reporting period

Indicator	**2015**	**2016**	**2017**	**2018**	**2019**	**Change 2019/2018, %**
Total, people	86491	69785	86489	96888	90948	-6,1 %

Source: Corporate Social Report 2019 of Russian Railways

As we can see from the table, an average of 86 thousand people come to the company every year. Russian Railways actively both supports existing employees and attracts new personnel. So, within the framework of the long-term development program of the company, the following areas were identified as part of personnel management:

– introduction of advanced digital technologies in the field of HR (modern methods of training, recruiting, the possibility of self-formation of a social package, creation and development of technologies for effective communication between an employee and an employer, automation of HR processes, including based on Big Data technology, transition to an HR model -Business partner);

– development of the current and most significant approaches for the employee (provision of a basic set of benefits, guarantees and compensations, annual indexation of wages, formation of a concept for continuous training of employees, introduction of an independent assessment of qualifications based on professional standards).

5.3 Analysis of the financial condition of JSC "Russian Railways"

The table below summarizes the main financial results of the activities of Russian Railways during the analyzed period (see Tab.12).

Table 12. Main financial results of the activities of Russian Railways

Indicator	**Indicator value, thousand rubles**			**Change in indicator**		**Average annual value, thousand rubles**
	2018 г.	**2019 г.**	**2020 г.**	***Thousand rubles***	**± %**	
1. Revenue	1 798 396 526	1 848 122 501	1 813 074 312	+14 677 786	+0,8	1 819 864 446
2. Expenses for ordinary activities	1 657 597 085	1 681 830 449	1 695 754 053	+38 156 968	+2,3	1 678 393 862
3. Profit (loss) from sales	140 799 441	166 292 052	117 320 259	-23 479 182	-16,7	141 470 584
4. Other income and expenses, except for interest payable	-28 065 820	4 100 574	-35 321 737	-7 255 917	↓	-19 762 328
5. EBIT (earnings before interest and taxes)	112 733 621	170 392 626	81 998 522	-30 735 099	-27,3	121 708 256
6. Percentage to be paid	55 887 458	72 147 920	77 626 827	+21 739 369	+38,9	68 554 068
7. Income tax, change in tax assets, etc.	-38 483 260	-44 787 927	-4 088 736	+34 394 524	↑	-29 119 974
8. Net income (loss)	18 362 903	53 456 779	282 959	-18 079 944	-98,5	24 034 214

Source: Created by the author based on the financial statements of Russian Railways for 2020 and 2019

Annual revenue for the analyzed period increased slightly (0,8%) and at the end of 2020 amounted to 1 813 074 312 thousand rubles.

The value of profit from sales for 2020 amounted to 117 320 259 thousand rubles. During the analyzed period, the change in the financial result from sales amounted to -23 479 182 thousand rubles.

The biggest change was in the value of net profit. Compared to the value in 2018 (18 362 903 thousand rubles) in 2020, it fell by 98,5% and amounted to 282,959 thousand rubles. This decline is associated with an increase other expense in 2020.

Table 13. Main indicators of the financial stability of Russian Railways

Indicator	Indicator value				Change in indicator	Normative value (audit-it, no date)
	31.12.2017	31.12.2018	31.12.2019	31.12.2020		
1. Autonomy ratio	0,72	0,69	0,64	0,65	-0,07	Normal value for the industry: 0,5 or more (optimal 0,6-0,7).
2. Financial Leverage Ratio	0,39	0,44	0,55	0,54	+0,15	Normal value for the industry: 1 or less (optimal 0,43-0,67).
3. Coefficient of provision with own circulating assets	-4,05	-4,41	-5,76	-5,53	-1,48	Normal value: not less than 0,1.
4. Permanent asset index	1,31	1,36	1,47	1,46	+0,15	
5. Investment coverage ratio	0,9	0,88	0,87	0,88	-0,02	Normal value: not less than 0,75.
6. Equity capital flexibility ratio	-0,31	-0,36	-0,47	-0,46	-0,15	Normal value: not less than 0,1.
7. Property mobility coefficient	0,06	0,06	0,05	0,05	-0,01	
8. Working capital mobility ratio	0,27	0,23	0,19	0,17	-0,1	
9. Supply ratio	-16,74	-16,5	-19,4	-17,5	-0,76	Normal value: 0,5 or more.
10. Short-term debt ratio	0,35	0,39	0,35	0,33	-0,02	

Source: Created by the author based on the financial statements of Russian Railways for 2020 and 2019 and data from audit-it.ru

The autonomy ratio of the organization as of the end of the analyzed period was 0,65. This ratio characterizes the degree of dependence of the organization on borrowed capital. The value obtained here speaks of the optimal amount of equity capital, which is 65% of the total capital of the organization. However, over the last 3 years, one can notice a decrease in the value of this coefficient (by 0,07).

The ratio of provision with own circulating assets at the end of the analyzed period has a negative value and is equal to -5.53. The value of this indicator over the past 3 years has decreased by 1,48. As of December 31, 2020, the value of the coefficient is critical. The ratio of the provision of own circulating assets remained at a value that did not correspond to the normal value during the entire analyzed period.

The safety factor for inventories as of December 31, 2020, is critical and equals -17,5. However, it should be noted that the value of this coefficient during the entire period did not fit into the established standard.

The value of the remaining coefficients of financial stability are within the norm. However, there is a decline in most of them, which indicates the need for a number of measures to improve the financial condition of the company.

Table 14. Calculation of liquidity indicators of JSC Russian Railways

Liquidity indicator	Indicator value				Change in indicator	Recommended value
	31.12.2017	31.12.2018	31.12.2019	31.12.2020		
1. Current (general) liquidity ratio	0,56	0,48	0,42	0,47	-0,09	The normal value for this industry is 1,7 or more.
2. Rapid (intermediate) liquidity ratio	0,36	0,29	0,25	0,27	-0,09	Normal value: 1 or more.
3. Absolute liquidity ratio	0,15	0,11	0,08	0,08	-0,07	Normal value: 0,2 or more.

Source: Created by the author based on the financial statements of Russian Railways for 2020 and 2019 and data from audit-it.ru

At the end of the analyzed period, the value of all three coefficients is below the norm.

The current liquidity ratio has a value of 0,47 against the standard value of 1,7. It should be noted that during the entire analyzed period there was a multidirectional change in the current liquidity ratio; the maximum value was 0,56, the minimum – 0,42.

The value of the quick liquidity ratio (0,27) also turned out to be below the permissible level. This means that Russian Railways does not have enough assets that can be quickly converted into cash to pay off short-term payables.

The absolute liquidity ratio has a value of 0,08 at a rate of 0,2. Moreover, it should be noted the negative dynamics of the indicator - for the entire analyzed period, the absolute liquidity ratio decreased by 0,07.

Table 15. Profitability analysis

Profitability indicators	Values (in % or in pennies from the ruble)			Change	
	2018 г.	2019 г.	2020 г.	kopecks	± %
1. Sales margin (the amount of profit from sales in each ruble of revenue). Normal value: 4% or more.	7,8	9	6,5	-1,3	-17,4
2. EBIT sales margin (the amount of profit from sales before interest and taxes in each ruble of revenue).	6,3	9,2	4,5	-1,8	-27,9

3. Net profit margin (net profit in each ruble of revenue). Normal value: at least 2%.	1	2,9	<0,1	-1	-98,5

Source: Created by the author based on the financial statements of Russian Railways for 2020 and 2019 and data from audit-it.ru

The profitability indicators presented in the table for the last year, despite the negative dynamics, have positive values as a result of the profitable activities of Russian Railways. However, the indicator of return on sales in terms of net profit not only does not fit into the normative value, but also has a critical value. This is due to the drop in the value of net profit by 98,5%.

Based on the above calculations based on the analysis of the financial position of Russian Railways the following conclusions can be drawn.

Among the positive are the following:

- over the past 3 years there has been a significant increase in non-circulating and circulating assets, as well as equity;
- net assets exceed the authorized capital, moreover, they have increased during the analyzed period;
- insignificant, but increase in the revenue of the organization;
- for the period from 01.01.2020 to 31.12.2020 profit from sales was received (117 320 259 thousand rubles), but its negative dynamics was observed compared to the previous year (-48 971 793 thousand rubles);
- the value of most indicators of financial stability are within the norm;
- the ratio of provision with own circulating assets has a negative value as of 31.12.2020 (-5,53);
- the autonomy ratio has an optimal value (0,65);
- the investment coverage ratio is of good value (the share of equity and long-term liabilities is 88% of the total capital of the organization).

There are indicators and performance results that are of unsatisfactory value:

- net profit fell by more than 95%, which affected the value of the return on sales in terms of net profit (<0,1 at the end of 2020);
- the value of profitability indicators have negative dynamics, even though they all fit into the norm;
- below the normal value of the absolute liquidity ratio;

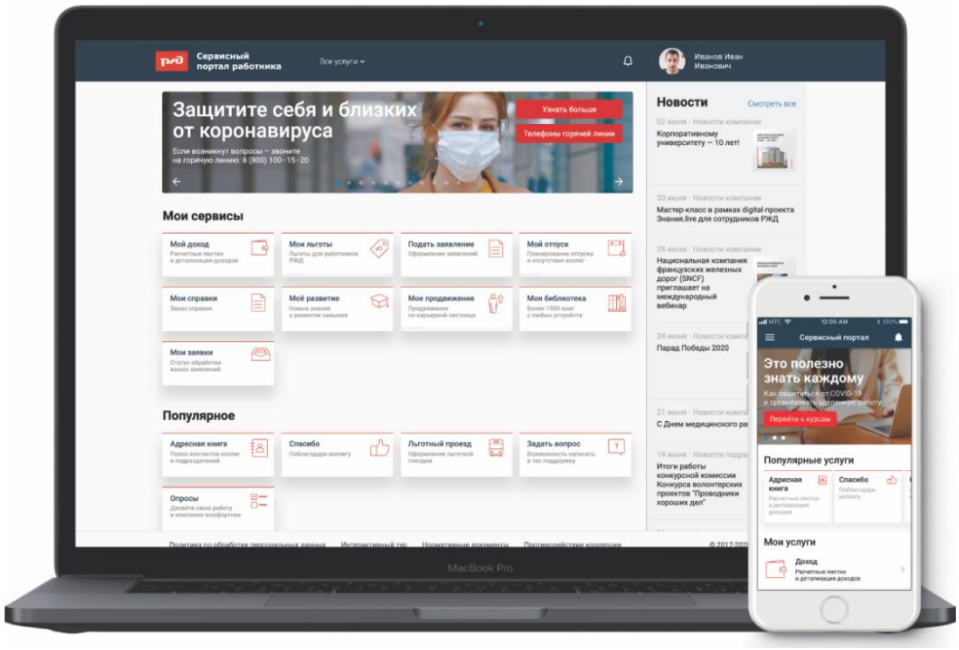
- significant negative dynamics of profit before interest payable and taxation (EBIT) per ruble of proceeds of Russian Railways (-1,8 kopecks of this profitability indicator for 2018);
- the coefficient of maneuverability of equity capital has a negative value. This indicates that the financing of non-current assets is made by means of own funds, and the financing of working capital is made by means of borrowed funds, which generally leads to a decrease in financial stability.

In general, the financial condition of Russian Railways can be characterized as satisfactory, since most of the indicators fit into the normative value, or are close to them. Also, the organization's activities continue to be profitable. This means that the company has funds to develop their HR services.

5.4 Analysis of Digital HR services of JSC “Russian Railways”

Russian Railways is one of the largest companies in the country. The number of staff is more than 700,000 people. Geography of the company's work from Kaliningrad to Vladivostok. Therefore, digitalization provides an opportunity to bring all employees together in a single network and improve their efficiency, access to all services and facilitate access to information.

In 2017, the company began to actively develop its corporate platform "Service Portal of a Russian Railways Employee", which is available on the domain https://my.rzd.ru/. Only employees have access to their personal account on the site. They can enter using their personal SNILS number and password. Users can use the service both from a computer and using a mobile application (see Fig.17).



Source: HR-tv.ru, 2020

Figure 17. Service portal of a Russian Railways employee

Thanks to this service, any employee of Russian Railways, regardless of his location (but with the Internet):

- to be in the general information field;
- has the ability to follow the latest company news;
- in the “one-stop shop” mode, he receives the necessary information on his income and other accruals, leave, benefits, pensions;
- orders various certificates and copies of documents;
- to be engaged in self-education “here and now”.

The service portal offers extensive functionality that is conveniently structured in the sections of the main menu. The functionality of the service is similar to that of the "Gosuslugi" website (portal of state services of the Russian Federation).

Figure 18 shows the capabilities of a personal account in Russian.

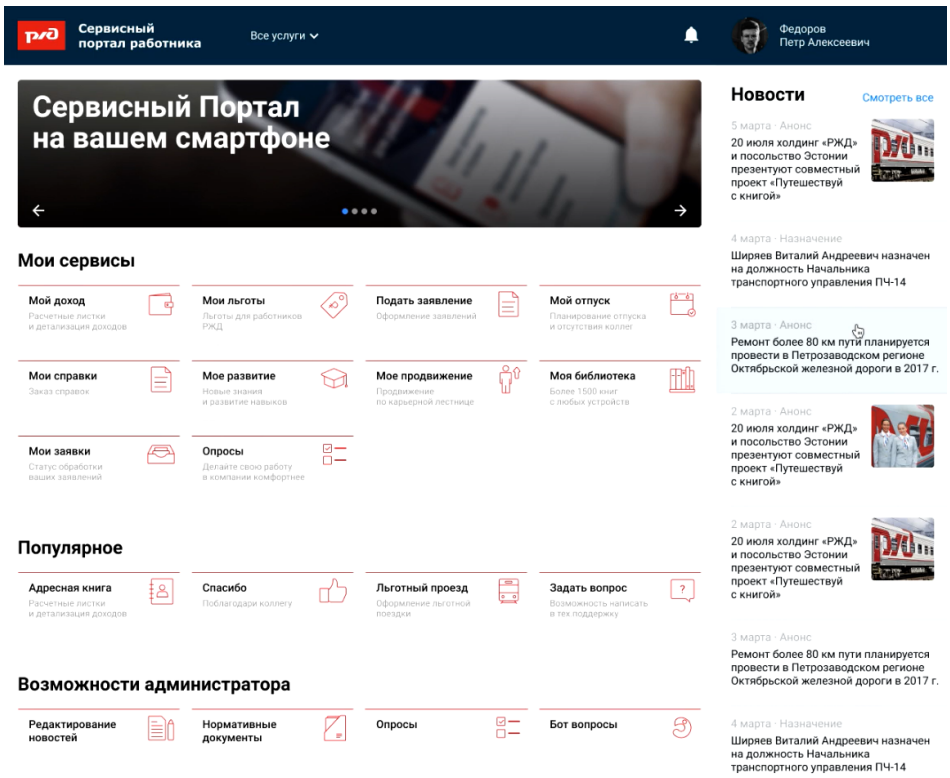


Figure 18. Personal account of the Service portal of a Russian Railways employee

"My income". This service allows the employee to keep track of his wages, receive pay slips. Information can be viewed for any period of interest.

"My certificates". In this section, an employee can order up to 16 certificates: a certificate from the place of work, 2-NDFL, etc. The document can be obtained both in electronic form and on paper. In the latter case, information is sent to the user by mail with the place and time, where and when it is possible to receive a paper copy of the ordered certificate.

"My benefits". Here you can see information about all available benefits (travel, sanatorium vouchers, subscriptions, etc.), as well as apply for their appointment.

"My vacation". In the section "My calendar" an employee can keep track of the dates of his vacation, in the section "Schedule of absences" - the schedules of vacations of his colleagues.

"My career advancement". This service allows employees to receive information about all open vacancies in the company and apply. There are two options "project vacancies" and "vacancies". For example, by choosing the first option, and then the project "Digital transformation of Russian Railways", you can find the goals and objectives of this initiative and open vacancies. The second option allows you to get acquainted with all the current vacancies of the company.

In the "Reserve" section, an employee can declare his candidacy for the personnel reserve of a specific unit and undergo an assessment of his personal characteristics and motivational profile.

"My development". The section consists of the following elements: Assigned Learning, Distance Learning, Corporate University, Library, Mentoring, and My Grades.

“SDO” (Distance Education System) allows an employee to undergo training assigned to him by the company or independently explore areas of interest. In this he can be helped by access to more than 1,500 books.

By choosing “mentoring”, a company employee can choose a mentor for himself or become a specialist himself. Mentors will help in professional development, achieve goals and unleash potential, while experts will advise on professional issues and help find answers. The capabilities of the service allow you to write personal messages, conduct consultations and group meetings, and also draw up an individual employee development plan.

“Submit Application” allows you to submit any available application online.

"My applications". Allows you to track the processing status of submitted applications.

"My Library". Provides quick access to more than 1,500 books of the Russian Railways Corporate University.

"Polls". Section with surveys conducted by various departments of Russian Railways.

"Contacts". In this section you can find all the necessary data of employees with whom you need to contact. The full name, position, phone number and e-mail of all employees from different departments are available. If an employee is on a business trip, on sick leave or on vacation, he is marked with the appropriate status.

"Spasibo". The service provides an opportunity to thank a colleague. Each employee has up to 30 "Thank you" per month available. You can also see what "spasibo" has been received and sent. At the end of each quarter, a rating is formed, and the best employees receive bonuses: from letters of thanks to certificates for training, master classes, etc.

"Ask a question". This service allows you to write in those. support.

"News". The column is located on the right side of the screen, if you go through a computer, the latest company news is displayed there.

Since February 2020, another service has been available on the Service Portal of an employee of Russian Railways, which reflects the activity of employees in communication with colleagues and their achievements in mastering the platform's capabilities. It can be found in your personal account by clicking "Achievements". With the help of this service, you can receive digital awards.

“Digital achievements are an element of gamification, that is, game mechanics that are widely used today in education and business as a motivational tool. Such incentives exist in the HR programs of many large companies”, - said Stanislav Sugak, head of the Center for Internal Communications and Employer Brand of JSC Russian Railways (gudok.ru, 2021).

At the moment, up to 14 digital rewards, or achievements are available for performing certain actions on the Service Portal. To find out what is required to receive a specific reward, you need to click on it.

For example, to receive the “Active User” award, you need to fill in the column of interests and competencies in your profile, confirm your email, go to the portal through the mobile application, go to the electronic payroll, and visit the Service Portal for five days in a row.

To receive the "Advanced User" badge, you need to add links to your social network accounts to your profile in addition to all of the above, and issue a virtual transport claim for a long-distance travel discount ticket through the Service Portal.

The "Reliable Partner" award is given to an employee who will be thanked by colleagues from other departments 20 times on the portal.

If, since the launch of the service of achievements, congratulate three employees on their birthday and say thank you to five more, then you can get the title of "Polite Colleague".

To receive the award "For the transition to digital", you must agree to provide a payroll in electronic form (this is done using the toggle switch in the "My Income" section), as well as download at least one such sheet.

As the service of achievement gains popularity among employees, the company plans to expand the list of awards.

In March, portal users have the opportunity to communicate on the platform through the built-in chat.

The chat on the platform appeared at the request of users: last year, a survey was conducted to find out how satisfied they are with the quality of work and the functionality of the resource. About 25% of respondents answered that they did not have enough chat.

User can enter the chat from the main page of the service portal (the chat icon is located on the top panel, next to the "bell"). It is easy to find the desired addressee in the "Address Book". To start a correspondence, person should click the "Write" button in the colleague's profile.

If the employee for some reason does not want to receive messages, then the chat can be disabled in the "Settings" section (in the "Security and privacy" tab, you must switch the switch to the "off for messages" position). For those employees who turn off this feature, the "Write" icon disappears in the "Address Book".

In July 2019, another service portal was launched, but for the company's veterans. The work is carried out by the Honor Charitable Foundation, the platform is located on the domain https://www.pochet.ru/. At the moment, the portal works on the Moscow, Volga, Transbaikal, Gorky, West Siberian, Northern, Sverdlovsk railways, as well as for members of the Regional public organization of veterans and pensioners of the railway transport administration.

The number of non-working retirees who are supported is more than 660 thousand people, of which more than 550 thousand people are retired from JSC Russian Railways, almost 60 thousand people from JSC FPC, and 1.5 thousand from other railway transport organizations. people (pochet.ru, 2021).

This online service allows you to find out information about benefits, guarantees, compensations to which a pensioner is entitled in accordance with the Collective Agreement of Russian Railways (see Fig. 19).

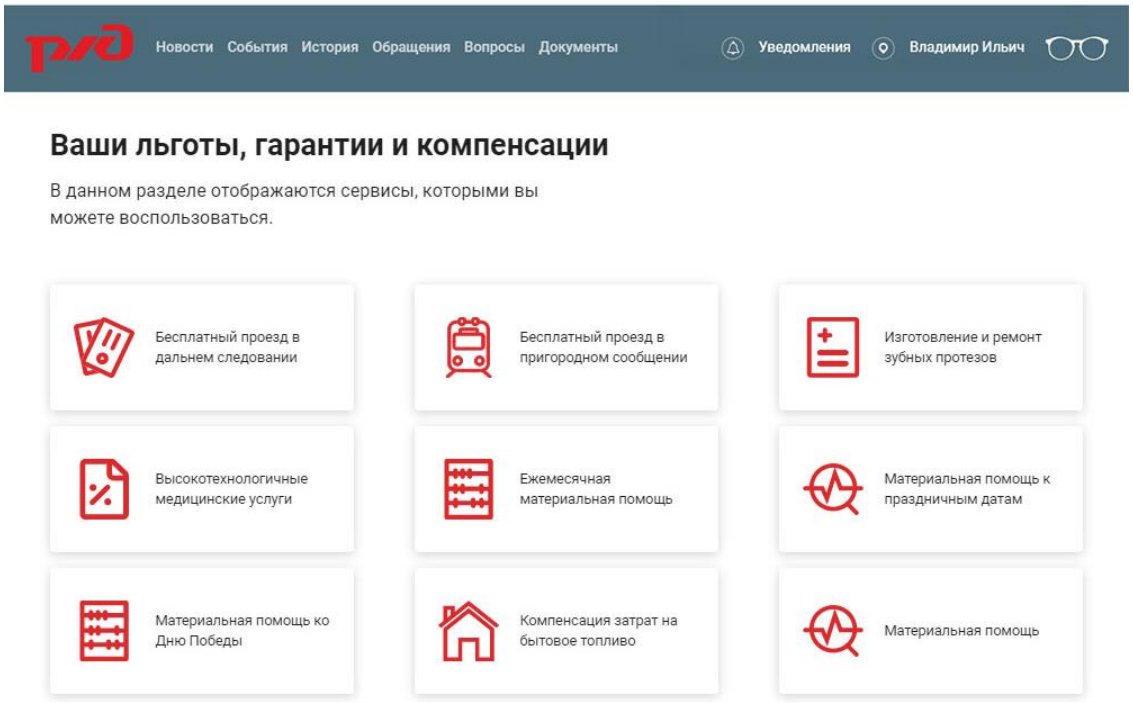


Figure 19. Service portal Pochet

For potential employees of Russian Railways, there is a career portal located at the domain https://team.rzd.ru/ (see Fig. 20). Using this platform, you can get acquainted with all open vacancies and submit an application and resume. The company has opportunities for both employees and students and schoolchildren. This portal is a digital (electronic) recruiting tool.

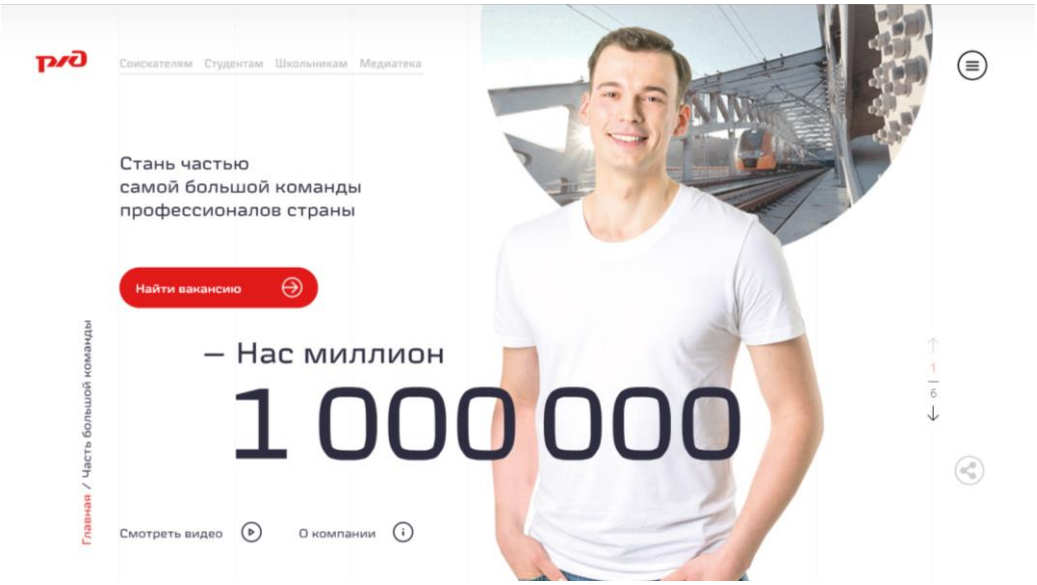


Figure 20. Career portal of Russian Railways

At Russian Railways, the digital transformation of HR activities is actively carried out as part of the Digital Transformation strategy until 2025. At the moment, the main functions have been digitized, such as electronic recruitment, training, mentoring, career management and compensation. Also, modern technologies are used for effective communication of all employees using chat and "spasibo", gamification in using the portal itself with the help of "achievements". Partially, the company's activities have been transferred to electronic document management.

Based on the above analysis of the existing HR services of the company and the results of a survey of employees, which was conducted by the company itself in October 2020 (this information is closed), we will highlight the main pros and cons of using the digital HR and identify the opportunities and threats for the further development of these services (see Tab. 16).

Table 16. SWOT analysis of Russian Railways Digital HR

Strengths	**Weaknesses**
- Availability of all necessary services in online format	- Very complicated password recovery process

- Separate platforms for different target audiences - Service development and the emergence of new opportunities - SNILS login reduces the likelihood of account hacking - User-friendly interface - Accessibility from different devices	- Career portal only for posting vacancies and submitting an application - Lack of communication between employees from different regions - The dependence of all services on the Internet connection - The platform is mainly used by office workers only - Remote stations do not use company services - Traditional employee training was diluted only with video calls
Threats	**Opportunities**
- Network attacks - After the end of the Digital Transformation strategy, the development of the service will stop - Workers will never use the services - Lack of interest of employees in the development of services - Lack of funds in the company's budget for the development of Digital HR services	- Creation of communities of interest - Use of advanced technologies in employee training - Creation of new opportunities on the career portal - Activities to attract young employees - Digital Skills Training Activities

As can be seen from the table, Russian Railways services in HR have both pluses and minuses. The ability to get almost all available services online is one of the strengths, but not all employees are ready to use them. One of the main areas, taking into account both opportunities and threats, is training employees in digital skills. This will make it possible to familiarize employees with the available services even closer, to stimulate their interest in the development of these services and their daily use.

6. New Digital HR services

6.1 Ways to improve Digital HR services according to the analysis of HR trends and the survey results

The use of technology in various spheres of life makes it possible to simplify many processes. So in HR, this allows you to automate activities, which reduces the workload of HR specialists, makes it possible to change the emphasis on the creative component, and implement a personalized approach to each employee.

However, the world is constantly changing, technologies are developing and any processes require revision. Digital HR must also change along with everything around, as employees have new needs, trends change, and work processes change. Therefore, measures to improve HR services should be one of the directions for the development of the company's activities.

In the course of cooperation with Russian Railways, HR specialists came forward with a request to create a service for communication of the company's employees. This request is due to the fact that the geography of the company is large and, as such, there is no connection between employees.

Analysis of the experience of foreign companies made it possible to single out such a tool as a corporate blog. Since the service portal is intended only for company employees, the blog will be internal.

This event will create communities of interest, exchange experiences between employees, and keep abreast of news of interest.

Let's consider the most famous practices of introducing a corporate blog:

– Adidas corporate blog. The authors are employees of the company, the blog is in the public domain. From statistics tools, the number of views for each article is used.
– Bosch corporate blog. The authors are IT specialists of the company, the blog is in the public domain. There is a selection "recommended to you" after each article. The blog also contains rules and guidelines: it is written about netiquette, moderation, and removal of comments.
– McKinsey corporate blog. The authors are the employees of the company, the blog is in the public domain. The articles follow one after the other, like an Instagram feed, there is a subscribe button after each article.

– Corporate blog SalesForce. The authors are the employees of the company, the blog is in the public domain. Each article is marked with tags, and the main point is indicated at the beginning. After each article, a selection of the latest articles by category is provided.

To study the opinions of employees regarding their writing of articles, they were asked the question "Highlight the main difficulty in writing articles for the future corporate blog of the company." 53 people took part in the survey. Next, we will consider the main problems that HR specialists may face when implementing a blog, and how to cope with them (see Table 17).

Table 17. The main difficulties of introducing a corporate blog and how to overcome them

Difficulties	**Ways to overcome**
"I want to write, but I don't know what"	Make thematic sections of articles corporate blog (communication, exchange of experience)
"What will my colleagues think about me?"	Involvement in dialogue with the author
"I don't know how to formulate a thought"	Guide with practical tips
"What if nobody likes it?"	Optimal statistics tools (views, likes, comments)
"This is only for teens"	Explain to employees the reason of creating a blog
"I don't have time for this"	Ability to create a draft to continue writing at any time
"Why would I do this?"	Employee motivation

Thematic division of posts will make it easier for an employee to find an interesting topic for writing an article, tags will make it easier to find articles of interest. All of this also makes it easier to navigate your blog. The author himself can generate a topic and send it to the moderator for review.

At the initial stage, it is important to show potential writers what and how they can write. At the time of launching the blog, it's important to fill it with posts from senior managers as an example of openness.

Involvement in dialogue with authors is possible by adding the ability to comment on an article. However, these measures require a thorough elaboration of mechanisms for checking comments on censorship.

Access to the blog should be done with 1-2 transitions so that the articles are always "before the eyes" of the employees. Since the main purpose of using the service portal platform is to receive services, the blog should grab attention so that the user lingers on it. One of the possible blog placements is the tab next to the news.

The field of each article must display a selection of recommended articles, this will also keep the user on the blog. Recommendations can reflect both previous articles by the same author and similar materials.

Blogs can be kept by both individual employees and departments. This will allow employees to get better acquainted with the peculiarities of the work of other departments, other stations, etc. It will also inform all employees about important events held by companies.

One of the latest trends in Digital HR is the use of VR in employee training. Since Russian Railways employs specialists whose work is associated with risks to life, this technology is the most relevant.

One of the most widespread professions in the company is the "driver of the train". The drivers drive both freight and passenger trains. It is important for this profession to follow all the rules, to be extremely careful and careful. Since the movement is carried out at great speed, there are also unexpected moments. For all this, drivers are trained during training.

VR training of drivers will allow specialists to be immersed in the driver's cab using virtual reality. This technology is aimed at training the departure and movement of the train, the reaction to the occurrence of obstacles, and other emergency situations.

The advantages of using virtual reality technology are speed and efficiency, safety, quality of training, reduced training costs, and flexibility.

On average, Russian Railways has 230 trained drivers per year in one department. There are 64 divisions in Russia in total. Training takes 1 month, and the cost per employee is 50 thousand rubles. The total cost of driver training is 736 million rubles. in year.

The cost of 1 pair of VR glasses is 100 thousand rubles. It is enough to buy 2 pairs for one department since this technology requires 1,5 hours per employee. The development of a training program will cost an average of 3 million rubles. The purchase of the company's equipment will cost 12,8 million rubles. at the initial stage.

The traditional approach is allocated 20 working days for training, 6 hours a day. Total 120 hours. Practice takes 20 hours. The use of virtual reality technology requires only 1,5 hours. Accordingly,

the training will last 101,5 hours. That will reduce training costs by 15%. The costs will amount to 625,6 million rubles.

In total, training and purchase of equipment will cost the company 638 million rubles, which is 14% less (-98 million rubles).

One of the trends in Digital HR is attracting and retaining Generation Z employees. The modern generation can no longer imagine their life without smartphones, they have become an integral part of life. To attract them to the Russian Railways company and familiarize them with the activities of the organization, it is recommended to create a mobile game.

Mobile games are actively used by both foreign and Russian companies. Marriott launched restaurant-like games on Facebook. It was designed to select new employees around the world. Upstream marketing company has developed a game “The challenge” for selecting managers. The game lasted 1 hour and contained 7 missions. Sberbank used the "Battle of the Banks" game during the Student Olympiad to select the best students for the company. OBI also uses a store simulation game to train new employees.

The development of a mobile game will allow users to form an idea of the Russian Railways holding as a potential employer and create a channel for informing the external youth audience. It is also necessary to form a positive image of the company, to dispel stereotypes about railways. professions and form a stable community to attract Russian Railways to projects. In the future, the game can be used to train new employees.

The target audience is boys and girls between the ages of 15 and 25. These are schoolchildren who graduate from school and think about choosing a profession, as well as students graduating from universities and colleges.

To develop the concept of the game, an online survey (Appendix 1) was conducted during the month of March. Schoolchildren and students from different cities of Russia were asked to take an online survey in Google form. Among them were also people whose parents work for Russian Railways. All survey results and the format presented to Russian Railways can be seen in Appendix 2. The conceptual framework of "serious play", which was explored in the work of Küppera D.M. et al. (2021) made it possible to take into account all the important points for creating a game concept when compiling a survey.

The survey involved 78 people aged 15 to 17 years (45 people) and from 18 to 25 years old (33 people). 75% of respondents answered that they play mobile games.

The most popular genres of games among the respondents were endless runners, strategy simulators, logic puzzles, story games, and survival games.

Most of the respondents in games are attracted by the opportunity to get positive emotions, calm down, play with friends, as well as set goals and achieve them. Most of all, they are repulsed by the monotony of games, as well as the presence of a large amount of advertising.

The survey presented a number of parameters of the game and the respondents had to rate their significance from 1 to 5. According to the results, the most important parameters are graphics, clear rules, plot, improvement of skills, awards.

The answers to the question of which genre the respondents would like to see a game about the railroad were distributed as follows:

1. story games - 26%;
2. strategic play - 22.1%;
3. economic simulator - 9.1%;
4. endless runner - 18.2%;
5. train simulator - 14.3%;
6. puzzle - 9.1%;
7. board turn-based game - 1.3%.

Based on the survey results, it is recommended to create a game in the Merge genre. The game consists of 2 main parts:

1. Interactive linear adventure from the third person;

2. A puzzle that allows you to get the resources and materials needed to advance in the adventure.

Each episode gives the player the opportunity to be in a new role: student, IT specialist, head of a small station, etc. This will make it possible to familiarize potential employees with all professions in the company. It will also help him determine what interests him most and possibly help in choosing a future profession.

The emphasis in the game is built on the branch of training, employment, wages, health, career, recreation, and bonuses.

During the game, the player will need to get items. This is precisely due to the introduction of the Merge genre. The task is to get new items by combining two identical ones. The puzzle gets harder with each level, so the player's interest will only increase.

It is also important here to show the complex structure of the company, but in a simple way (railway stations, depots, repair stations, maintenance of buildings, transport, etc.) in the following areas:

- passenger transportation;
- freight transportation and logistics;
- management of the transportation process;
- construction and maintenance of infrastructure;
- information technology and innovation.

The respondents indicated that they want to be able to play with their friends. Therefore, the game will be able to unite into in-game communities. Associations of players will allow, in addition to communicating in the game, distributing information outside the game, to perform joint in-game tasks, to help each other in the search/delivery/production of parts, orders, materials, etc.

KPI of the project:

- control pulse surveys (1-2 questions) to monitor changes in perceptions about the company. Implementation through the dialogues of characters inside the game;
- number of installations;
- the number of active players per month;
- the average duration of a player's retention;
- the average duration of a session.

6.2 Assessment of the efficiency of promising areas of improving Digital HR services of JSC “Russian Railways”

In March 2021, a corporate blog was launched in test mode on the service portal of a Russian Railways employee (see Fig.21). Some suggestions were taken into account: the blog is available from the start page next to the news, at the moment instead of the authors thematic blogs, one of which is about the life of the Central Communications Station of Russian Railways. From the statistics tools, the number of views and the number of likes is used.

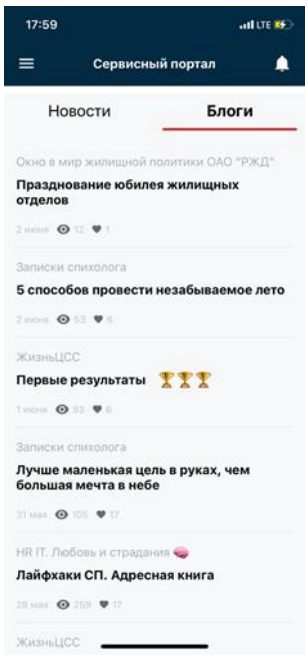


Figure 21. Corporate blog of Russian Railways

In order to assess the opinion of employees regarding the blog, which appeared on the service portal, and the prospects for introducing VR into the training process, a survey was conducted (Appendix 3). 63 Russian Railways employees took part in the survey. The survey was conducted in an online format, a link to it was sent to the working chats.

The survey was attended by representatives of the following professions:

- HR specialist (4 people);
- driver (17 people);
- compiler (22 people);
- duty officer (13 people);
- signalman (2 people);
- dispatcher (3 people);
- accountant (2 people).

All 63 respondents believe that it is necessary to continue developing HR services in the company.

As for the appearance of the blog, everyone noticed that it appeared on the service portal and entered. 17 people (27%) read at least 1 article, 18 people (29%) just opened the article but did not read it, and 18 people (44%) did not even open a single article.

76% of respondents find the blog to be useful. Most of them noted views and likes as necessary tools for tracking statistics, preferred comments a little less, and reposts are not at all popular among respondents.

43 people (68%) intend to continue reading the articles that will be published in the future.

Thus, the appearance of the blog on the service portal found a response among the employees of Russian Railways. Their wishes regarding statistics tracking tools were taken into account.

Since only 68% of respondents said they would read the articles, company should events to develop the blog so that all employees find there what interests them.

Absolutely all respondents believe that VR technologies can help train drivers, and they themselves would like to undergo training using virtual reality. That is, this recommendation found a response not only among the target audience (drivers) but also among representatives of other professions.

The use of VR in training will allow:

1) reduce training costs by 14% (calculated in 6.1);

2) reduce training time;

3) create a safe learning environment;

4) involve other professions of Russian Railways in training using this technology;

5) develop alternative methods of staff training.

A survey was also conducted regarding the genre chosen for the mobile game (Appendix 4). The respondents were the same schoolchildren and students who participated in the survey about the mobile game earlier (78 people).

To begin with, the respondents were asked to familiarize themselves with the genre of the game Merge 2. For this, the survey provided links to games.

As it turned out, many have already played this genre of games (64%). The average game duration is up to 1 month, which is pretty good. However, only 37% would recommend this game to their friends.

As of June 20, Russian Railways has already hired a mobile game development company and an active game development process is underway according to the proposed concept.

The effectiveness and significance of the proposed activities was also noted by the Director for Development and Personnel Policy of the Innopolis University (Appendix 5). The university itself actively uses technology in organizing the activities of HR, so the review of such a specialist is very valuable. Radik Valiev noted that the proposed recommendations take into account not only existing trends, but also the company's development opportunities and needs.

Discussion

This last part outlines some of the most notable literature review study findings and includes areas for additional investigation.

Digitization is having a huge impact on business change. HR services are also subject to changes. Companies are trying to integrate technology into the work of all services in order to remain competitive in the market, especially in the labor market.

The following mega-trends had the greatest influence on the formation of Digital HR:

Flexible workforce. Most influenced by the Covid-19 pandemic, which literally forced us to reconsider all possible forms of employment. Therefore, HR companies now need to develop new methods of working with employees remotely.

Digitalization of business models. Many companies have already moved all of their HR processes online, from recruiting to implementing them.

Using artificial intelligence. HR currently lacks key analytical competencies to process a large amount of data, but companies are actively developing in this direction.

As noted by many authors, and HR specialists themselves from companies around the world, the most common HR functions in which technologies are being implemented are recruiting, training, compensation, mentoring, communication, and performance evaluation.

The use of technologies in the work of HR can bring quite a lot of benefits: it allows to reduce costs (for example, for training), use time efficiently (you can get all the necessary information online, therefore, HR specialists do not waste their time working with papers), use effective tools for communication within the company, etc.

Regarding the practice of introducing such technologies, unfortunately, it is very difficult to find any data. Companies try not to advertise everything that happens in their company. Some organizations publish information only about the technologies they are implementing, without detailed data. There is also no up-to-date data on Digital HR in the world. You can find information by region, but it is impossible to make a comparative characteristic since the studies are carried out in different time periods (for example, the last study of Digital HR in Europe was carried out in 2018). This problem is a good prerequisite for future research.

Despite this, after examining the reports on the use of Digital HR in different regions, it can be concluded that more than 50% of companies have already begun the digital transformation of the work of their HR departments.

However, it is not enough just to introduce technologies into the work of HR. Since everything in our world undergoes changes and humanity does not stand still, HR technologies also need constant development. Companies come to the aid of trends, the study of which will determine the ways of development. So now more and more companies are paying careful attention to the psychological health of their employees. One of the top priorities is attracting and retaining Gen Z employees and using artificial intelligence to analyze data. Also, more and more companies are using virtual reality technologies to train their employees.

Studying the experience of Russian Railways and other Russian companies allows us to conclude that digital in HR of Russia is not standing still and is developing. Companies are implementing technologies borrowed from the West. Completely new services also appear in Russia, which is then borrowed by foreign companies. For example, a startup from Russia created a service for recruiting employees based on artificial intelligence using video interviews. Russian HR are not inferior to their Western partners. Therefore, existing trends in technology can be actively implemented in the work of Russian companies.

Despite all the positive aspects of the implementation of Digital HR, there are also difficulties. Practically all HR experts in the world note that these events require large financial investments. However, such expenses are well paid off. So, I proved that the introduction of VR technologies in the training of Russian Railways drivers will reduce training costs by 14%. Also, among the problems is communication with developers. Many companies noted that after the introduction of technologies, it is very difficult to contact the developers if any problems arise. In this case, some companies develop platforms and applications themselves with the help of the IT department. And the last is the need to train staff in digital skills. Not all people are equipped to use and understand technology. To do this, companies should train their employees, make special guides, or hold meetings.

The most important problem identified by the authors and of which I was convinced myself is that it is not always possible to assess the effectiveness of the use of technologies in the work of HR. There are no quantitative characteristics that can be changed. The only way is when the use of technology allows you to reduce costs, in which case you can assess the economic effect. This issue is an urgent problem for future research in the field of Digital HR.

Conclusion

The questions of research should be answered in order to finish the research and to represent the success of the objectives. The first question to be investigated in this thesis is this:

Q1. Does digitalization affect the work of HR function?

Yes, digitalization has a huge impact on the functioning of HR. In the process of introducing technologies into the work of specialists in HR, their work has changed dramatically. Now specialists do not bother with a huge number of papers, they pay more attention to the training and adaptation of employees. Digital HR allows you to more efficiently assess the productivity of employees and form the wages fund. HR becomes partners of business and employees.

The second research question, formulated as follows, describes another achieved goal of this analysis:

Q2. If we say that the HR is changing under the influence of digitalization, then how can companies improve their HR services?

In order to change the functioning of HR in the company, the following steps must be followed:

Assess the capabilities of the company. As a rule, any changes require an investment, so it is important to evaluate all resources at the initial stage.

Assess the needs of the company. In this case, it is necessary to study the opinion of HR specialists, employees, and top management. It is those who directly work in the company who know what they lack and what can be improved.

Study the practice of implementing Digital HR in other companies. Research showed that no matter which country you take for comparison, many countries use similar technologies in their work.

Get familiar with existing trends. It is the trends that will help to determine the ways of development of existing HR technologies.

Among the most common practices for improving HR services are the following:

Electronic recruiting. Companies post vacancies on career sites or on their career portals. This also allows you to immediately assess the employee, for example, a potential employee can

immediately take a survey, testing or video interview, so that the HR specialist can immediately assess all the skills.

Electronic career management also uses the already mentioned career portals to enable their own employees to climb the career ladder and develop.

E-learning. Companies create online training platforms for their employees or buy courses from professional organizations. This allows employees to undergo training without interrupting the work process, or to reduce the time away from the workplace during the training period. Recently, more and more companies are adopting virtual reality technologies for employee training.

Technologies for communication. In order to provide communication between all levels in the company corporate blogs, chats, mailings are being introduced.

Electronic mentoring. This practice allows you to communicate online with a work mentor who will help with adaptation in the workplace and development.

Electronic compensation has long been used in many businesses. This allows employees to independently track payroll and order the necessary documents.

Electronic job evaluation. Allows you to assign tasks to employees online, monitor the progress of work, and collect feedback.

All these tools are developing and every year new opportunities appear for the digital transformation of HR activities. Therefore, it is important for companies to track these changes, always keep abreast of the latest news and be able to make changes.

List of references

2021 top human resources Trends & Predictions you should know about! (part 2) (2020). Available at: https://www.pentabell.com/article/2021-top-human-resources-Trends-%26-Predictions-you-should-know-about!--%28part-2%29.

Akhverdyan, A. (2019) Interview with Artificial Intelligence - The Secret of the Firm. URL: https://secretmag.ru/opinions/sobesedovanie-s-iskusstvennym-intellektom.htm (Accessed: May 23, 2021).

Amara, N. B., & Atia, L. (2016). E-training and its role in human resources development. Global Journal of Human Resource Management, 4(1), 1–12.

Analysis of the financial stability of an enterprise or organization. Financial analysis. Available at: https://www.audit-it.ru/finanaliz/terms/solvency/.

Andersson, L., B. Lanvin, and L. Van der Heyden 2016. "Digitalisation Initiatives and Corporate Strategies: A Few Implications for Talent". In the Global Competitiveness Index 2017: Talent and Technology. Edited by B. Lanvin and P. Evans, 51–57.

Aurelia, S. and Momin, M. M. (2020) "Global reverberation and prediction for HRM amid and after COVID-19: A technological viewpoint," Materials Today: Proceedings. doi: 10.1016/j.matpr.2020.11.544.

Bondarouk, T. V. and Ruël, H. J. M. (2009) "Electronic human resource management: Challenges in the digital era," International Journal of Human Resource Management, pp. 505–514. doi: 10.1080/09585190802707235.

Boubacar, D. (2018) Human resources: the African trend is to digitalization - AfrikaTech. Available at: https://www.afrikatech.com/misc/human-resources-the-african-trend-is-to-digitalization/.

Braulov, E. (2020) How Russian Railways created and develops a service portal for employees. Available at: https://hr-tv.ru/articles/kak-rzhd-sozdala-i-razvivaet-servisnyj-portal-dlja-sotrudnikov.html.

Chitty, A. (2018) How is HR Technology Supporting Businesses in East Africa? Available at: https://www.hrtechafrica.com/2018/08/01/how-is-hr-technology-supporting-businesses-in-east-africa/.

Digital HR Survey 2020: Challenges and opportunities for Middle East companies - PwC Middle East (no date). Available at: https://www.pwc.com/m1/en/publications/digital-hr-survey-2020-challenges-opportunities-middle-east-companies.html.

Digital Transformation: How we prepare our employees for the future (2019). Available at: https://www.henkel.com/spotlight/2019-07-04-digital-transformation-how-we-prepare-our-employees-for-the-future-959348.

Dulebohn, J. H., & Marler, J. H. (2005). E-Compensation: The Potential to Transform Practice. In Greutal, & Stone (Eds.), The Brave New World of e-HR (166-189). San Francisco, CA: Jossey-Bass.

Forbes Insights (2016) "How digital transformation elevates human capital management". Available at: https://images.forbes.com/forbesinsights/StudyPDFs/Adobe-HumanCapitalManagement-REPORT.pdf.

Galer, S. (2019) AI-Based Career Mentoring For The Masses: When People Talk, Innovation Happens. Available at: https://www.forbes.com/sites/sap/2019/06/25/ai-based-career-mentoring-for-the-masses-when-people-talk-innovation-happens/?sh=4fdfbfcb76d1.

Gig economy - a new business paradigm - Mentamore. Available at: https://mentamore.com/biznes/gig-economy-gignomika.html

Harney, B. and Collings, D. G. (2021) "Navigating the shifting landscapes of HRM," Human Resource Management Review, p. 100824. doi: 10.1016/j.hrmr.2021.100824.

How VR is Transforming the Way We Train Associates (no date). Available at: https://corporate.walmart.com/newsroom/innovation/20180920/how-vr-is-transforming-the-way-we-train-associates.

HR Technology Pulse Survey | Gallagher USA (no date). Available at: https://www.ajg.com/us/2020-hr-technology-pulse-survey-report/.

Human Resource Digitalisation in Malaysia: Survey Findings by Digi and Vase.Ai | altHR Announcements (2020). Available at: https://althr.my/announcements/hr-digitalisation-survey-malaysia.

How virtual reality is changing the way employees train. Available at: https://corporate.walmart.com/newsroom/innovation/20180920/how-vr-is-transforming-the-way-we-train-associates

JSC "Russian Railways" has risen in the rating of the largest transport companies in the world to 5th place | Infrastructure | News | Beep (2018). Available at: https://gudok.ru/news/?ID=1439826.

Kasprisin, C. A., Single, P. B., Single, R. M., & Muller, C. B. (2003). Building a better bridge: Testing e-training to improve e-mentoring programmes in higher education. Mentoring & Tutoring, 11(1), 67–78.

Kemp, S. (2020) Digital 2020: Global Digital Overview — DataReportal – Global Digital Insights. Available at: https://datareportal.com/reports/digital-2020-global-digital-overview.

KPMG 2020 CEO Outlook: COVID-19 Special Edition (2020). Available at: https://home.kpmg/content/dam/kpmg/xx/pdf/2020/09/kpmg-2020-ceo-outlook.pdf

L'Oréal Earned Content Platform Employee Content | Olapic (no date). Available at: https://www.olapic.com/resources/case-study-loreal-talent_s1ec/.

List of countries by rail transport network size - Wikipedia. Available at: https://en.wikipedia.org/wiki/List_of_countries_by_rail_transport_network_size

Marler, J. H. and Parry, E. (2016) "Human resource management, strategic involvement and e-HRM technology," International Journal of Human Resource Management, 27(19), pp. 2233–2253. doi: 10.1080/09585192.2015.1091980.

Minbaeva, D. (2020) "Disrupted HR?," Human Resource Management Review, p. 100820. doi: 10.1016/j.hrmr.2020.100820.

Mosca, M. (2020) Digitalization of HRM: A study of success factors and consequences in the last decade.

Murphy, A. (2018). Can the digitisation of HR services alter employee perceptions of those services and the HR function at the same time as delivering HR operational cost savings to an organisation? (Doctoral dissertation, Dublin Business School).

Newbert, S.L. (2007), "Empirical research on the resource-based view of the firm: an assessment and suggestions for future research", Strategic Management Journal, vol. 28, no. 2, pp. 121.

Noel, P.H., Lanham, H.J., Palmer, R.F., Leykum, L.K. and Parchman, M.L. (2013), "The importance of relational coordination and reciprocal learning for chronic illness care within primary care teams", Health Care Management Review, Vol. 38 No. 1, pp. 20.

Paylocity Collaborates with Deloitte and Launches Modern Workforce Research | Paylocity (no date). Available at: https://www.paylocity.com/resources/resource-library/press-release/press-release-paylocity-collaborates-with-deloitte-and-launches-modern-workforce-research/.

Poba-Nzaou, P. et al. (2020) “Taxonomy of business value underlying motivations for e-HRM adoption: An empirical investigation based on HR processes,” Business Process Management Journal, 26(6), pp. 1661–1685. doi: 10.1108/BPMJ-06-2018-0150.

Ripa, V. (2020) To Get Into McKinsey, I Planted Cacti On An Island: An Overview Of The Game The Company Is Testing Applicants - Careers at vc.ru. Available at: https://vc.ru/hr/105960-chtoby-popast-v-mckinsey-ya-sazhala-kaktusy-na-ostrove-obzor-igry-s-pomoshchyu-kotoroy-kompaniya-testiruet-soiskateley.

Stringer, G. (2020) 5 HR trends you need to know for 2021: HowNow. Available at: https://gethownow.com/blog/5-hr-trends-you-need-to-know-for-2021/.

Strohmeier, S. (2007) “Research in e-HRM: Review and implications,” Human Resource Management Review, 17(1), pp. 19–37. doi: 10.1016/j.hrmr.2006.11.002.

Survey Results: Employee Experience During the Pandemic (2020). Available at: https://www.limeade.com/en/blog/employee-experience-during-the-pandemic-survey/.

Swaroop, K. R. (2012). E-HRM and how it will reduce the Cost in Organization. Asia Pacific Journal of Marketing & Management Review, 1(4), 133–139.

The award will find a user | Release of the newspaper Gudok from 2021.02.17 | 1 lane: Frames (2017). Available at: https://gudok.ru/newspaper/?ID=1553440.

The social economy: Unlocking value and productivity through social technologies | McKinsey (2012). Available at: https://www.mckinsey.com/industries/technology-media-and-telecommunications/our-insights/the-social-economy#.

Thite, M. (2020) “Digital human resource development: where are we? Where should we go and how do we go there?,” Human Resource Development International. doi: 10.1080/13678868.2020.1842982.

Top 6 HR Technology Trends for 2021 - PossibleWorks (no date). Available at: https://possibleworks.com/blog/top-6-hr-technology-trends-for-2021/.

Vardarlier, P. (2020) “Digital Transformation of Human Resource Management: Digital Applications and Strategic Tools in HRM,” in Contributions to Management Science. Springer, pp. 239–264. doi: 10.1007/978-3-030-29739-8_11.

Verlinden, N. (2018) Back to Basics: What is Digital HR? | AIHR Digital. URL: https://www.digitalhrtech.com/back-to-basics-what-is-digital-hr/.

Verma, S., Singh, V. and Bhattacharyya, S. S. (2020) “Do big data-driven HR practices improve HR service quality and innovation competency of SMEs,” International Journal of Organizational Analysis. doi: 10.1108/IJOA-04-2020-2128.

Virtual Reality Startup Raises $12M to Help Displaced Workers Retrain for New Jobs | Business Wire. Available at: https://www.businesswire.com/news/home/20201119005285/en/Virtual-Reality-Startup-Raises-12M-to-Help-Displaced-Workers-Retrain-for-New-Jobs.

Vulpen, E. van (2018) 9 Digital HR Terms Every HR Professional Must Know. Available at: https://www.digitalhrtech.com/9-digital-hr-terms-every-hr-professional-must-know/.

Electronic magazine "HR Director". Available at: https://e.hr-director.ru/

Official site of the Pochet Charitable Foundation. Available at: https://www.pochet.ru/

Official site of JSC "Russian Railways". Available at: https://www.rzd.ru/

Career portal of JSC "Russian Railways". Available at: https://team.rzd.ru/

Service portal of an employee of JSC "Russian Railways". Available at: https://my.rzd.ru/

Corporate Social Report of JSC "Russian Railways" for 2019.

Financial statements of JSC "Russian Railways" for 2019-2020.

Annual Reports of JSC "Russian Railways" for 2018-2019.

Appendices

Appendix 1.

Мобильные игры

Привет!
Меня зовут Камилла)
Спасибо, что согласился поделиться своим мнением! Для меня это очень важно!
Далее ты увидишь простые вопросы относительно мобильных игр. Это нужно, чтобы понять, что именно заставляет людей выбирать те или иные мобильные игры.
Пожалуйста, прочитай внимательно все варианты ответов прежде чем что-то выбрать)

* Обязател

Hey!
My name is Kamilla)
Thank you for agreeing to share your opinion! It is very important for me!
Next, you will see some simple questions regarding mobile games. This is necessary in order to understand what exactly makes people choose certain mobile games. Please read carefully all the answer options before choosing something)

Как часто ты играешь в мобильные игры? *

How often do you play mobile games?

- ○ Каждый день — Every day
- ○ Несколько раз в неделю — Few times a week
- ○ 1 раз в неделю — Once a week
- ○ 1-3 раза в месяц — 1-3 times a month
- ○ Реже 1 раза в месяц — Less than once a month
- ○ Совсем не играю — I don't play at all

Какие игры привлекают тебя больше? (Выбери от 1 до 3 вариантов) *

Which games appeal to you more? (Choose from 1 to 3 options)

endless runners

☐ Бесконечные раннеры (Subway Surfers, Temple Run, Despicable Me: Minion Rush, Sonic Dash и т.п.)

strategic

☐ Стратегические (симуляторы ресторанов, ферм и т.д.)

clickers

☐ Кликеры (игры, где нужно лишь кликать на экран и тем самым ты зарабатываешь монеты, опыт и т.п.)

logic puzzles

☐ Логические головоломки (Candy Crush, Two Dots, Cut the Rope и т.п.)

survival games

☐ Игры на выживание (Dawn of Zombies: Survival, L.O.S.T и т.д.)

story games

☐ Сюжетные игры (MazM: Jekyll and Hyde, Forgotton Anne, Life is strange и т.п.)

☐ Другое: Other

Выбери один из вариантов * choose 1 option

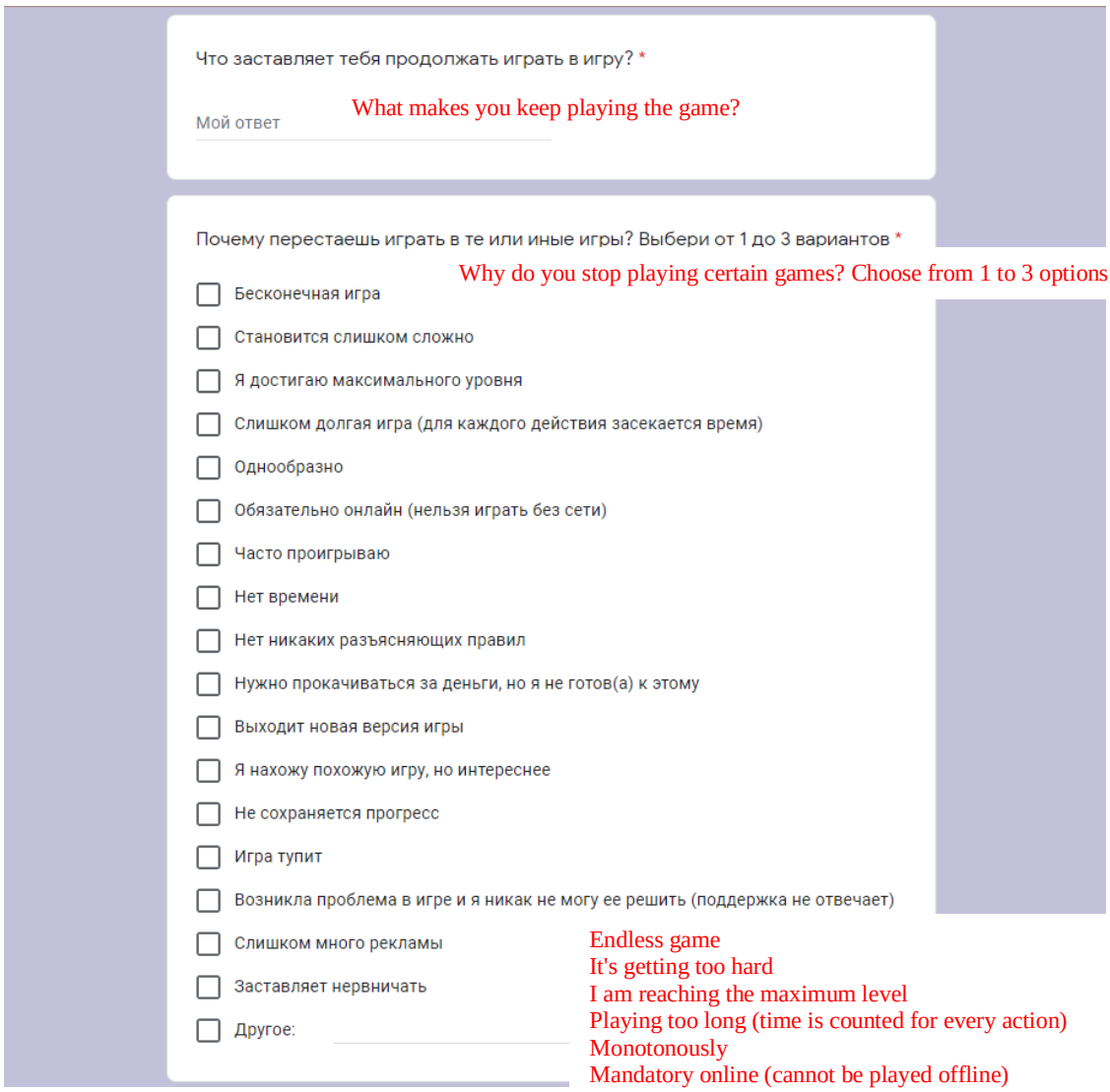
- ◯ Я предпочитаю игры, где нужно зарегистрироваться, чтобы не потерять прогресс — I prefer games where you need to register in order not to lose progress
- ◯ Я выбираю только игры без регистрации — I only choose games without registration
- ◯ Для меня наличие или отсутствие регистрации не имеет значения — For me, the presence or absence of registration does not matter

Что тебя привлекает в мобильных играх? Выбери от 1 до 3 вариантов * What attracts you to mobile games? Choose from 1 to 3

- ☐ Возможность играть с друзьями — the opportunity to play with friends
- ☐ Возможность ставить цели и добиваться их — The ability to set goals and achieve them
- ☐ Возможность узнать что-то новое — An opportunity to learn something new
- ☐ Возможность получить вознаграждение — The opportunity to receive a reward
- ☐ Возможность что-то накопить — The ability to save something
- ☐ Возможность с кем-то соревноваться — The ability to compete with someone
- ☐ Возможность получить положительные эмоции — An opportunity to get positive emotions
- ☐ Возможность успокоиться — An opportunity to calm down
- ☐ Возможность развить фантазию — The ability to develop imagination

Если рассмотреть игру как побег от реальности, то для чего? * If we consider the game as an escape from reality, then for what?

- ◯ Защититься от стресса — Protect yourself from stress
- ◯ Для медитации — For meditation
- ◯ Для обучения — For training
- ◯ Для тренировки на концентрацию внимания и скорость реакции — For training on concentration and reaction speed
- ◯ Для компенсации негативных эмоций — To compensate for negative emotions



Endless game
It's getting too hard
I am reaching the maximum level
Playing too long (time is counted for every action)
Monotonously
Mandatory online (cannot be played offline)
I often lose
No time
There are no clarifying rules
I need to pump for money, but I'm not ready for this
A new version of the game is released
I find a similar game but more interesting
Progress not saved
The game is blunt
There was a problem in the game and I cannot solve it in any way (support not responding)
Too many ads
Makes you nervous
Other

Assess the importance of each of the parameters for a mobile game (1-not important, ..., 5-very important)

Оцени важность каждого из параметров для мобильной игры (1-не важно, ..., 5-очень важно) *

	1	2	3	4	5
Графика	○	○	○	○	○
Сюжет	○	○	○	○	○
Наличие героев	○	○	○	○	○
Музыка и звуки	○	○	○	○	○
Уровни	○	○	○	○	○
Награды	○	○	○	○	○
Соревнования	○	○	○	○	○
Улучшение навыков	○	○	○	○	○
Пауза и возобновление	○	○	○	○	○
Обновления в игре	○	○	○	○	○
Понятные правила	○	○	○	○	○
Поддержка	○	○	○	○	○
Сопряженность с соц.сетями	○	○	○	○	○

Graphics
Plot
The presence of heroes
Music and sounds
Levels
Awards
Competitions
Improving skills
Pause and resume
Updates in the game
Clear rules
Support
Social media connectivity

Что тебе больше всего НЕ нравится в мобильных играх? Кратко *

Мой ответ

What do you DO NOT like the most about mobile games? Briefly

Как ты обычно находишь новые мобильные игры? *

How do you usually find new mobile games?

- ○ По совету друзей
- ○ Реклама в соц. сетях
- ○ Подборки в магазине приложений
- ○ Другое:

On the advice of friends
Advertising in social networks
App store collections
Other

Представь, что появилась новая мобильная игра про железную дорогу! Какой бы она была? *

Imagine there is a new mobile railway game! What would it be?

- ◯ Бесконечный раннер — Endless runner
- ◯ Стратегическая игра, чтобы лучше понять как устроена работа на железной дороге — Strategy game to better understand how the work on the railroad works
- ◯ Симулятор поезда (например, ты машинист поезда) — Train simulator (for example, you are a train driver)
- ◯ Экономический симулятор (управление ЖД вокзалом и т.п.) — Economic simulator (railway station management, etc.)
- ◯ Сюжетная игра (существует какой-то сюжет и задачи) — Narrative game (there is some kind of plot and tasks)
- ◯ Головоломка (например, необходимо спланировать расположение путей) — Puzzle (for example, need to plan the location of paths)
- ◯ Настольная пошаговая игра (2+ игрока, собираются карточки, выполняются задания) — Board turn-based game (2+ players, collecting cards, completing tasks)
- ◯ Другое: — Other

Какие самые интересные игры тебе приходилось играть? (очень интересуют стратегические) *

What are the most interesting games you've played? (very interested in strategic)

Мой ответ

Если бы ты хотел добавить что-то относительно мобильных игр, что не было упомянуто выше, напиши это здесь)

If you would like to add something regarding mobile games that was not mentioned above, write it here)

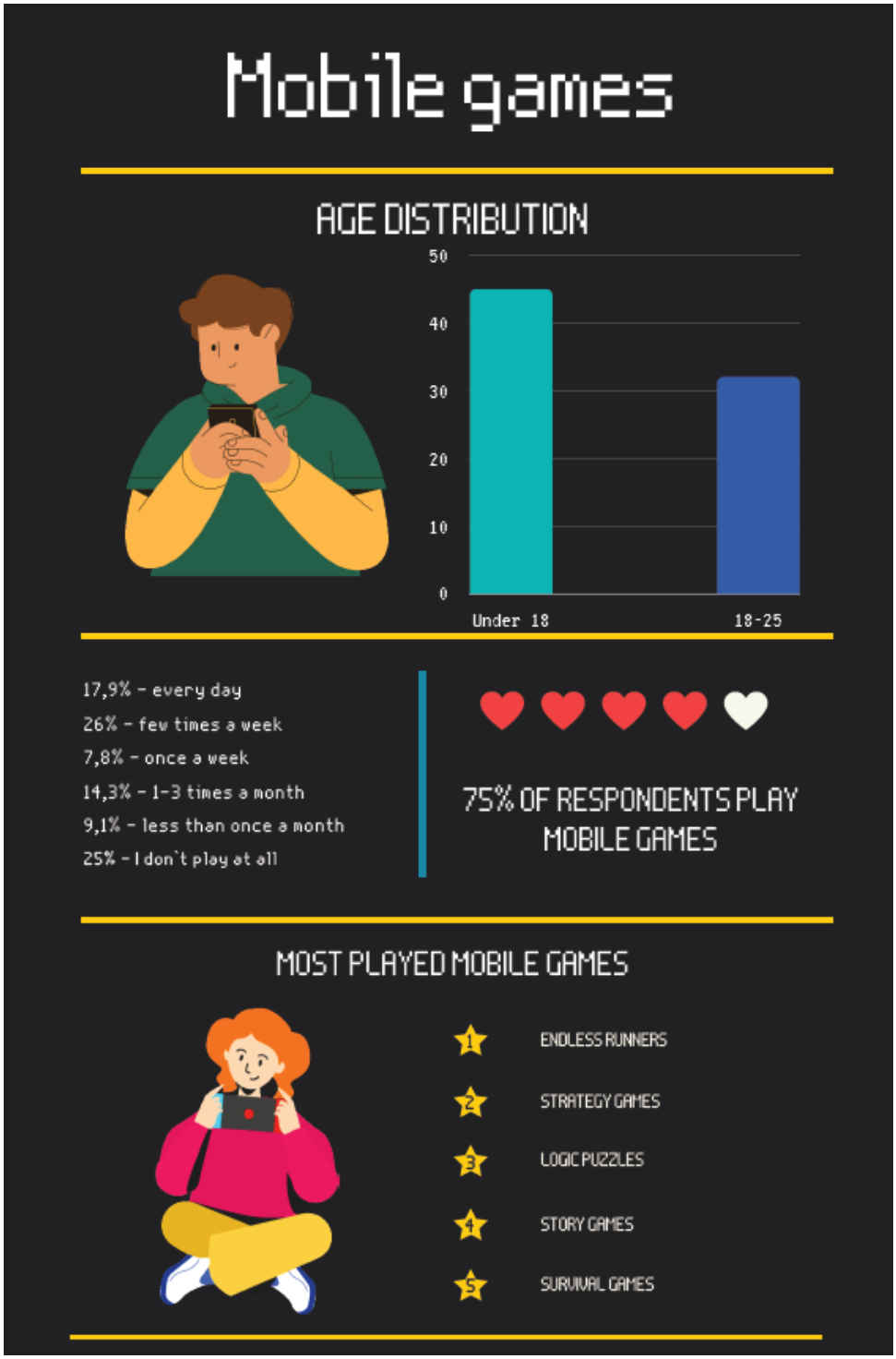
Мой ответ

И последний вопрос. Какой возрастной группе ты принадлежишь? *

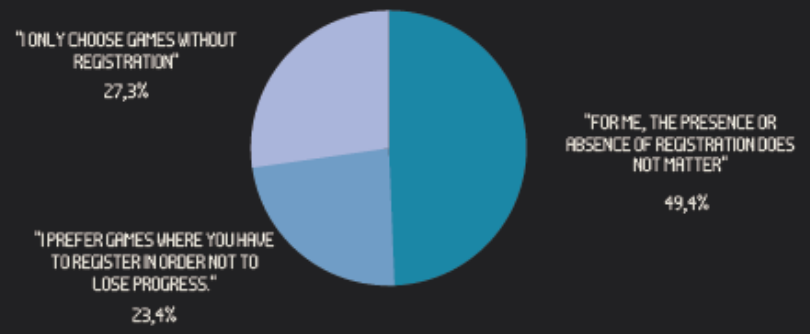
And the last question. What age group do you belong to?

- ◯ до 18 лет — under 18 years old
- ◯ 18-25 лет — 18-25 years old
- ◯ 26-35 лет — 26-35 years old
- ◯ старше 35 — over 35

Appendix 2.


Mobile games
AGE DISTRIBUTION
50
40
30
20
10
0
Under 18
18-25
17,9% - every day
26% - few times a week
7,8% - once a week
14,3% - 1-3 times a month
9,1% - less than once a month
25% - I don't play at all
75% OF RESPONDENTS PLAY MOBILE GAMES
MOST PLAYED MOBILE GAMES
1 ENDLESS RUNNERS
2 STRATEGY GAMES
3 LOGIC PUZZLES
4 STORY GAMES
5 SURVIVAL GAMES

REGISTRATION IN A MOBILE GAME



"WHAT ATTRACTS ME MOST ABOUT MOBILE GAMING IS THE OPPORTUNITY ..."

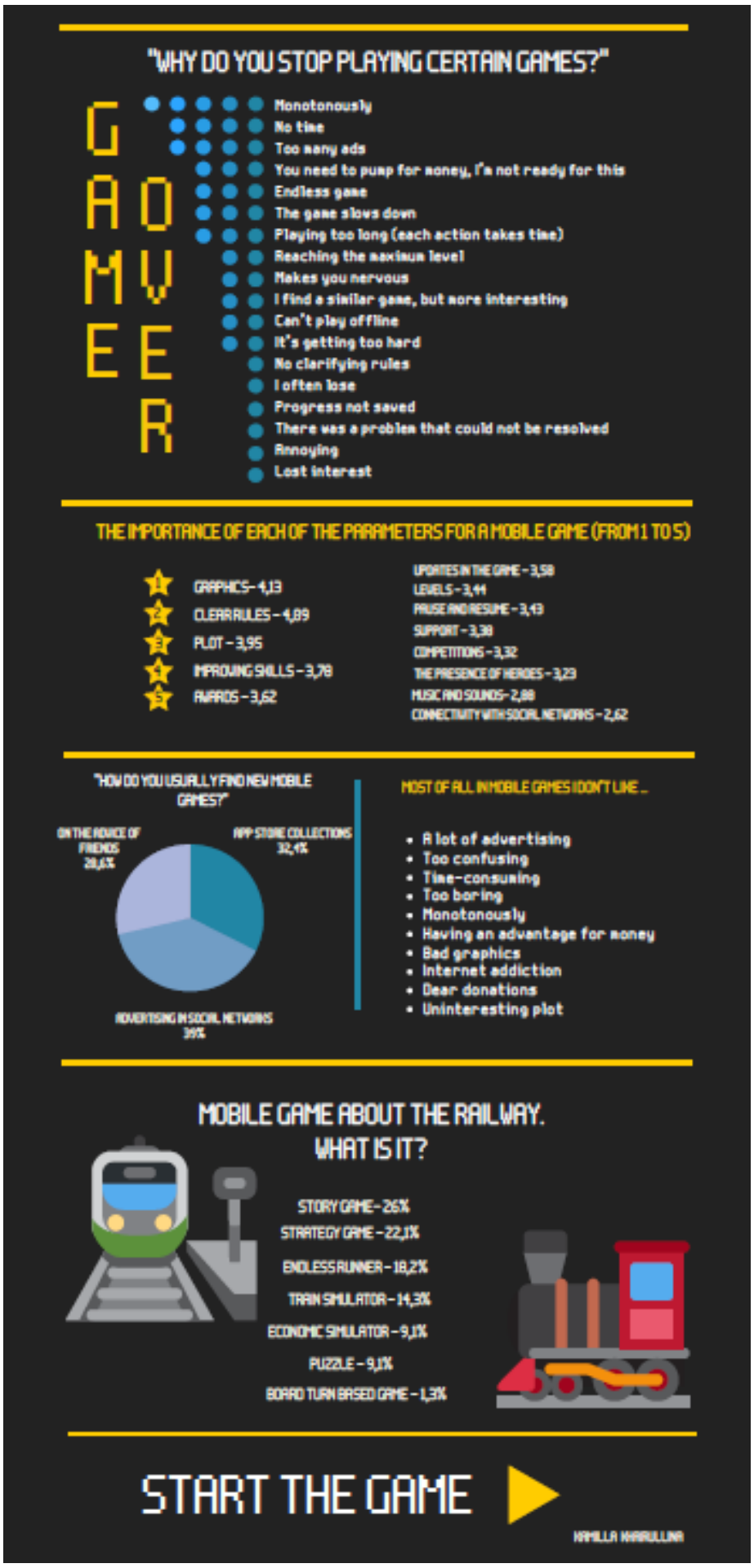
KAMILLA KHAIRULLINA

IF WE CONSIDER THE GAME AS AN ESCAPE FROM REALITY, THEN FOR WHAT?

1. Protect yourself from stress
2. Compensating for negative emotions
3. Training for concentration and reaction speed
4. For meditation
5. For training

WHAT MAKES YOU KEEP PLAYING?

INTEREST
EXCITEMENT
PROGRESS
BOREDOM
PLOT
GOALS
EMOTION
FRIENDS
TASKS


"WHY DO YOU STOP PLAYING CERTAIN GAMES?"
GAMEOVER
Monotonously
No time
Too many ads
You need to pump for money, I'm not ready for this
Endless game
The game slows down
Playing too long (each action takes time)
Reaching the maxiaum level
Makes you nervous
I find a similar game, but more interesting
Can't play offline
It's getting too hard
No clarifying rules
I often lose
Progress not saved
There was a problem that could not be resolved
Annoying
Lost interest
THE IMPORTANCE OF EACH OF THE PARAMETERS FOR A MOBILE GAME (FROM 1 TO 5)
1 GRAPHICS - 4,13
2 CLEAR RULES - 4,09
3 PLOT - 3,95
4 IMPROVING SKILLS - 3,78
5 AWARDS - 3,62
UPDATES IN THE GAME - 3,58
LEVELS - 3,44
PAUSE AND RESUME - 3,43
SUPPORT - 3,38
COMPETITIONS - 3,32
THE PRESENCE OF HEROES - 3,23
MUSIC AND SOUNDS - 2,88
CONNECTIVITY WITH SOCIAL NETWORKS - 2,62
"HOW DO YOU USUALLY FIND NEW MOBILE GAMES?"
ON THE ADVICE OF FRIENDS 28,4%
APP STORE COLLECTIONS 32,4%
ADVERTISING IN SOCIAL NETWORKS 39%
MOST OF ALL IN MOBILE GAMES I DON'T LIKE ..
A lot of advertising
Too confusing
Time-consuming
Too boring
Monotonously
Having an advantage for money
Bad graphics
Internet addiction
Dear donations
Uninteresting plot
MOBILE GAME ABOUT THE RAILWAY.
WHAT IS IT?
STORY GAME - 26%
STRATEGY GAME - 22,1%
ENDLESS RUNNER - 18,2%
TRAIN SIMULATOR - 14,3%
ECONOMIC SIMULATOR - 9,1%
PUZZLE - 9,1%
BOARD TURN BASED GAME - 1,3%
START THE GAME
KAMILLA KHARULLINA

Appendix 3.

Опрос сотрудников РЖД

Как вы считаете, важно ли продолжать развивать HR сервисы в РЖД (сервисный портал, мобильные приложения и т.д.) (In your opinion, is it important to continue developing HR services at Russian Railways (service portal, mobile applications, etc.))

- ◯ Да (Yes)
- ◯ Нет (No)

Заметили ли Вы появление блога на сервисном портале? (Have you noticed the appearance of the blog on the service portal?)

- ◯ Да (Yes)
- ◯ Нет (No)

Заходили ли Вы в блог? (Have you visited the blog?)

- ◯ Да (Yes)
- ◯ Нет (No)

Читали ли Вы статьи в блоге? (Have you read the blog articles?)

- ◯ Открывал(а), но не читал(а) (Opened but did not read)
- ◯ Читал(а) (read)
- ◯ Нет, даже не открывал(а) (No, I didn't even open)

Какие инструменты статистики, по Вашему мнению, важны для блога? (What statistics tools do you think are important for a blog?)

- ☐ Просмотры (Views)
- ☐ Лайки (Likes)
- ☐ Комментарии (Comments)
- ☐ Репосты (Shares)

Считаете ли Вы полезным появление блога? (Do you find it useful to have a blog on the service portal?)

- ◯ Да
- ◯ Нет

Будете ли Вы теперь читать блоги вместе с новостями? (Will you now read blogs along with news?)

- ◯ Однозначно да (Definitely yes)
- ◯ Скорее да (Rather yes)
- ◯ Скорее нет (Rather no)
- ◯ Однозначно нет (Definitely no)

Как вы считает, способно ли применение VR технологии (очки виртуальной реальности) повысить эффективность обучения машинистов? (In your opinion, is the use of VR technology (virtual reality glasses) capable of increasing the efficiency of driver training?)

- ◯ Да (Yes)
- ◯ Нет (No)

Хотели ли бы Вы сами проходить профессиональное обучение при помощи VR технологии? (Would you like to undergo professional training yourself using VR technology?)

- ◯ Да (Yes)
- ◯ Нет (No)

Ваша профессия (Your profession)

Мой ответ

Appendix 4.

Фокус-группа по игре

Focus group on the game

Homescapes – Merge2

Одна из многих игр в жанре Merge2, в которых для победы необходимо объединять какие-либо предметы на клеточном поле.

One of the many games in the Merge2 genre, in which you need to combine any items on the cell field to win.

Examples

Пример игры Merge2:

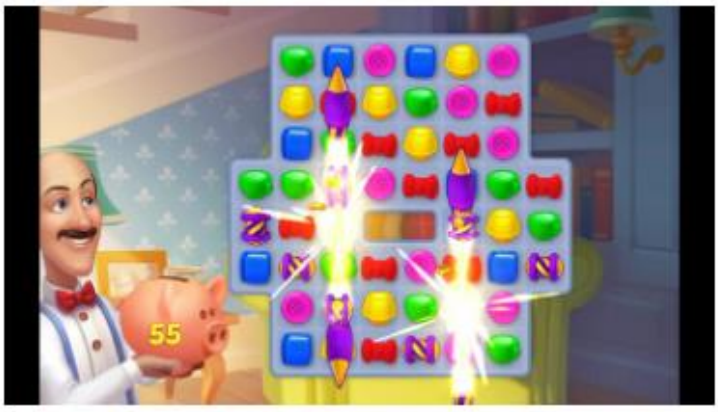
https://apps.apple.com/ru/app/homescapes/id1195621598 – на iOS

https://play.google.com/store/apps/ id=com.playrix.homescapes&hl=ru

Merge2 - a whole genre of games
in which on the cell field it is necessary to combine the same items to get improved items and victory in general

Merge2 – целый жанр игр

в которых на клеточном поле необходимо объединять одинаковые предметы для получения усовершенствованных предметов и победы в целом



* Вы играли в игру в жанре Merge2?

О жанре чуть выше

Have you played a Merge2 game?

- Да
- Нет

Yes
No

* Сколько вам лет?

How old are you?

How long have you been playing Merge2?
Any game like Homescapes

- Launched a couple of times
- up to 7 days
- up to 14 days
- up to a month
- up to 2 months
- more than 2 months

Would you recommend a Merge2 game to a friend?

- Yes
- Rather yes
- Probably not
- Not

Appendix 5.

Review

of the dissertation work «Modernization of HR services driven by digitalization: example of Russian Railways»

by Khairullina Kamilla

I, the undersigned, Valiev Radik Flaritovich, Director for Development and Personnel Policy of Innopolis University, confirm the significance of Khairullina Kamilla`s thesis results.

The topic of the master's thesis is relevant for the work of HR in any company.

In the theoretical part, the main aspects of the impact of digitalization on the work of HR are considered, the main trends in digital HR are described. The analysis of the development of Digital HR in different regions of the world, including in Russia, is carried out. At the moment, there are no studies that would compare the development of Digital HR around the world, so this work is a starting point for future research in this area.

A qualitative analysis of the existing Russian Railways services in HR has been carried out, points for possible growth have been identified. Based on existing trends, company requests, and areas of possible growth, measures are proposed to improve the company's HR services. Detailed surveys were carried out, which made it possible to accurately determine the needs of potential and existing employees of Russian Railways.

The results of the analysis and a list of measures to improve the HR services will be considered for the possibility of using the HR in the work of the Innopolis University.

Innopolis University
Отдел по работе с персоналом

/ Valiev R. F.