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Graduate School of Management

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Key Features of Job Automation in Russia: an Example of Banking Sector

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АННОТАЦИЯ

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Ключевые слова	Автоматизация, цифровая трансформация, банки, трансформация HR, рескиллинг

ABSTRACT

Master Student's Name	Starikovich Andrei
Master Thesis Title	Key Features of Job Automation in Russia: an Example of Banking Sector
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Description of the goal, tasks and main results	Main goal of the work was to create overview of best and worst automation implementation practices used in Russian banking sector to answer the question of how companies should handle automation from HRM perspective. To achieve this goal the case study strategy was chosen and interviews with HR specialists from three different banks were arranged. The factors influencing process of automation and practices Russian banks use to deal with employees who have been affected by automation were identified as a result of the study.
Keywords	Automation, digital transformation, banks, HR transformation, reskilling

ЗАЯВЛЕНИЕ О САМОСТОЯТЕЛЬНОМ ХАРАКТЕРЕ ВЫПОЛНЕНИЯ ВЫПУСКНОЙ КВАЛИФИКАЦИОННОЙ РАБОТЫ

Я, Старикович Андрей Ростиславович, студент второго курса магистратуры направления «Менеджмент», заявляю, что в моей магистерской диссертации на тему «Особенности автоматизации труда в России на примере банковского сектора» представленной в службу обеспечения программ магистратуры для последующей передачи в государственную аттестационную комиссию для публичной защиты, не содержится элементов плагиата. Все прямые заимствования из печатных и электронных источников, а также из защищенных ранее выпускных квалификационных работ, кандидатских и докторских диссертаций имеют соответствующие ссылки.

Мне известно содержание п. 9.7.1 Правил обучения по основным образовательным программам высшего и среднего профессионального образования в СПбГУ о том, что «ВКР выполняется индивидуально каждым студентом под руководством назначенного ему научного руководителя», и п. 51 Устава федерального государственного бюджетного образовательного учреждения высшего образования «Санкт-Петербургский государственный университет» о том, что «студент подлежит отчислению из Санкт-Петербургского университета за представление курсовой или выпускной квалификационной работы, выполненной другим лицом (лицами)».

01.06.2021

Смирнов

STATEMENT ABOUT THE INDEPENDENT CHARACTER OF THE MASTER THESIS

I, Starikovich Andrei Rostislavovich, second year master student, Master in Management program, «Management», state that my master thesis on the topic «Key Features of Job Automation in Russia: an Example of Banking Sector», which is presented to the Master Office to be submitted to the Official Defense Committee for the public defense, does not contain any elements of plagiarism. All direct borrowings from printed and electronic sources, as well as from master theses, PhD and doctorate theses which were defended earlier, have appropriate references.

I am aware that according to paragraph 9.7.1. of Guidelines for instruction in major curriculum programs of higher and secondary professional education at St.Petersburg University «A master thesis must be completed by each of the degree candidates individually under the supervision of his or her advisor», and according to paragraph 51 of Charter of the Federal State Institution of Higher Education Saint-Petersburg State University «a student can be expelled from St.Petersburg University for submitting of the course or graduation qualification work developed by other person (persons)».

01.06.2021



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Introduction

Relevance of the study

The modern society is now entering a new stage of development, which has received different names, such as "information society", "the second machine age", "digital era", "fourth industrial revolution" ("industry 4.0"), etc. However, while this stage of development possesses different names, its results have certain names that almost everyone in the World have heard about - Artificial intelligence, machine learning, robotics, predictive analytics.

Today digital technologies are starting to play a bigger role in different aspects of human life (Vatoropin et al., 2017), such as services, and also, they influence companies in various sectors. For example, there has been a trend to replace people with machines and robots in the industrial sector starting from the middle of the last century. This trend also could be called "automation". However, automation technologies include much more than just robots.

The term automation was introduced quite some time ago and was associated with different technologies through the years. Nowadays, automation is closely connected with digital technologies and, therefore, with digitalization and partially with digital transformation. And sometimes, the terms can be mixed up with each other (Moore, 2015) because currently, there is no universal definition for any of them.

As for automation, Groover, in his work "Fundamentals of Modern Manufacturing: Materials, Processes, and Systems" (2014) defines automation as "the technology by which a process or procedure is performed with minimal human assistance."

People's replacement with machines isn't a new story for humanity. John Maynard Keynes predicted technological unemployment in 1933 – "due to our discovery of means of economizing the use of labor outrunning the pace at which we can find new uses for labor". However, automation is in some ways unique, especially in the speed of its effects worldwide. Digital technologies are bound to cause the disappearance of some jobs, or at least the most simple and routine types. It would also result in the transformation of multiple existing jobs and the emergence of new types of occupations (Manuti, de Palma, 2018).

Automation is a phenomenon that is in the near future will affect almost every company in the world. It is transforming the way businesses organize their operations and how they capitalize on technology. It helps companies develop new personalized and customizable services and products and reduce overall costs and improve the efficiency of different processes (Butler, Ho, 2019). Although there are plenty of benefits from technology, companies must not rely only on technology as it may lead to "Automation bias" (Triki, Weisner, 2014; Goddard, Roudsari, Wyatt,

2011). So, organizations should pay close attention to training employees in the direction of human-machine interchange to avoid such biases.

Training employees is particularly important in the Digital era. PwC report (2018) shows that less-educated employees will be more prone to automation, and it is crucial to pay much more attention to retraining.

But even if companies will properly train employees to work with different automation elements, they still have to organize a comfortable workplace for them and pay attention to their productivity as they will still remain one of the most valuable assets for companies. At the same time, digital technologies will help save time by completing routine tasks.

It is important to consider different factors influencing digital transformation (main form of automation nowadays), such as economic and political state of country or current level of technological development. Countries' readiness for the digital economy is currently measured by the World Economic Forum's Networked Readiness Index. The Index consists of 4 main “pillars” – technology, people, governance, impact. According to the index, Russia is placed 48th right between Uruguay and Romania. This result is far from positive, taking into account that in 2017 Russia was ranked 41st.

While the overall ranking of digital readiness is not great, some sectors in Russia still show positive dynamics. Digital Banking Maturity report by Deloitte (2020) shows that the Russian banking sector is well-above average value of the index in most categories studied.

Banking sector was considerably affected by automation, especially in the last year due to COVID-19. It resulted in certain changes – further improvement of some traditional products, innovations and technology development (Deloitte, 2021). Banks also had to optimize their resource usage – more than a half of banks in the world decided to reduce opening hours or close branches in some cases.

To conclude, the main motivation to research this topic is that automation greatly affects businesses nowadays and in particular banking sector. Automation usually led to plenty of different benefits for organizations but also to changes. Such as substitution of human labor. In this case, it is significantly to investigate how the most developed sector in terms of automation is handling it from an HRM perspective.

Research gap

After reviewing the current literature on automation topic, it becomes clear that researchers (Evseeva 2019; Micheler, Goh, Lohse, 2016) mostly pay attention to technology implementation rather than people affected by it. In the academic studies the authors usually pay much less attention to the problem of how companies should handle automation from HRM perspective and the problems that will come with it as well as reviewing current role of HR in automation. Such as

in Evseeva (2019) paper, which focuses only on the advantages and disadvantages of different technologies used for digitalization of HRM. Lyaskovskaya and Kozlov's research paper "Human Resource Management in Digital Economy" (2018) once again consider only technology side rather than employee perspective. On the other hand, there are some researchers (Galper, 2020) that provide information on the process of digital transformation and how to handle it, yet it does not provide any specifics regarding automation and HRM perspective. Another example is Methodical Guidelines on Digital Transformation (2019) from Russian government – while there is almost no information about automation yet, it acknowledges role of Digital transformation in Human capital development (training and development programs, employee satisfaction and engagement, employer rating).

Especially automation phenomenon has to be research more deeply in the current reality of COVID-19 which arguably speeded up automation and digital technologies adoption (Deloitte, 2020).

Russian banking sector is also rarely mentioned as a study object in relation not only to automation but also to Digital Transformation. Even though, banking sector was named one of the digital transformation leaders by Analytical Center of the Russian Government in the of 2020 in Russia. And according to the Deloitte report (2020) Russian banking sector is well-above average in comparison with foreign banking sector's level of Digital Transformation.

Research questions and aims of the study

The subject of the study is the process of automation implementation in the banking sector, the object of the study is automation.

The research goal of the thesis is aimed at finding answers on how companies should handle automation from HRM perspective.

It will also answer such questions as:

- What are the factors affecting automation development in Russian banking sector?
- What practices Russian banks use to deal with employees who have been affected by automation?

Also, the study is aimed at analyzing the current landscape in Russia, such as trends in automation in the last years and the influence of COVID-19 to achieve main research goal properly. The pandemic already forced not only people to change lifestyle, but companies and even governments as well. Millions lost their jobs and will probably be replaced by robots as they are more productive and become cheaper every year. Some of these now jobless people are representatives of older generations for which it is harder to learn new skills. This implies that tens of thousands of those who lost their work due to the pandemic could be jobless for many years.

(Semuels, 2020). To not let something like this happen in the future, companies need to change themselves and pay much more attention to training and retraining programs.

Complex study that discusses every topic mentioned above has not been found during the literature review process. Therefore, the relevance of this study is due to its modernity, analysis of the situation in Russia and integral approach.

Chapter 1 Theoretical overview

Automation is rapidly changing jobs. Every year more and more companies adopt automation ideas. PwC report on the survey conducted in 2018 that revealed that more than 50% of business around the world are already exploring the advantages of collaboration between machines and people. And banking sector is just one of them.

Automation is definitely playing an important role in the development of society, for example, it helps to significantly increase productivity and also leads to an increase in public wealth (Karnaukh, 2017). Although automation effects might be mixed and ambiguous in some cases and therefore there are some important questions needed to be answered – “what is automation?”, “what are the factors influencing automation?”, “will the development of modern technologies not lead to an era of chronic unemployment?”, “what jobs are most vulnerable to automation?” and “how employees can stay relevant?”, “what is the current situation regarding automation in Russia?”.

1.1. Automation, Digitalization and Digital transformation

Sometimes there is a confusion about the terms of automation, digitalization and digital transformation (Moore, 2015). And quite often there are seen as synonymous to each other. However, while they are connected to each other and in some ways even implies one another they still are not equal.

Automation can be defined differently. Merriam-Webster dictionary defines it as “automatically controlled operation of an apparatus, process, or system by mechanical or electronic devices that take the place of human labor”. International Society of Automation defines automation as “the creation and application of technology to monitor and control the production and delivery of products and services”. For the purposes of the thesis, the Groover definition will be used. In his work “Fundamentals of Modern Manufacturing: Materials, Processes, and Systems” (2014) defines automation as “the technology by which a process or procedure is performed with minimal human assistance”.

Dneprovskaya (2019) refers to automation as a first step to the digital transformation, the second being digitalization, and the third the digital transformation itself.

There is no universally accepted definition of digitalization and digital transformation. But it is important issue to point out is the difference between automation, digitalization, and digital transformation.

Gartner company explains it as followed “digitalization is about creating and delivering new value to customers, not just improving what is already being done or offered”. In other words,

digitalization is not just about improving and automating processes (although this is usually required) as it is more about changing the business. Business can shift accents or improve processes, but digitalization changes the product, relationships with customers and suppliers, the positioning of the company, and this distinguishes the concept of "digitalization" from "automation," which improves something but preserves the way the company does business.

To illustrate, automation, for example, for the educational purposes implies the use of digital textbooks, video lessons and other tools that make the learning process more convenient. Digitalization implies the creation of a new interactive educational system, which provides the ability for students to choose the pace and the program of training in accordance with the availability of free time and the initial level of knowledge.

As stated previously, Digital transformation do not have one universal definition. The definitions vary from simple “the integration of digital technologies into business processes” (Liu, Chen, and Chou, 2011) to “the ultimate stage [of developing digital literacy]...which is achieved when the digital usages which have been developed enable innovation and creativity and stimulate significant change within the professional or knowledge domain that could happen at the individual, group or organization level” (Lankshear, Knobel, 2008). However, it is more commonly described as “an adoption of new digital technologies and to exploit their benefits” which involves transformation of number of business internal environment elements, such as culture, strategy, organizational structures and management concepts (Matt et al. 2015).

To conclude, automation is a first step to digital transformation and strongly connected nowadays with digital technologies. But it focuses only on improving efficiency and reduce human involvement in some processes. Digitalization and Digital transformation both change more than one aspect of internal business dimensions and aims at creating more value for an enterprises and customers.

1.2. Factors influencing automation implementation

Some researchers (Micheler, Goh, Lohse, 2016) usually consider factors of implementing automation mostly with manufacturing processes. Therefore, their study focuses mostly only on technological factors of automation, such as capacity, speed, productivity, etc. Although some economic factors are taken into account as well – investments, economic performance, Life-cycle costing (LCC) and ROI.

They do not take into some crucial factors connected with organizational structure and employees. For better understanding of these factors different approaches can be used.

Alekseev and Korolev (2019) consider that there are plenty of factors that should be taken into account for a successful implementation of new digital technologies. To achieve greatest impact, it is necessary to consider the following factors:

- Current state of processes in a company
- Qualification level of employees
- Ability to achieve optimization of different processes in a company
- Leadership and Management of changes

They also point out the importance of a clear roadmap, which must be linked to the business strategy of a company.

Some believe (Koryagina, 2017) that nowadays it is not enough to pursue only efficiency for a company and with digital technologies continue to change different aspect of businesses, new practices of management should be used as traditional ones are not enough. For example, companies should encourage leadership thinking, project teamwork and talent mobility. These practices will help company became more agile and flexible, which will allow to compete within their market. Therefore, managerial practices in a company are important factors for successful automation implementation.

Model developed by Bondarouk (2017) called TOP model also can be used. This model includes three categories of factors – technological, organizational and people. Examples of these factors are provided in table below.

Category	Elements
Technological factors	<ul style="list-style-type: none"> • Current IT architecture • Digitization of data • Technology project management
Organizational factors	<ul style="list-style-type: none"> • Organizational characteristics • Planning and project management traditions • Privacy and data access • Resources and capabilities
People factors	<ul style="list-style-type: none"> • Support from the Top Management • Acceptance by users • Expertise and skills of employees • Communication and collaboration between units • Leadership and culture

Table 1. TOP model (adapted from Bondarouk et al., 2017)

The TOP model was used by Bondarouk to determine the success of the digitalization of HRM practices, but it still appropriate to use the model as universal model for automation.

As for technological factors such as current IT architecture, Digitization of data and Technology project management the following should be considered for better implementation of automation and other digital technologies. Current IT architecture could be measured differently, starting from level of IT usage in organization (Haines, Lafleur, 2008) and ending on reliability of applications (Chapman, Webster, 2003). Digitization of data is associated with data standardization and compatibility within a company (Teo et al., 2007). Technology project management is the process of selecting proper software and deciding on if it should be developed in company or if it would appropriate to use universal commercial soft (Chapman, Webster, 2003).

Organizational factors consist of different elements including organizational characteristics, planning and project management traditions, privacy and data access, resources, and capabilities. Ketolainen (2018) named size of company as one of main organizational characteristics, also highlighting importance company's business sector. She considers that there is positive relation between size of company and success of implementation of digital technologies and overall transformation, concluding that digital transformation is more common for large and medium size companies. Planning and project management traditions could have negative influence on automation if there is lack of planning from the corporate level to the divisional level (Bondarouk et al., 2017). Privacy and data access category elements are putting restrictions to technology implementation as government are concerned about confidentiality and security of data inputs. That is why companies have to set certain standards of data security.

Another important group of organizational factors are resources and capabilities. It includes elements such as cost of implementation, Life-Cycle Costing (Gaskell, 2018). Abdali (2019) considers the budget constrains and overall limitation of financial resources as major success factor in the process of automation implementation. Importance of financial resources and budget limitations are also highlighted by number of other researches (Hooi. 2006; Reddick, 2009). With regards to capabilities part – change management expertise level in company (Reddick, 2009) and technical expertise of project team can influence success of implementation process (Neary, 2002).

Young and Poon (2013) named top management support as a factor that is “much more necessary than any other success factor and sometimes being sufficient for success” with regards to implementing IT technologies. Another factor that is important to consider is the user acceptance. While the importance of acceptance from employees is crucial (Wahdain and Ahmad, 2014), the customer involvement should be considered as well.

Skills and expertise are another side of user acceptance. If the PC skills of management and employees are on the high level then the process of implementation of new digital technologies would be much easier and faster (Ruel et.al, 2004).

To succeed with implementation, it is essential to collect feedback from the employees (Alleyne et al., 2007), provide new information (Martin, Reddington, 2010) about implementation process, in particular about how it would influence jobs.

However, in people factors category the most important one is leadership and culture. That includes organizational culture that opened to innovations (Panayotopoulou et al., 2007; Martin, Reddington, 2010; Chapman, Webster, 2003), with high job satisfaction, confidence in technology skills and strong change management leadership (Wilson-Evered, Hartel, 2009).

Tokarev (2021) stresses the significance of external factors in addition to internal factors mentioned above. External factors are divided into factors of direct impact and indirect impact. External factors of direct impact include those that directly affect a company. External factors of direct influence include the following: suppliers (which include three sub-factors – suppliers of resources, suppliers of capital and suppliers of human resources); consumers; government and legislation; competitors. Besides he cities “owners” as one of the factors, with elements such as strategy of automation and digitalization. Indirect impact factors are the state of the economy, political stability, technological progress, international affairs, socio-cultural characteristics, and force majeure.

To sum up, there are number of factors that should be considered before implementation of automation. It can be internal factors, such as current leadership and culture in a company or its resources and capabilities. Also, it can be external factors, such as consumers, legislation and suppliers. By taking into account these factors and by undertaking the necessary actions a company will improve chances of successful implementation of new technologies.

1.3. Automation change management and role of HR department

As implementation of automation could be considered as a transition that companies are going through, it is important to elaborate the meaning of the term “transition” and what changes are associated with automation implementation and who should be responsible for these changes.

According to Bridges (2011) – transition is a psychological process with multiple number of phases. During these phases individuals as well as organizations adapt to a new situation. Bridges (2011) also claim that if change would be done without proper transition it will lead to negative results and, in the end, costing more money for a company.

Pacaux-Lemoine (2017) believes that there is a need for applying complex approach that considers not only technology factors but also human factors. As the changes that are associated with the adoption of automation technologies have an impact on human-work

During the transition in a company, user resistance could become a crucial factor for the implementation success of IT (Beaudry and Pinsonneault, 2005). Carroll and Fidock (2011) consider that the users have to form an understanding of how the new technologies could fit within their work. Also, employees need to be supported through the whole process of adoption and instructed on how to use certain technologies. If the employees would not see the technologies' benefits, they could start to abandon these technologies. Although the researchers claim that it is not the clear act of resistance – it is just due to the fact that employees cannot gain any value from the technology. Janneck (2009) also suppose that the success of the introduction of new digital technologies depends on the full process of adoption of digital technology.

As for responsible for changes, Ulrich (1997) argue that one of the main roles of HR department is being change agents. Storney (1992) described this role as the most strategic and argued that it could positively influence flexibility of organization. Importance of this role is also highlighted by other researchers (Hailey, Farndale and Truss 2005) as they consider that organizations are exist in rapidly changing business environment. That is why HR should be able to prepare employees and overall organization for changes.

Similarly, Lawson and Limbrick (1996) came to the conclusion that HR processes should be developed and incorporated in efficient and swift manner. Moreover, there is a for consistency in addition to the organization strategy, especially in the face of rapid changes with regards to technologies. This in turn requires HR specialist to be able to create an atmosphere that supports changes from employees' side.

Also, Zhang (2020) claim that HR change-agent role helps in shaping social exchange relationship of employees within a particular organization. As the result, HR build a change-oriented culture.

On the other hand, it is not only HR department that influence changes implementation success. Cianni and Steckler (2017) consider that leaders support is crucial for case of digital transformation and therefore automation. The main reason is that leaders have to explain the value of certain changes.

To conclude, it is important to provide the role of change agent to HR when organization is going to change. The HR will create organizational readiness for change. In case of automation implementation HR department still need to play the role of change agent as some of the problems arise within employees. Especially the appropriation process of new digital technologies should be considered.

1.4. Replacing human labor

Some researchers argue (Ford, 2015) that Human labor will be replaced completely, in other words, machines will not only perform routine tasks but cognitive tasks as well. Others (Flichy, 2017) consider that digitalization and automation result in job transformation and give rise to the “open work” concept.

In the last 10 years, a number of researches have been conducted to answer the question “Is technology going to replace human in the near future?”. The discoveries largely vary from only 9% of jobs being vulnerable to automation (Arntz, Gregory, Zierahn, 2016) to 47% (Frey, Osborne, 2013). This variation can be explained by different methods used by the researchers. Below overviews of the most important studies are provided.

Frey C. and Osborne M. - The future of employment: how susceptible are jobs to computerisation? (2013)

The research by Frey and Osborne conducted in 2013 examines how susceptible jobs are to computerisation. 702 occupations were analysed to estimate how much each one is vulnerable. Main findings here are that 47% in USA of jobs highly susceptible to substitution and that higher the skills and education level required for particular job the less it vulnerable. They also compare difference between the nineteenth, twentieth and the twenty-first century demand for skilled labour, making the conclusion that the Computer Revolution caused a decline in middle-income jobs.

Few examples of occupations that are less computerisable are: Recreational Therapists (with 0.0028 probability), Dietitians and Nutritionists (0.0039), Dentists (0.0044), Mental Health Counselors (0.0048). Overall, there are plenty of medical occupations in first hundred (ranks from least to most computerisable). Yet, more than one exception of jobs not related to medical sphere, such as Human Resources Managers (0.0055), Set and Exhibit Designers (0.0055), Anthropologists and Archeologists (0.0077) are presented on the top as well.

The most computerisable are: Telemarketers (0.99), Order Clerks (0.98), Real Estate Brokers (0.98), Cashiers (0.97), Accountants and Auditors (0.94). As a matter of fact, more than 400 occupations have more than 50% probability of automation according to the study. Figure 1 presents the risk of automation by categories.

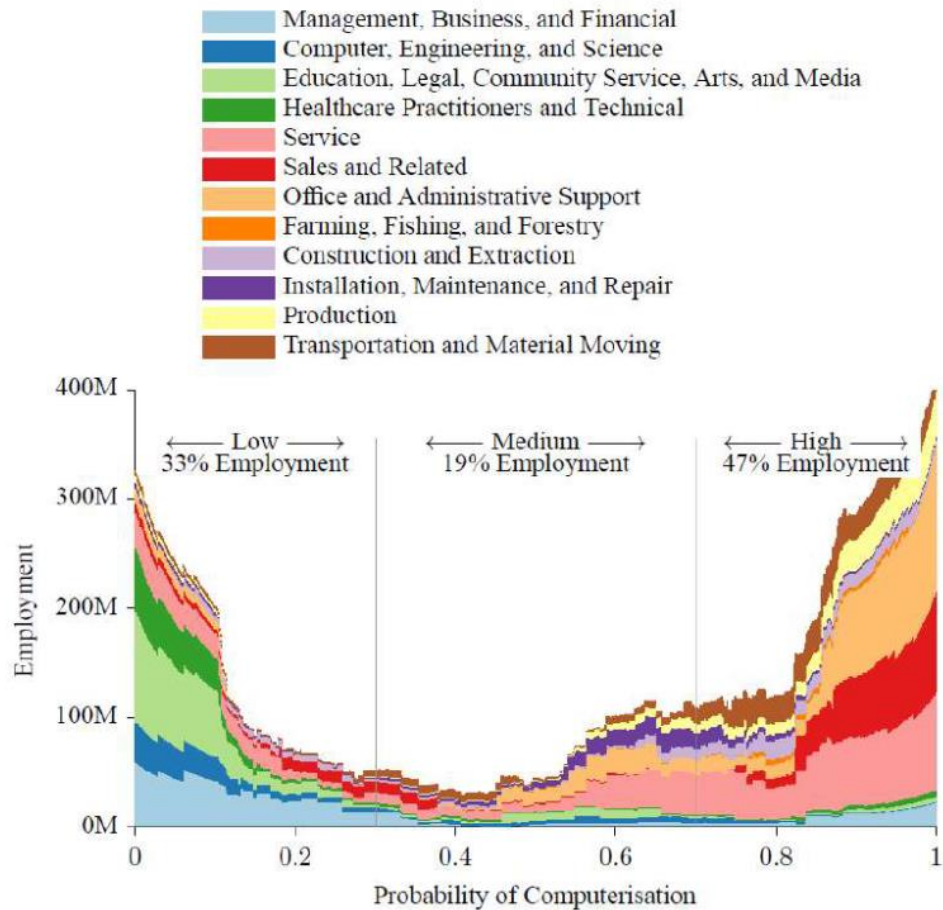


Figure 1. US employment automation risk (Frey and Osborne, 2013)

Furthermore, the authors do not forget to acknowledge ‘engineering bottlenecks’ that could limited automation, or in other words, tasks in the performance of which people are more proficient as compared to technology, such as social intelligence tasks and creative tasks.

Arntz M., Gregory T. and Zierahn U. The Risk of Automation for Jobs in OECD Countries:A Comparative Analysis (2016)

The authors take a different methodology approach to research compared to Frey and Osborne and because of that they got drastically different results - in United States of American only about 9% of jobs prone to automation. In OECD countries the results varied from 6% in Korea to 12% in Germany.

The authors consider job transformation as the main challenge and argue that more than half of professions will experience dramatic changes with regards to required skills, with additional shift in work organisation and the human-machine balance.

McKinsey Global Institute. *A future that works: automation, employment and productivity* (2017)

McKinsey Global Institute study takes a different methodology approach as well. And as the result the study showed that in about quarter of all professions studied 70% of activities could be automated, as for another 60% of professions only 30% of all tasks can be automated. On the other hand, the study concludes that automation depends mostly on technological feasibility. In other words, if implementation of technology will be costly and require employees to learn new skills to operate this technology while the financial outcome would be low than implementation should be reconsidered.

Overall, it can be concluded that it is likely that work is not going anywhere soon, however, it's important to point out that some professions and jobs will cease to exist while others are likely to transform. If we look further into past research about technology replacing humans, we will see that this topic has been popular since early 1980s (Valenduc, Vendramin, 2016), yet there are still mostly human workers.

As for banking sector we can refer to PwC report “Will robots really steal our jobs?” (2018). Financial service jobs are rather prone to automation. But it is only in shorter term (figure 2).

Figure 1 – Potential job automation rates by industry across waves

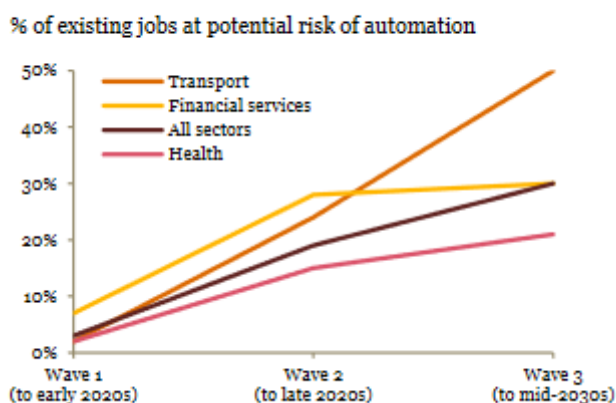


Figure 2. Potential job automation rates by industry across waves (PwC, 2018)

In its first wave, automation would influence mostly routine process and tasks involving pure data analysis as algorithms tend to outperform humans in these spheres. In the second wave financial sector will continue to be highly impacted, along with other sectors with a higher proportion of clerical support. Similar results could be found in Frey and Osborne paper mentioned above. With regards to financial sector next professions are most computerisable – New Accounts

Clerks (0.99), Loan Officers (0.98), Credit Analysts (0.98). On the other hand, professions that require more critical approach to tasks and creative thinking are less prone, for example, Personal Financial Advisors and Financial Analysts (0.23).

1.5. Counteracting technology dominance

One of the main issues for the companies is technology dominance, counteracting the effects of technology dominance, knowledge and skills of employees, human-machine collaboration and ethics issues surrounding AI as well as researching particularly the problem of automation in the accounting sphere.

Sutton, Arnold and Hold (2018) study these issues because technology such as data analytics, machine learning and AI are developing rapidly, and many businesses are solving their problems with simply automating as much as possible without paying attention to the Human Resources side of things. They also consider theory of Technology Dominance and Automation Bias by reviewing theory research and making emphasis on “Reliance” part of technologies (Triki, Weisner, 2014; Goddard, Roudsari, Wyatt, 2011). The authors also claim that technology dominance can result in poorer decision making as the user becomes dominated by the technology. Arnold, Leech, Rose and Sutton (2018) research is dedicated to more rapid skill development and answering the question “Can expertise be rapidly developed?” by taking into consideration some psychological aspects such as cognitive skills. In the end, the researchers stress the importance of new ways of learning, such as constructivist learning which helps develop experiential expertise more quickly. Better and quicker ways of learning will help improve human-machine collaboration.

McCoy, Phillips, Stewart (2019) discusses the importance of maintaining and retaining human capital with superior using resource-based theory and how to value human capital as strategic assets. The authors study this problem because human capital getting more and more important during rapidly developing automation. While technology replaces monotonic and repetitive tasks, there still need for creative, social and problem-solving skills that AI cannot provide and therefore human capital becomes a firm's strategic asset. Human capital can be seen as a firm resource deployed to sustain a firm's competitive advantage. Authors conclude that routine processes should be devoted to lower-level personnel or automated and with further technological development, competitive advantage would lie in the effective maintenance and retention of human assets that perform work that requires creative, social, critical-thinking skills.

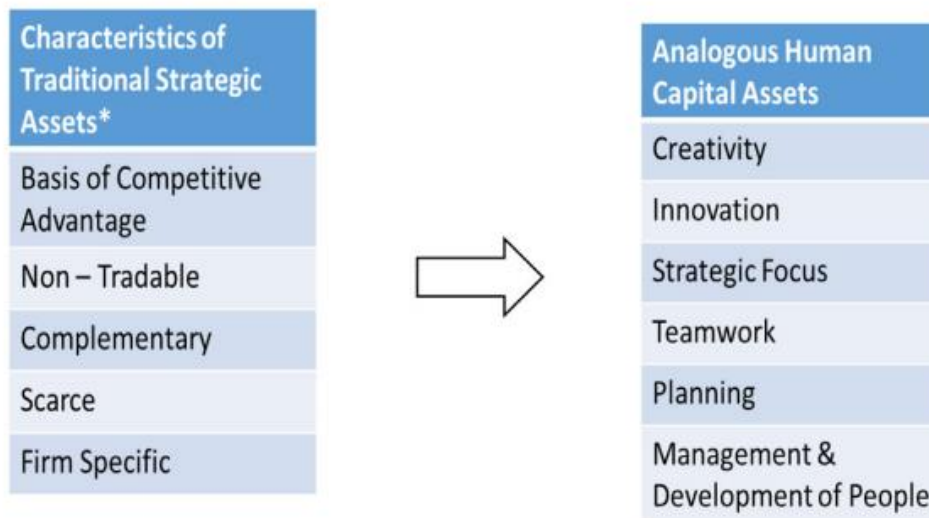


Figure 3. Change of strategic assets (McCoy, Phillips, Stewart, 2019)

Even though automated algorithms are responsible for tasks completion, employees still need to understand what these algorithms doing (not from computer science point of view, but at least from basic approach) and what are the problems existing in this collaboration (Card, Nelson, 2019), such as Google effect, which claims that human tends to lose their ability to memorize information, which can be easily found online (Sparrow, Liu, Wegner, 2011).

Regarding practical implementation, companies should pay more attention to the improvement of human-machine collaboration. For example, company could provide retraining for the employees who are going to be substitute for AI, or if they will not be completely substitute – provide courses about that particular AI system to increase their understanding of what system does (Butner, Ho, 2019). The problem of retraining/reskilling is huge – 53 percent of Deloitte’s 2020 Global Human Capital Trends survey, claimed that their workforce in near future (3 years) would need to go through the process of reskilling.

According to 2020 Deloitte Global Human Capital Trends more than 70% of companies consider reskilling as rather important and that it is crucial for short- and long-term success. Although less than 15% are ready to provide reskilling opportunities for their employees.

Rotatori, Lee and Sleeva (2020) suppose that while overall number of jobs will increase in the future, it would be still accompanied by layoffs and therefore the question of “what must be done to support the employability and economic well-being of displaced workers” is significant.

In the World Economic Forum report on the topic of reskilling (2017) the following factors were underlined as an important one to consider for organizing reskilling process. Some of them are:

- Existing skills of the employees

- Current demand for particular skills
- Financing instruments of organization
- Learning motivation
- Training processes and employees' engagement into training processes
- Current stakeholders' roles

While digital technologies that aimed at automation of different tasks significantly help employees, it could also be a source of problem for them. First of all, employees could be replaced by technologies. Therefore, it is necessary for them to stay relevant and have up to date knowledge, skills and most importantly – expertise. AI still cannot provide creative, social and problem-solving skills to a company.

Even if employees would not be laid off as a result of automation, they still need to start developing skills for better human-machine collaboration and to avoid bias that might come with technology dominance.

Companies also should focus on solving problem of training of their employees as reskilling the workforce is important for their success not only for technological implementation point of view.

1.6. Transformation of HR and its role in the future

With job transformation, HR would also need to rediscover itself (Manuti, de Palma, 2018). However, the main role would not change, it still would be seen as the tool that could help organizations in leading people through change (Stephan et al, 2016). Mostly it should change the way of how companies manage their human resources. And some of them have already been pushed to changes (Bondarouk, Ruel 2009; Manuti, de Palma 2016).

One of the areas to which HR should pay attention in digital era is training. CRM or Crew resource management is an integrated approach to training employees that was developed (to face different challenges (Kanki et al., 2010). CRM builds on the interdisciplinary human factors approach: “Human factors...focuses on the nature of human-artifact interactions, viewed from the unified perspective of the science, engineering, design, technology, and management of human-compatible systems, including a variety of natural and artificial products, processes, and living environments” (Karwowski, 2012)

CRM based training was designed to help identify and analyze human errors as well as to avoid them in the future (Badke-Schaub et al., 2010). CRM mostly focuses on approaches that will improve employee's performance (Kanki et al., 2010).

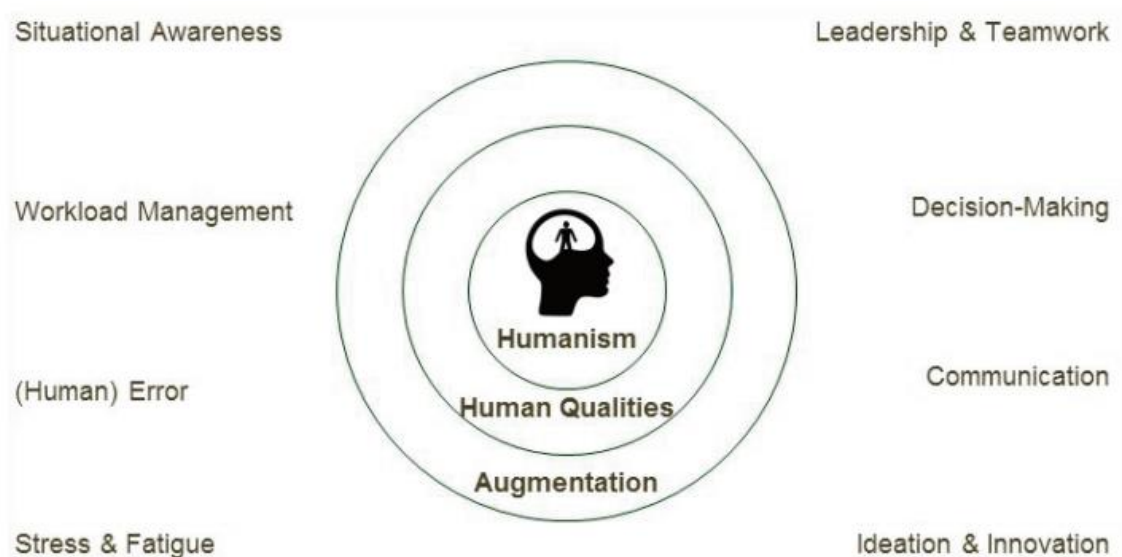


Figure 4. HR-Development Pitch for Augmented Human Centered management (Wagner, 2019)

Another instrument HR department should get more familiar with is machine learning and big data (Davenport, 2014). For example, by using big data and machine learning HR department could lessen the burden of different routine processes such as CV analysis.

One of the studies (Lyaskovskaya, Kozlov, 2018) pays particular attention to the technology of personalized software assistants. These assistants will analyze the condition of employees in real time based of different parameters. This data later can be used to improve working conditions for employees or understand which skills should be developed further for better work.

The next step is to use machine learning to create an individual educational trajectory, career navigation and new internal job opportunities. Such services can be provided with IBM Watson.

Watson Recruitment is an AI-powered talent management solution. It surfaces the most qualified candidates for the job — without human bias — and identifies adverse impact (IBM Website, 2020). Another version of Watson is Watson Career Coach. It helps employees with improvement of their career goals, overall path and with new skills acquirement. Also, the AI could be used to find relevant candidates within a company for internal jobs.

But adopting new technologies isn't enough to properly transform HRM. Work organization should transform too. And agile working seems like a good solution. Some researchers also call it Smart Work (E. Ales et al, 2018), activity-based working (Telsyte 2015) or in some cases flexible work arrangement (McNall et al. 2010). Nonetheless, all researchers agree that this concept has certain principles, such as flexibility, responsibility and collaboration.

Chartered Institute for Personnel and development or CIPD defines it as “an approach to organising work that aims to drive greater efficiency and effectiveness in achieving job outcomes through a combination of flexibility, autonomy and collaboration, in parallel with optimizing tools and working environment for employees” (CIPD Research report, 2014). However, adaption of this concept could tough process for a company as it means changes in many activities that would need to be adapted according to the new orientation (Cameron and Green, 2015).

Overall, the transformation from Industrial HR to Digital HR is described in the report “Accelerating the journey to HR 3.0” of IBM in collaboration with Joshbersin academy published in 2020. Let us look at Figure 4.

	Industrial HR 1.0	Internet HR 2.0	Digital HR 3.0
Key focus	Compliance Administration design Programs and jobs	Process excellence Standardization Self-service Shared services	Employee experience Cognitive Personalized Transparent
Organization	Functions, Service Centers, HR Partners Geographic	COEs, Shared Services, HR Business Partners Mostly globally standardized	Offering Managers, Intelligent Chatbots, Pop up squads, HR Business Partners
Design driven by	Best practice benchmarking	Process experts	Design thinking with users
Decisions driven by	Intuition	Analytics with historical HR data	Actionable insights with predictive AI and rich external/internal data
Key area of measurement	Job evaluation Performance assessment Attrition rates Employee satisfaction	Headcount Competencies Diversity representation Efficiency metrics Employee engagement	Critical Skills Leadership pipeline diversity Inclusion Attrition rate NPS, Pulse surveys

Figure 5. The evolution of Human Resources (IBM, 2020)

Although for some people the word “Internet” might be a synonym for the word “Digital” there is a large difference between them. Internet or HR 2.0 mostly focus on some quantitative parameters, such as headcount, efficiency, and their derivatives (standardization). And decision making was driven by historical data which means that this data in some cases could be unreliable. On the other hand, Digital or HR 3.0 focuses on different characteristics. According to the report, the five most common are: personalized experience-centric design; skills placed at the core of the enterprise; data-driven decision making supported by AI; agile practices; and consistent transparency in order to maintain credibility and lower reputational risk. Some of these characteristics were discussed in more detail previously.

The most important imperative for the future is personalized experience-centric design. Moving from the standardization approach companies want to blur the line between office and home for their employees, making their experience comfortable and enjoyable. Now companies not only will need to measure employee's performance in forms of different KPIs, but to continuously ask them for feedback, implement clear and continuous coaching and performance conversations, set transparent goals, and apply analytics to monitor workforce development.

As stated in the IBM report (2020), to create a better experience for employees the next points are essential:

- Easy and convenient interactions with HR department through digital platform
- Considering feedback and different ideas from employees and encouraging dialogue
- Focus on human-centered design, transparency, simplicity, personalization, authenticity
- Measure employees experience through metrics such as NPS
- Utilizing the analytics to form better understanding of employees

Even though the technologies used by HR are important, it is quite important to evaluate role of HR in the future.

There are plenty of different views on the future, which include not only HR 3.0 view. PwC report "Workforce of the future" (2018) provide a look at four different potential futures and four dramatically different roles of HR.

First world is the Red World, which focuses mostly on innovation side. Companies try to satisfy consumers needs as fast as possible and therefore innovation is ahead of regulation. Technologies including digital platforms provide outstanding influence and reach to companies, which have successful ideas. The other winners in this situation are niche profit-makers and specialists. As it is really easy to use self-organising teams, outsourcing or automation technologies the HR is nonexistent in traditional form.

Second is Blue World, which focuses on corporations. Large multinational companies are ruling the world and continue to grow while their own preferences became more important than companies' social responsibility. IT technologies and AI help HR with measuring current performance of employees, projecting their performance in the future and predicting future talent demands.

Third is Green World, where social responsibility is one of the most important aspects. Being the key drivers for companies concerns about demographic changes, climate, sustainability, and other social responsibilities behavior elements are filling companies' agenda. In this World HR taken functions associated with brand image and with building the right corporate culture.

Fourth is Yellow World, where Humans comes first. In some ways it is similar to Green World – social responsibility with focus on humanness is valued greatly, the most prosper companies are the ones that have a great, blameless image and that have a social focus in its business. Traditional HR functions exist within this World and did not changed drastically.

To sum, HR department is undergoing changes not only in terms of technologies used but also in terms of its future role.

1.7. Current situation in Russia

Overall situation in Russia with regards to the automation

Network Readiness Index report of 2020 placed Russia on 48th place out 134. While Russia is one of leaders within Upper-middle-income group overall place is still too low. The main problems according to the report is Regulation group of indicators, such as Regulatory quality (105th), ICT regulatory environment (128th), e-commerce legislation (127th). On the other hand, other indicator groups don't fall lower than 90th. For some indicators Russia even exceed its overall place – People pillar, Individuals and Business sub-pillars.

Potential of Russia for digital economy is clear, even with regulations problems. According to McKinsey experts (2017), the digitalization of the economy may become an important source of long-term growth in Russia in the near future. And around 50% of activities can be automated by adapting currently demonstrated technologies.

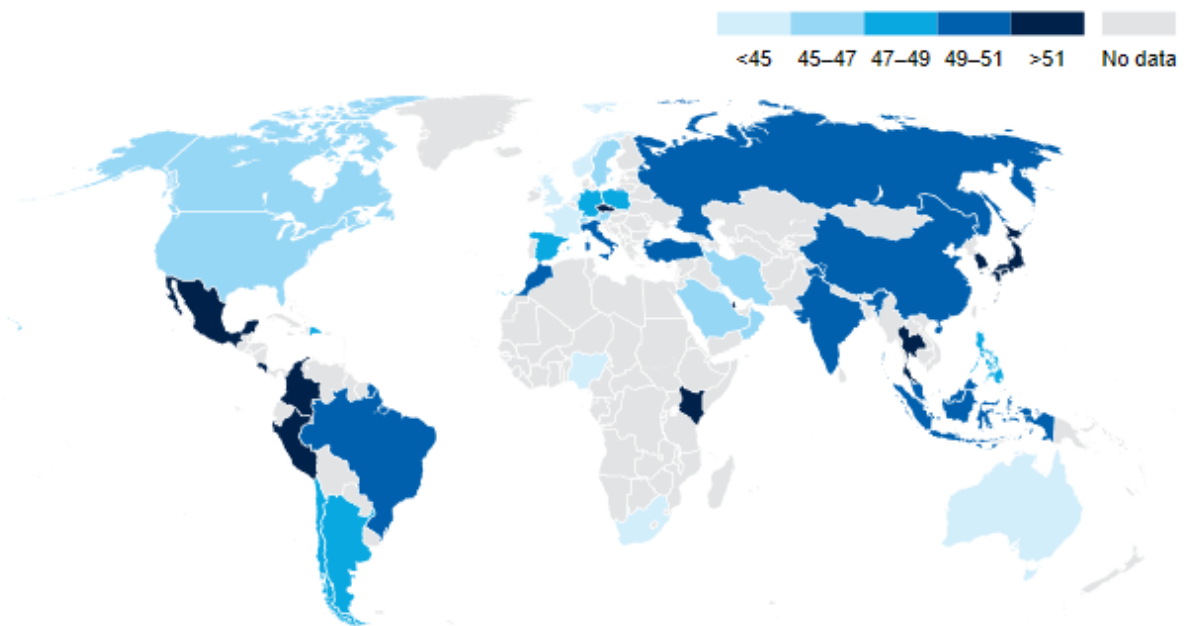


Figure 6. Employee weighted overall % of activities that can be automated by adapting currently demonstrated technologies (MGI, 2017)

There is other important advantage of Russia as claimed by DT - Global Business Consulting in their report – Digital transformation in Russia (2019). It is already existing proper knowledge and skills base. Russia has few of its own major digital players, but they are not as the major international companies such as Amazon. However, most companies (more than 60%) are still planning or only considering the opportunity of digital transformation. And large number of digital technologies are not being used or implemented in limited amounts (figure 6).

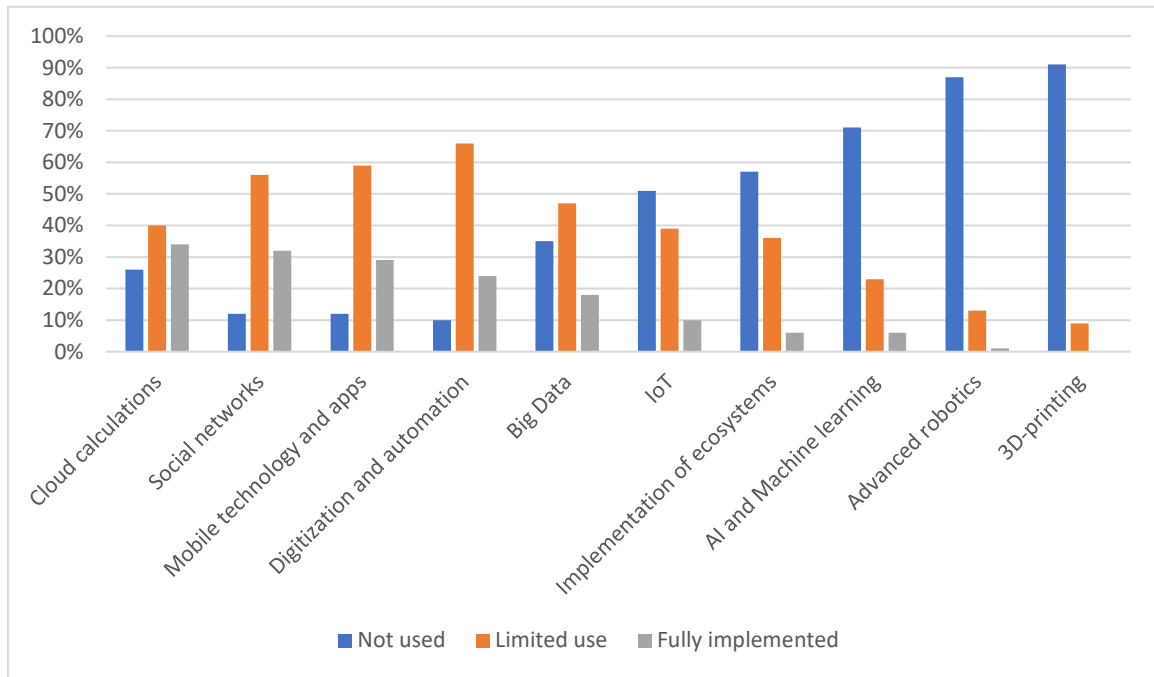


Figure 7 – State of implementation of main digital technologies in Russia (adapted from DT, 2019)

Companies in Russia face several challenges in carrying out digital transformation. Two main problems reported by about half of the respondents are a lack of human resources and a lack of knowledge and understanding of what is needed for digital transformation. Other problems rise in the early stages of digital transformation. According to the DT survey (2019) – about 47% of respondents believe one of the biggest challenges is dealing with outdated systems, 45% cited the need for extensive organizational culture change, and 42% reported internal digital transformation challenges (process change).

The government plays a key role in establishing priorities and encouraging digital transformation in Russia. The government sees it as an opportunity to accelerate economic modernization and become more independent of oil and gas exports. As stated on the official website of “Digital Economy 2024” program – the total budget will reach \$1.8 billion by 2025. But more than 52% of companies (DT, 2019) consider that current legislation does not support the processes of digital transformation in key aspects. The economic sanctions against Russia are

another important factor for companies in relation to digital transformation. They affect international cooperation and complicate legislation. The requirements of Russia's local data retention laws have caused major U.S. technology companies such as Google and Amazon to slow down the pace of development in Russia.

Situation in Russian banking sector

Regarding the banking sector – it was named one of the digital transformation leaders by Analytical Center of the Russian Government in the of 2020. Also, Digital Banking Maturity report by Deloitte (2020) shows that Russian banking sector is well-above average value of the index in most categories studied. Deloitte analysts found that Russian banks are among the world leaders in digitalization of their services and that Russian banks exceed the global average in five of the six stages of customer interaction.

Digitalization development also helped Russian banks to better handle COVID-19. As stated in the BCG article “COVID-19 pandemic has made digital transformation an urgent priority for banks” (2020) – “Russian banks were much better prepared for the pandemic than their international counterparts” because they started digital transformation earlier than foreign banks. EY’s report (2021) supports that point of view as well and provides insight on few most important internal and external factors that had positive influence on Russian banks during the pandemic. One of them was already mentioned above – it is overall high level of digitalization, which allowed to provide to customer different services in the conditions of their limited physical mobility. The other ones are flexibility of the banks' operating models, which allowed them to easily switch to remote mode of operation and IT infrastructure readiness.

More than that Russian banks are planning to improve operating efficiency, according to the EY report (2021). As measures to improve operating efficiency, banks plan to continue developing IT systems and increasing the efficiency of business processes, in particular, by means of automation. This trend is common both for Russian and international banks as well. A lot of major players have relatively old and inflexible key IT-systems, which require upgrades. Some of Russian banks that were formed as a result of mergers and acquisitions, still have several systems with the same functionality that exist in parallel. While Russian banking are planning to put even more effort into automation IT systems and IT infrastructure it does not necessarily means that number of branches will reduce. Only a limited number of EY’s survey participants plan to significantly reduce their branch offices, which indicates the relevance of physical contact with employees and customers for Russian banks. Only 6% of respondents reported plans to optimize the number of staff. That fact differs Russian banks from international banks, which are actively launching large-scale programs to reduce staff as a key source of reducing operating costs. For

example, Nordea Bank has been cutting jobs since late 2017 (Bloomberg, 2018) to cut costs and stay competitive. Yet it is important to put that after sharp cut in 2017/2018, the decline has slowed down.

Specifics of the banking sector with regards to employees

According to the article of Molodkova and Popazova (2020) it is important to point out certain specific factors of Russian banking sector that should be taken into account in process of automation and digitalization. They are as follows:

- Strong competition among specialists in finance in the labor market due to the reduction in the number of credit institutions, an oversupply of general specialists (tellers, cashiers, financial advisers);
- Limited mobility of banking employees - banking specialists have very few opportunities to move to another sector of business, as their skills and knowledge are highly specialized. Also transition of specialists to the bank from other branches is not always successful and possible;
- Increased workload on existing bank employees due to the reduction of staff in many banks;
- Centralization of certain functions in specific regions;
- High level of innovations and strong competition between banks;
- The existence of operational risks that might be caused by inaccurate actions of bank employees, errors in IT systems, and by flaws in the organizational structure;
- Most Russian banks are still having highly hierarchical organizational structures and/or still working on establishment of more flexible organizational structures.

These specifics of banking sector are influencing the ways of automation development.

Today automation, digitalization and digital transformation are fundamentally changing the nature of work. Banking sector requires employees to be ready to learn constantly and to develop a wide range different competence.

Chapter 2. Methodology

Qualitative research method was chosen for the thesis, in particular - multiple case studies strategy. The purpose of qualitative methodology is to obtain in-depth and clear information to understand aspects of the problem being analyzed (Almeida, 2017).

2.1. Multiple case studies

As claimed by Baxter and Jack (2010), qualitative case study methodology provides scholars with the tools to examine complex phenomena within their context. When applied correctly, the approach becomes a valuable method for conducting a research for theory development and program evaluation. Case study is a great way to gain tremendous insight into a case as it allows the scholars to collect data from a number of different sources and later combine and evaluate that data.

The case-study approach, and more specifically the multiple-study approach, provides researchers with a well-tested tool for developing an extensive understanding of a particular phenomenon (Zach, 2006), in this study - automation

3 banks with different characteristics were chosen for the purpose of the thesis. All of them have different approach to their operations, corporate culture, and training processes. Also, banks have different level of automation of internal and external processes.

With regards to the data collection, it was obtained from official press-releases from bank's official websites as well as industry journals reports, and some academic articles.

Bank A is one of the largest banks in Russia, currently trying to become something more than just a bank. It is starting to resemble IT company more and more in the recent years. The bank employs around 286,000 people and has more than 14,000 branches in Russia.

Bank B is a smaller bank in comparison with Bank A, yet it is still top 10 bank in Russia. It has universal model of operation aimed both at retail banking customers and corporate customers. The number of branches is more than 400. This bank also claims to be building sustainable business model

Bank C is regional bank with more than 30 years of history. It has less than 10 branches all located within one city. The business model is focusing on corporate clients rather than retail. It currently in the process of automation implementation in some departments.

2.2. Interview

The thesis study is aimed at filling the gap in understanding current situation regarding automation in Russian banking sector as well as discovering HRM perspective on the phenomenon. The result of the study will contribute to the enterprises and HR area as the

recommendations on how to handle automation will be provided based on experience of Russian banking sector.

To make a precise conclusion, quality data is required. To collect data expert interviews were arranged. Interviews were in the form of one-on-one with representatives of HR departments of the Russian banks. The semi-structured interviews approach was applied as it helps to encourage two-way conversation and therefore to get better insights regarding phenomenon.

The following sections were used by the author of the thesis for the interview guide:

1. Background information

This section includes questions aimed to collect general information regarding respondent's career experience. While this question block does not have direct correlation with the research questions, it will give a scope on how long the respondent have been in the bank and evaluate their objectivity in consideration to implementation of automation in particular bank.

2. Current state

Second question block contains question on the topic of current state of automation within a bank, influence on departments and how respondent perceive this phenomenon.

3. Factors influencing automation

Third block aims to discover which trends could positively or negatively influence the development of automation in a bank. Plenty of factors could influence automation – it could be their employees who do not have necessary competencies or simply misunderstand the technology, the strategy of organization and/or the organizational structure and much more. Special attention is brought to the COVID-19 influence because some industry reports (McKinsey, 2020; Capgemini, 2020) suggest that it is one of main factors for digital development nowadays. The block correlates with the first research question of the study

4. HR role

Fourth block is about automation and HR. Questions from this block help us to understand in detail the current role of HR in automation development and on the other hand how automation affecting HR processes. And main question in this section is about personal opinion of HR specialists on idea of being more involved into adapting organization to automation development processes.

5. Retraining

Fifth block focuses on current measures taken by banks to handle employees with regards to the automation development and how did the requirements for the job changed. Main emphasis is made on retraining programs.

Interviews with respondents lasted around 60 minutes each. The interviews are recorded in audio-only format with the permission from respondents, followed by transcription in Russian language and further translation.

For the purpose of thesis, interview guide was written in two languages: English and Russian. Although, only Russian version was used for the interviews because all of the respondents are native in Russian language. Then the transcriptions of the interviews were made and later translated to English language.

2.3. Respondents overview

Three respondents from Russian banks were selected for the purpose of this interview. All are representatives of HR departments, with experience in different fields.

HR in Bank A: is a manager from corporate culture development department who has various experience, such as in HR consulting, in research of employees and HR analytics as well as employees training programs.

HR in Bank B: is IT-recruiter in top 10 Russian bank with 5 years of experience in current position and more than 12 years of experience overall in HR field. Due to the specifics of work, they know latest IT trends and has knowledge about digital technologies.

HR in Bank C: is a recent graduate and a recruitment manager with 2 years of experience in Bank B. Currently responsible for organization and management of training processes within the bank.

Due to the pandemic HR representatives are interviewed through the means of videotelephony programs, such as Skype, Zoom, and Microsoft Teams. For purposes of the thesis anonymity of respondents is assured.

2.4. Data analysis

Before data was analyzed, all interviews were transcribed from audio recordings of conversations. Then the text was comprehensively translated into English language.

The thematic analysis was used for better understanding of answers of the respondents. Therefore, the transcripts were codified, and some words were labeled for further analysis.

After that, the results of the interviews had been compared with findings from academic literature and certain conclusions were drawn.

Chapter 3 Findings

3.1. Within case analysis

Bank A

Bank A is one of the largest and oldest banks in Russia. It is partially state-owned bank. The bank employs around 286,000 people and has more than 14,000 branches in Russia. It also was included in the list of the 100 largest banks in the world by S&P Global Market Intelligence in 2020.

In the last years, the bank pays plenty of attention to the digital transformation process and every year it resembles IT company more and more. The bank also creates their own AI-based solutions for various spheres of its operation and sometimes make this solution commercially available for other companies. Even their employees see them as a tech company rather than bank. Respondent from Bank A said the following:

“Most employees consider our bank as a tech company. according to our internal survey more than 80% see it this way”

Corporate culture is aimed at developing digital, design and soft skills with particular focus on the flexible work opportunities (working from home, part-time employment).

The bank provides a lot of opportunities in terms of developing new skills, such as corporate university and virtual school. Employees also could monitor their career path and ways of development through smart applications. According to the respondent from Bank A:

“For employees we provide opportunities to register in our smart services... They provide different kind of recommendations to the employees – training materials, career path advice generated by AI based on employees’ qualifications and experience... if an employee is interested in entirely new profession, they could enroll in corporate university and learn a new profession or change qualifications according to their interests”.

And because the bank has bought multiple companies in different spheres (mainly related to IT) mobility within companies is encouraged. Respondent from Bank A claims that:

“After acquiring new skills and knowledge in the corporate university an employee could ask to be moved into another company”.

Yet with the start of the digital transformation the number of employees started to reduce. Since 2016 the number of employees has decreased by almost 13% (41,000 of employees). While there are some occasional increases, negative trend continues since fourth quarter of 2016.

To conclude on the Bank A, it went far away from simple automation development and currently doing a lot for proper digital transformation. Its company culture positively affects this

process. It provides great opportunities for employees in terms of reskilling as well as developing current skills. However, thousands of employees have been negatively affected by automation.

Bank B

Bank B is a smaller bank in comparison with Bank A, yet it is still top 10 bank in Russia. It has universal model of operation aimed both at retail banking customers and corporate customers. The number of employees is more than 20,000, working within with more than 400 branches.

The bank pays special attention to achieving the strategic goal of technological transformation and digitalization of the bank's activities in the context of the growing importance of remote customer service and organization of remote work of employees. Even though the main focus is still banking activities. The respondent from Bank B said:

“All automation and digitalization development are aimed mainly at supporting banking activities”.

During 2019 the Bank B worked on more than 2,000 tasks aimed at technological upgrading and organizational transition from conventional to digital.

In terms of developing new skills, the Bank has training programs aimed at developing contemporary skills, strengthening the leadership potential of managers based on modular programs as well as regular training on professional topics.

The Bank B maintain positive dynamic in the number of employees hired in the recent years. For example, in 2019 the Bank's staff growth was about 3,000 people – mainly employees of the Bank's retail unit and information technology specialists were hired.

Bank C

The Bank C is regional bank with more than 30 years of history. It has less than 10 branches all located within one city. It is not too much information about the bank in open sources. Yet some crucial points that need to be outlined.

Business model of the focuses mostly on corporate clients even though it provides services for retail ones as well. In the official description it is mentioned that “The bank's clients are companies of various sizes and ownership forms, mostly - small and medium-sized businesses.”

As for number of current employees – bank did not disclose such information for quite some time, and this may indicate that bank has been changing number of employees.

The bank also does not publicize information about employee development and trainings.

Bank	Key characteristics
A	One of the largest banks in Russia; shift focus to IT sector; IT friendly corporate culture; provide plenty of opportunities for training/reskilling; HR plays complex role
B	Top 10 bank in Russia; banking and related operations remains main focus; corporate culture is neutral to IT; provide some opportunities for training/reskilling; HR plays complex role
C	Local bank with branches only in one city; focus on providing services to corporate customers; provide limited opportunities for training/reskilling; HR plays an administrative role

Table 2. Bank's comparison

3.2. Interview Analysis

1. Current state of automation in Russian banks

The respondents are aware about phenomenon of automation and experienced it itself. The participant's knowledge was enough to answer most of questions from the first block however some questions were struggle. It is probably due to the that HR department has a little involvement in implementing automation processes.

The first block of questions was aimed to discover current state of automation in Russian banks, overall perception and understanding of the phenomenon. Questions also touched on banking strategies, and functions most affected by automation. The main goal of this part was to if there are any differences within Russian banks in terms of automation.

Understanding automation

All respondents were able to differentiate automation and there was mostly no confusion. Even though interpretation was different the idea was the same – it is a process of implementing digital technologies or algorithms aimed at replacing human labor. With regards to the banking sector – it is ensuring that information flows, external and internal process within the bank are efficient. An example provided by HR manager from Bank B:

“Nowadays we are moving into digital world and clients want from mobile applications all the services that offices can provide to them even if signatures from bank's employees are required.”

Overall, all presented answers have characteristics that are similar to the Groover (2014) definition stated in the begging of the thesis with some differences in terms the focus, here the specialists made accent on minimal human assistance from bank side like in the answer above,

customers still need make certain action to get services they need but over the last years it also been reducing.

Yet it is important to point out that banking sector automation is definitely more resembling digitalization with how it was described by some respondents, if we take into account the definition and characteristics of digitalization provided by Gartner company. Bank are focusing on creating digital ecosystems to ensure quality of services and providing more value to the customers.

Automation perception

Given answers were different and varied from neutral to positive. Respondent from Bank C sees it as positive:

“Automation will allow employees to work with more projects and I believe it will help to avoid unnecessary routine”

Respondent from Bank B consider more neutral approach:

“Automation is not good or a bad trend, it is more of necessity. If you want to stay competitive you need to have extensive IT infrastructure and established digital processes”.

While respondent from Bank A sees it as an opportunity to expand to new markets:

“We are not only developing and implementing new technologies to stay competitive in the banking sphere, but also are selling these technologies to the others... usually to non-banking companies... so it is definitely a positive for us, it expands our reach”.

First answer correlates with the study of McCoy, Phillips, Stewart (2019) which claims that technology replaces monotonic and repetitive tasks, that's allow them to focus on the creative, social and problem-solving and as a result become firm's strategic asset. Another correlation could be seen with regards to the EY's report (2021) – automation is one of the ways to improve operating efficiency. It is highly relevant for Russian banks for keeping up with competitors.

According to the study “Digitalization of human resource management practices and its impact on employees' well-being” (Fedorova, Koropets, Gatti, 2019) in which 57 respondents were being interviewed on similar topics – majority claimed they are positive about new technologies; however, some believe that it has negative impact on health of the employees and implementation cost is too much. Others put in question reliability and “difficulties in mastering new technologies that older people face”, but none of the respondents did provide answers similar to that study.

Current state of automation

Gazprombank's survey (2021) arranged on habr.com shows that only 4% do not use digital banking services. This result shows that customers in Russia are used to using digital services and probably would not consider a bank that would not provide them some digital solutions.

According to different market reports (Deloitte, 2020; BCG, 2020) Russian banks are among the leaders in implementing digital technologies while overall automation level is not high in comparison with developed countries (NRI, 2020).

Respondent from Bank B confirms that automation in banking sector overall and in their bank is on high level:

“All banks in Russia want good IT technologies for digitalization and automation of processes Automation in Russian banks is on high level. What we consider “must have” such as mobile apps or online banking is not considered minimal hygiene factor in some foreign countries (even in more developed than Russia) The budget set for automation development in our bank is really high”.

Respondent from Bank A agrees with the statement above:

“Automation in our bank is on high level and we are aiming to improve it even more by using advanced technologies”.

While the respondent in Bank C consider that they are lagging in automation behind other banks:

“For clients we do have mobile apps and online banking features. But if talking about internal process we are not within leaders. In some departments we are still working on standard routine operations automation”.

It could be explained by that Bank C is regional bank and as claimed by the respondent has “conservative strategy, with focus on corporate customers” and that the bank is regarded as smaller one in comparison with the other.

We can conclude that two larger banks have great development of automation technologies. While the smaller bank still automates some of their internal processes. Also, the project budget was mentioned by one of the respondents as really high for automation projects.

These answers are showing that size of bank and projects budget are playing serious roles in development of automation which relates to Ketolainen (2018) study on importance of named factor as well as Bondarouk (2017) study.

Strategy of implementing automation

The strategy defines the framework of the future development of the company, in other words, what types of activities it will pursue and how the certain processes of the company will be implemented into main business model. Strategy is a comprehensive plan of the company's business management. And it is crucial to have a strategy with regards to automation and other digitalization process implementation, because today there are creating competitive advantages in banking sector.

Respondent from Bank A says:

“As previously mentioned, our bank put a lot into automation technologies... We do have both long-term and short-term strategy with regards to digital transformation and its elements”.

Respondent from Bank B provided following comment:

“Our bank top management definitely has a vision about direction in which we should be headed, and it includes IT technologies”.

Respondent from Bank C also has awareness about strategy:

“Yes, the company's top management currently in the process of developing a strategy for implementing automation.... We did not have one [strategy] before the pandemic”.

These answers underline the importance of having strategy. While two larger banks already had automation strategy and were acting with accordance to it, the smaller bank is in process of development automation strategy. According to Bondarouk, (2017) planning is an element that could have negative influence on automation if there is lack of planning from the corporate level to the divisional level.

The answer from respondent from Bank C stresses the fact that pandemic played a huge role as a catalyst for further automation development.

Processes and functions most affected by automation

PwC report “Will robots really steal our jobs?” (2018) claims that mostly routine task will be affected by automation – filling in forms or exchanging information, which includes the physical transfer of information. Academic studies (Manuti, de Palma, 2018; Ford, 2015; Dengler, Matthes, 2015) also provide similar insights on the problem.

Respondent from Bank A talks about internal changes:

“We are always looking for ways to improve internal processes. Well, if speaking more specifically, in the last years there has been some changes in HR. Nowadays, I believe, most of changes happen in R&D departments... As for functions – analytics”.

Respondent from Bank B claims that most of the process in their bank has undergone automation:

“It's hard to say. Almost everything is already automated. I don't think that in the last five years something changed drastically”.

The same respondent also claimed that it is highly unlikely that in short-term something will change. It contradicts ...

Respondent from Bank C has difficulty answering this question in retrospective due to the short experience in the bank:

“It hard to answer... during my time in the bank not much changed until the pandemic started... and now I can say that it is a concern for every department”.

Judging by answers of respondents it can be concluded that level of automation is high. Similar claims can be found in few major market reports (BCG, 2020; EY, 2021) on Russian banking sector.

2. Factors affecting automation

The second block is about factors that are negatively/positively affecting automation; challenges associated with process of automation implementation if there were any; role of COVID-19 in automation development.

Positive factors

Positive factors have key influence in advancing automation processes. Named factors will show which of them done more impact and what is current level of their development in a bank.

Respondent from Bank B answered in the following way sees the pandemic as a positive factor, yet the internal processes didn't change too much because they were already up to date:

“The pandemic forced banks to provide more digital services.... another thing that our bank just wants to keep everything up to date; without automation processes would be very slow and inconvenient which will influence clients”.

The pandemic made banks implement digital technology as well as process automation much faster than before according to the number of market reports (McKinsey, 2020; Capgemini, 2020; Deloitte, 2020) suggest that it is one of main factors for digital development nowadays. The pandemic was force majeure factor that occurs rarely, however such factors still should be considered.

The respondent also cites how demand from customer made positive impact as well. Clients are one of the main drivers of both digital transformation and automation. In some of the studies (Mosca, 2020) it is suggested that digital tools play a significant role for creation of user-driven experience. Therefore, users' needs could be considered as an important factor. They will provide certain insight in which way automation should be developing.

Respondent from Bank C provided similar comments:

“In the last year and a half - definitely COVID and the need to move of most employees to remote work. Another important factor is that our clients want more and more digital services. They just do not want to the bank too often nowadays”.

But respondent from Bank A firstly consider the importance of corporate culture in addition to users' demands:

“Our overall corporate culture is helping with automation – employees understand new technologies and willing to accept them. There is also a large demand from user's side – they want to do all operations by using their smartphones”.

Martin and Reddington (2010) quote openness to innovation in company is meaningful factor for an organization in new technology implementation process.

Government policies are important as claimed by respondent from Bank B:

“Government is doing many a lot with regards to the development of IT sector overall. At first, it is automation of government services (such as Gosuslugi, mos.ru). And it is all due to that government decided to develop that sector – invested into projects, wrote programs and currently supporting IT specialists”.

Respondent from Bank A agrees with that point of view:

“...also government policies. Government is focusing on digital economy – create programs to support digital innovations”.

Government policy is external factor that was not considered by Bondorouk (2017), but Tokarev (2021) emphasizes it. Respondent attaches importance to it as well due to specifics of current national policies which are aimed at helping companies to transition to digital economy state of affairs. Government is supporting digitalization of economy and therefore automation implementation.

Another factor is availability of technology as stated by respondent from Bank B:

“Automation technologies are developing at rapid pace and more and more cheap and quality solutions became available at the market”.

Technology availability wasn't mentioned clearly in the reviewed literature as a major factor for successful automation adoption. The closest mention is Chapman and Webster (2003) decision to choose between in-house development of the technology or use of commercial application. It can be argued that technology availability might be implied however there are no clarifications.

Negative factors. Problems with implementation. Corporate culture.

A study of negative factors will help to get insights on problems that might slow down automation implementation significantly. Particular importance is putted on corporate culture as main problem that could decelerate implementation processes. Bondarouk (2017) states that IT-friendly cultures reported greater adoption success.

Respondent from Bank A argue that labor market is significant problem:

“Currently we have a lot of technological projects, so the need for IT specialist is really high for us... It can be struggle to find IT specialist as they are overall in a high demand”.

Respondent from Bank B provides comprehensive answer. They consider lack of specialist and project budgets as main negative factors:

“Lack of specialists is a serious problem. There are simply “not enough hands” for everyone. Plenty of retail companies need IT specialists, even the government now making a lot of

automation projects. So, the current state of labor market might slow down the processes of automation implementation Second problem is a derivative of the first one – because demand is so high, hiring cost also rise while your project budget is still fixed”.

Once again these are external factors that Tokarev (2021) examines. By Tokarev’s classification problem with lack of specialist can be considered as a problem with suppliers, in this case market labor is the supplier of human resources. Without sufficient number of technology specialists, implementation of automation could be significantly slowed down. More than that it influences project’s budgets.

Project’s budgets are in capabilities and resources category of organizational factors according to Bondarouk’s TOP model. The budget constraints as an essential factor that determines the success of the automation implementation (Abdali, 2019). While automation of certain processes could with achieving higher operational efficiency (EY, 2021) it might be costly to implement, so the cost has to be calculated beforehand and compared with potential benefits.

Another external factor is named by respondent from Bank B:

“... maybe in some way laws could also affect the process, but I am not too sure about that... some technologies could be unavailable to us due to the sanctions”.

Government policies and laws were already mentioned above as a positive factor but there is duality to it. It is mostly due to the specifics of banking sector and requirements for it with regards to privacy of information, overall security, and monitoring of money movement. However, according to DT report (2019), 52% of companies consider that current legislation does not support the processes of digital transformation in key aspects.

Moreover, there is political factor, which negatively influence banks and overall Russian economy. Due to sanctions, some of Russian companies are not allowed to do business with foreign companies. This applies primarily to state-owned companies (most of largest bank in Russia are fully or partially state-owned). Therefore, certain technologies might be unavailable to them. Also, the sanctions make legislation even more complicated (DT, 2019). For example, the requirements of Russia's local data retention laws have caused major U.S. technology companies such as Google and Amazon to slow down the pace of development in Russia.

Respondent from Bank C once again names limited budgets, but also highlight users’ resistance to changes:

“The main problem is budget... As for problems with implementation users’ resistance was problematic. For older generation it is much harder to accept technological changes”.

Respondent from Bank B agrees:

“Users are also against automation – there are still plenty of groups that are not flexible and for them it is hard to accept changes, learn... they are resistant, do not want to cooperate... therefore, corporate culture could influence implementation...”

As mentioned by respondent from Bank B it is a corporate culture problem. Bondarouk (2017) states that IT-friendly cultures reported greater adoption success. The users’ resistance might occur if employees are not flexible and don’t possess certain knowledge. Users will need to understand how new technologies fit in with their work tasks and routines and be supported in using and working with new technologies.

COVID-19 influence

Deloitte report (2021) claims that the pandemic is changing the global banking industry on several dimensions, which create new competitive landscape and help with prompting a new wave of innovation, accelerating digitization and digital transformation.

Respondent from Bank B sees COVID-19 influencing both internal and external processes:

“I would divide the question into two parts – influence on internal automation of processes and influence on external automation of processes or in other words interaction with clients. As for external I already mentioned that everyone was focusing on mobile application to make it work properly and update frequently, add new functions.... As for internal, the focus was on the virtualization of workforce... I consider that our bank will continue working with virtualization after the pandemic. People that left Moscow for example are not planning to come back”

Clients’ needs were already described above. As for virtualization of workforce, it is a recent trend that relates to the pandemic (Deloitte, 2020). Many companies needed to adapt to working remotely. For large banks, this process was easy as they have sufficient IT infrastructure and financial resources. The respondent believes that there is an influence on the labor market, because it also opened the opportunity for candidates from other cities:

“We still had a need to hire people even in the middle of the pandemic.... We hired people all across Russia”

That fact could be a positive change. Virtualization of workforce will provide more opportunities for work in different kind of companies, especially in large ones.

Respondent from Bank A also cites virtualization of workforce as main influence of the pandemic, but for them priorities did not changed much because in internal processes automation – main focus before and during pandemic was providing client with best digital experience in form of mobile application and online banking features. The respondent from Bank C consider that virtualization of workforce was certainly a challenging process for their bank. Even though, the adaptation was a success there no plans in the bank to continue operating in this format after the pandemic is over.

However, there were more strict response to COVID-19, such as optimization of number of offices, due to virtualization of workforce, cost optimization and limited client's mobility. To illustrate, the answer from respondent from Bank A is provided:

“Clients are getting used to digital services... it was a necessity for them to use digital banking... and it probably led to that even after the pandemic there will be no need in current number of branches. The number could decline, or they change format.... There could be layoffs or retraining of employees to few areas (make them universal specialists which combines in itself positions of administrator, client's manager and teller, for example)”

Nevertheless, reduction of offices is an evolution process following widespread of automation/digitalization of a lot of bank processes and jobs transformations. New jobs will appear because of current job transformation (Arntz, Gregory, Zierahn, 2016). These new jobs probably will combine responsibilities from different job positions.

3.Role of HR

Ulrich (1997) describes the significance of HR specialists as change agents. Most companies nowadays operating in very fast changing environments, so the ability of HR specialists to build company readiness level for change could determine the success of implementation of new technologies and practices.

Automation of HR processes

In addition, it is important to found out how HR rediscovering itself (Manuti, de Palma, 2018), how does it adapt to current trends and employees' needs.

Respondent from Bank A described current level of automation of HR processes as quite high:

“Automation level with regards to HR is high... Right now, we have a HR platform that allows to make most HR processes in digital format with much less people involved. For employees it is a convenient mobile application where they can ask for transfer to another department or fill out a vacation request and a lot more... They provide different kind of recommendations to the employees – training materials, career path advice generated by AI based on employees' qualifications and experience”

Respondent from Bank B provides similar point of view:

“In HR everything is automated down to the smallest details... not only for HR perspective but also for employees... they can sign up for retraining, file a various request”

Though, respondent from Bank C suppose there are possibilities to improve at least for their bank:

“Main processes have been automated for quite some time, but we still plenty of paperwork, so there is a room for improvement”.

Automation and utilization of latest technologies could greatly help HR departments. Machine learning and big data could improve recruitment processes (Davenport, 2014), AI-powered talent management solution will create individualized career and training path for employees based on their personal characteristics (IBM, 2020). By evaluating respondents' answers, it can be concluded that in Bank A automation level of HR is quite high. Bank B has slightly lower level and Bank C is lacking behind.

HR department current involvement in automation implementation

Although HR departments are using technology that automates huge number of processes their involvement into automation in company is limited (not including their own department).

Respondent from Bank B argue that it is quite normal situation and HR department should not be involved:

“It is not a responsibility of HR department. Even if there are some changes in terms of employees due to automation, we are not the one responsible for that”.

Respondent from Bank C agrees with such statement:

“Our department is not involved into such processes”.

Respondent from Bank A has a different point of view:

“Directly HR is not involved into automation development. We are not IT specialists and does not create new technologies... However, indirectly, HR is helping by building necessary culture”.

Once again corporate culture is mentioned as an important factor that could help automation implementation. And this factor is responsibility of HR department, yet most of respondents do not see any connection between HR and automation.

HR involvement into adapting organization to automation implementation

Lawson and Limbrick (1996) draw a conclusion that HR specialists need to create shared desire for change. It includes different activity such as motivating key stakeholders, communicating about the importance of change and promoting the necessary changes to ensure measurable success. Svoboda and Schröder (2001) also stresses the importance of HR specialists in change period. They state that HR specialists have to identify emerging issues and drive related organizational flexibility.

Respondent from Bank B suppose that there is need for more involvement into adapting organization to technological changes:

“There is probably a need for it. But it should be discussed on the level of chairman of the bank and director of personnel. And the planning period here is at least 5 years.”

Adding that HR department in some cases acts more as an advisor:

“In case of implementation of automation in particular department – it would be responsibility of department head to talk to the employees and resolve any problems. HR can provide some recommendations and advice to department head”.

Respondent from Bank C doesn't see HR department playing more serious role in their bank:

“I believe that the current level of involvement is optimal. HR serves to support the core business, but it should not fulfill direct responsibilities [of core business]. For our part, we carry out planned training, employee evaluations, and recruitment. That's it”.

As for respondent from Bank A, they also believe that the current level of involvement in their bank is optimal. Although, the involvement in these banks vary greatly.

To better describe level of development of HR in each bank, the categorization provided in IBM report (2020) will be used. Key areas of HR are going to be evaluate in the table below (table 3).

Action area/Bank	Bank A	Bank B	Bank C
Employee performance management	HR 3.0 with elements of HR 2.0 -Presence of continuous feedback with the help of mobile app (HR platform) -Assessment is based on multiple dimensions -Results used to inform compensation and promotions	HR 2.0 -Evaluation is an annual process -Productivity based assessment (single measure assessment) -Results used to inform compensation and promotions	HR 2.0 -Evaluation is an annual process -Productivity based assessment (single measure assessment) -Results used to inform compensation and promotions
Leadership development	HR 3.0 -Continuous immersive and experiential learning -Leadership based on performance and behavior -Behavioral science-based assessments and predictive analytics to identify potential	HR 2.0 -Leadership development combines experiential and education -Leadership based on performance and tenure -Flatter organizational structures -360-degree assessment	HR 1.0 with elements of HR 2.0 -Hierarchical -New manager training is once and done -Leadership based on performance and tenure
Learning and development	HR 3.0 with elements of HR 2.0 -Learning is personalized by employee	HR 2.0 -Internal design and development	HR 1.0

	<ul style="list-style-type: none"> -Learning ecosystem with content from internal and external sources -Utilizing analytics and AI for evaluation of current skills levels and providing personalized career and learning paths -Delivered and managed through LMS 	<ul style="list-style-type: none"> -Learning is customized to each major career path -Delivered and managed through LMS 	<ul style="list-style-type: none"> -Training content is static and mostly developed in-house -Learning is not customized -Mostly traditional classroom training
HR technology	<ul style="list-style-type: none"> HR 3.0 with elements of HR 2.0 -Analytics and AI embedded pervasively across HR solutions -User experience focused -Employee-enabled tools that provide anyplace, anytime connectivity and support 	<ul style="list-style-type: none"> HR 2.0 -On-premise big ERP software -Introduction of self-service -Efficiency focused 	<ul style="list-style-type: none"> HR 2.0 with elements of HR 1.0 -On-premise big ERP software -Custom solutions -Excel spreadsheets are used for certain processes
HR data	<ul style="list-style-type: none"> HR 3.0 with elements of HR 2.0 -Significant investments in AI and analytics across HR -Predictive analytics -Data sources are internal and structured 	<ul style="list-style-type: none"> HR 2.0 -Data is standardized and integrated, or in the process of being integrated across the enterprise -Data sources are internal and structured 	<ul style="list-style-type: none"> HR 2.0 -Data is standardized and integrated, or in the process of being integrated across the enterprise -Data sources are internal and structured
Overall characteristic	HR 3.0 with elements of HR 2.0	HR 2.0	Between HR 1.0 and 2.0

Table 3. Evaluation of HR department level of development

The most development HR department is in Bank A and not only in terms of technology but in terms of practices. Usage of AI and advancement analytics, high level of leadership and learning development all these point out to the level of HR 3.0, even though there are some elements of HR 2.0. Bank B still has a clear HR 2.0 level, while Bank C is somewhere in between HR 1.0 and 2.0.

To conclude the bank with larger role of HR department in adoption of automation and overall changes is more successful and more developed in comparison with counterparts.

4.Current skills and retraining/reskilling

The problem of developing relevant skills is huge nowadays. Organizations are not ready to take this responsibility fully, although most of them claim that in near future employees would need to go through the process of reskilling (Deloitte 2020). And with rising number of business processes that are being automated, improvement of human-machine collaboration knowledge is also required. Organizations have to focus on the development of training programs.

New essential skills

The jobs are transforming due to multiple factors – automation, globalization and use of cognitive technologies within the workplace are the main ones (Rotatori, Lee, Sleeva, 2020). And the traditional STEM skill set is not enough in today’s environment. Some reports (AACC, 2018) highlight the importance of soft skills – communication, collaboration, etc.

Overall situation with regards to new required skills is described best by the answer from respondent from Bank B:

“Nothing had drastically changed in terms of needed skills in the last years. Of course, everything depends on the position of employees – for some we are trying to find people who are proficient in certain programs (such as traders). But for most [positions], basic knowledge of PC programs (Microsoft Office) is enough”.

Although, the respondent claim that nothing had changed in the last years in terms of skills the situation might change in near future according to the reports (Deloitte, 2020). Especially with regards to the particular human-machine collaboration skills.

Retraining programs

According to the Kaur and Krishna (2020) study providing opportunities for employees to learn the right kind of skills is crucial. The companies have to focus more on retraining rather than hiring, for example, new IT specialists to save company’s time and financial resources. Jehanzeb and Bashir (2013) consider employee’s development as a way to help employees and organizations to operate in more efficient manner and to adapt to the constantly changing business environment. Schwartz (2019) consider a growing skills gap and demand for learning on-the-job. More than that, reskilling is considered a world issue (World Economic Forum, 2017), but not many actions are taken to overcome the problem. 74% of companies sees reskilling as an important factor for their successful operations in the span of the next 12–18 months, but only 10% are ready for providing reskilling opportunities (Deloitte, 2020).

Respondent from Bank B says that their bank has limited availability of training programs:

“As for retraining programs – in case of implementation of new computer programs we do have retraining process. For new employees we also provide trainings on specific computer

programs. Also, there are training programs to improve certain skills. But we do not have something like corporate university in Yandex in which you can learn new profession”.

Respondents from Bank C thinks it is easier to find already trained specialist:

“We can’t really offer too much with regards to training programs. I consider that bank should implement more opportunities for staff to retraining. But we need to take into account size of a company or bank. We are local player and don’t have as much resources as major bank. For us it cheaper to find trained specialists at labor market”.

However, Bank A provides plenty of opportunities for reskilling and additional training:

“Bank provides opportunities to study in the corporate university, in which employees can learn entirely new professions. More than that, after acquiring new skills and knowledge in the corporate university an employee could ask to be moved into another company”.

Financial resources are main concern when it comes to reskilling. Even if reskilling gives some benefits, smaller companies (banks in our case) cannot provide reskilling programs due to financial and time restrictions.

Future of automation and counteracting

Ford (2015) suppose that labor performed by humans will be replaced completely by advanced technologies. On the other hand, Flichy (2017) consider that digitalization and automation result in job transformation and give rise to the “open work” concept. Because there are no unite in opinions, it important to discover the real practical view on this problem.

Overall, respondents consider that automation is nothing to worry about. Respondent from Bank B commented on the problem in following way:

“Even if the bank would implement some technology that would allow to reduce number of employees, for example, from 10,000 to 1,000, it will take plenty of time, not one year. And with natural employees’ outflow and with reassignment of employees to different position we will not have to fire 9000 people. Also, we should not forget about key system users who can actively participate in automation implementation and then they can move to IT department (as analytics or administrators)”.

More than that, in recent years Bank B has been hiring more people than were laid off. Still, most of hired employees are connected to IT sphere, which shows evolution process of banking workforce. As for technology development it is hard to predict what will happen in the future. In 2018 in Nordea Bank there was a believe that AI will allow to cut workforce by half in near future (Bloomberg, 2018), but after firing 6000 of employees there were no any significant changes. Some banking specialist (Financial Times, 2018) predicted that by 2023 around 30% of banking jobs will be replaced by AI.

As for other respondents – respondent from Bank A thinks that their bank is doing a lot to provide opportunities for their employees to stay relevant in contrast with rising role of AI and respondent from Bank C consider that if their bank wants to stay competitive, they have no other choice beside firing employees which jobs were automated completely.

Chapter 4. Conclusions

4.1. Results and discussion

Handling automation implementation properly is important for any company as it will help save time and financial resources at the early stages and improve outcomes on the latter one. A lot of external and internal factors can influence implementation process – organizational characteristics, resources and capabilities, economic situation in the country, etc. Not only these factors should be taken into account but also the readiness of company to change. HR specialists should become change agents and build an atmosphere that would motivate employees to embrace changes. Though, to become change agents the HR department needs to rediscover itself at first. One way to it is to adopt the latest technologies and practices.

By studying the Russian banking sector one of the key features can be seen – in terms of technology, the sector is well-above average in comparison with foreign banks (Deloitte, 2020). But there are still plenty of local players in the sector which can afford much less than major players with regards to technologies. Another distinctive feature of Russian banking sector is the major role of government. The government not only transforming their own services by automating and digitalizing them but also invests into technological projects, plays an advisory role in digital transformation, and accepts laws on different aspects related to digital technologies. Yet banks and government sometimes overlook two problem – reskilling and role of HR department in automation implementation process. More than that, it is especially important with regards to the banking sector because banking specialists have very few opportunities to move to another sector of business, as their skills and knowledge are highly specialized. Also, transition of specialists to the bank from other branches is not always successful and possible.

In this thesis, three different banks were analyzed. These banks all have different characteristics, such as overall organization size and a number of employees, level of HR development, used HR practices. Interview results provided insight and allowed to answer all of the research questions which were set in the introduction part of the thesis.

They are as follows:

- What are the factors affecting automation development in the Russian banking sector?

The respondents highlighted a number of factors such as government policies, corporate culture, the pandemic, user acceptance (both from customers' and employees' side), availability of technology, restrictions of financial resources, lack of IT specialists, politics. Overall, some of these factors were named by Bondarouk (2017) and by Tokarev (2021) as the most important ones for the successful implementation of automation. The fact that was not mentioned in the reviewed

studies is availability of technology. The closest related mention is in Chapman and Webster study (2003) – formulated as a decision to choose between in-house development of the technology or use of the commercial application. It can be argued that technology availability might be implied however there are no clarifications.

To sum up, all the factors are categorized in the table below (table 4).

Category	Named factor	Mentioned as
Internal (organizational)	-restrictions of financial resources	negative
	-size of organization	negative
	-planning and project management traditions	positive
Internal (people)	-user acceptance (employees)	positive
	-corporate culture	positive/negative
External	-availability of technology	positive
	-government laws and policies	positive/negative
	-lack of IT specialists	negative
	-political situation	negative
	-the pandemic	positive/negative
	-user acceptance (customers)	positive

Table 4. Factors mentioned by respondents categorized in accordance with the reviewed academic studies

From this table, it is obvious that respondents named more external factor rather than internal. They could be more concerning for the respondents because they cannot be controlled. Moreover, most of them were described as having a negative influence on automation implementation processes. Another interesting finding is that technological factors were not considered by the respondents. It probably due to the fact that technology levels are rather in Russian banks, as was mentioned by the respondents and also various market reports.

The high level of IT infrastructure also helped Russian banks to better adapt to the pandemic and address the challenges associated with it. Overall, the pandemic played both positive and negative roles. Positive with regards to higher adaption of new technologies that include automation and virtualization. Banks had implemented new technologies not to simply to stay competitive but also to operate in some cases as both customers and employees were limited in mobility. To solve this issue from the employees' side, technologies of workforce virtualization were implemented. As for customers, banks tried to automate more of their services by adding new functionality to their mobile applications or online banking. But some of negative features

accrued as well. Mainly they are associated with the downturn of Russian economy and banks' financial resources. Once again, it was more concerning for smaller banks rather than larger ones. More than that, these banks had lower levels of IT infrastructure before the pandemic, which means that they not only have had less amount of financial resources available but also have to spend on improving IT infrastructure to maintain operations.

Government laws and policies have a significant impact on implementation processes. On the one hand, it can make the process easier by supporting automation and digital transformation of companies in the form of relevant and clear laws. While the respondents for the most part were positive about the role of the named factor, various market reports (DT, 2019; NRI, 2020) that studied the situation in Russian with relation to automation and digitalization describe opposite views. Regulatory quality, ICT regulatory environment, e-commerce legislation – all considered as an issue and hinders further development and implementation of new technologies. And more than half of companies in Russia (DT, 2019) consider that current legislation does not support the processes of digital transformation in key aspects. For example, the requirements of Russia's local data retention laws have caused major U.S. technology companies such as Google and Amazon to slow down the pace of development in Russia. Although, the respondents from banking sector focus did not focus on legislation and it is probably due to the factor that banking sector is already affected by a number of strict laws with regards to privacy of information, overall security, and monitoring of money movement.

Nowadays Russian government pays close attention to building digital economy. And the government provides plenty of recommendations about how to approach digital transformation in the form of methodological documents. Yet, the role HR department and HRM overall quite often not mentioned in these documents. For example, in the Methodological Recommendations for the Digital Transformation of Public Corporations and State-Owned Companies (2020) it is mentioned that transformation of HRM is an important direction for embracing digital transformation, but no specific recommendations about HRM are provided.

With the important role of the government in automation development in Russia, it is necessary for the government to highlight the role of the HR department in automation for the Russian companies. And additionally, providing more specific recommendations about HRM.

Moreover, there is a political factor, which negatively influences banks and the overall Russian economy. Due to sanctions, some of the Russian companies are not allowed to do business with foreign companies. At first, it hinders cooperation and exchange of experience. At second, foreign companies might not want to sell their services or products (for example, technologies) because they do not want to be engaged into politics. However, mostly state-owned companies are affected.

With respect to the availability of technology, it should be pointed out that it is not only related to sanctions and politics. It also has to do with commercial availability. Some organizations do not have the resources to create custom digital solutions for their needs, so they are looking for solutions on the market. If solutions that fit the requirements were not found, the organization could simply suspend further implementation.

But even if technologies are commercially available or organizations have enough resources for creating in-house solution, finding specialists is also important. Without sufficient number of IT specialists, implementation of automation could be significantly slowed down. The respondents are claiming that *“there are simply “not enough hands” for everyone. Plenty of retail companies need IT specialists, even the government now making a lot of automation projects”*. And amidst the pandemic the situation has worsened. Banks had to look for specialists not only in major cities where their HQ are located, but all across Russia to continue developing technological projects. This fact has both positive and negative sides. Positive is that banks now will provide more opportunities for specialists from different cities. Negative is that these specialists might be less effective. For example, time zone differences could result in organizational problems, and specialists will not have opportunities to work with certain problems in-person, etc.

It is crucial for the HR department to pay more attention to training programs. By thoroughly developing and implementing training programs, the HR department will ensure that employees will improve their human-machine collaboration knowledge and as a result a company will get more benefits from automation implementation. Also, not only could it help mitigate the potential problem of not having enough IT specialists for companies' needs in the labor market but also it could contribute to the resolution of the reskilling problem. For example, the training programs could focus on developing necessary digital skills as well soft skills, which became especially important in the Digital era.

Another external factor that was not mentioned clearly in reviewed scientific literature is acceptance of technologies from the customers side of view. Clients' needs are one of the main drivers of both digital transformation and automation. If organizations are implementing features that are aimed at automation of interaction with customers, they should consider customers' skills and its features' convenience. Ideally, the use of digital tools, and in particular of AI, should help in creation of a user-driven experience. More than that, customers' needs might provide insights about which functions of employees should undergo automation, as one of the respondents claimed, *“clients want from mobile applications all the services that offices can provide”* and banks are trying to fulfill these needs.

Nevertheless, the banks are paying attention to internal factors as well. Banks' financial resource limitations were already mentioned previously as the crucial factor for successful

implementation. As for corporate culture, larger banks are building more IT-friendly cultures. With the proper culture, internal users' acceptance rate would be much higher as employees would be more flexible, aware of current technologies and more open to changes. Employees also could become more encouraged to develop their own IT skills. And once again HR department can help with solving this problem.

Having a proper strategy could also influence automation adoption success. The strategy defines the framework of the future development of the company, in other words, what types of activities it will pursue and how certain processes of the company will be implemented into main business model. All of the respondents underlined the importance of having strategy. All three banks have strategies with regards to the implementation of automation technologies.

To conclude, there are plenty of different factors influencing automation. All of them are shown in the Table 4. For successful automation implementation, they all should be taken into account while developing strategy. If HR department is capable of taking the role of change agent that could greatly help organization. By building the right corporate culture, organizing relevant training/reskilling programs, HR specialists will help to raise company readiness level for technological and overall change. But the HR at first should move from its traditional administrative role and redeveloped itself by adapting new technologies and practices. By becoming more efficient in its current processes with the help of automation, the HR department will have more time for dealing with corporate culture, users' acceptance levels and training programs. HR will expand its area of focus and influence and will effectively manage the human element of work.

- What practices Russian banks use to deal with employees who have been affected by automation?

Less educated employees might be more prone to automation. That fact highlights the importance of increasing investments into training programs. But even if there would be a proper training programs for employees on the topic of how to work with different automation elements or to acquire new skills, organizations would still have to organize a comfortable workplace for employees and pay attention to their productivity as they will still remain one of the most valuable assets for companies, while digital technologies will help save time by completing routine tasks. But real-life situation is different.

Practices do vary depending on the bank. Larger banks have more resources and can build corporate universities, which help employees with retraining, learning new profession, and then organization itself can help with further mobility within the organization. In addition to AI

monitoring of employees' current skills and their potential, the bank could understand who could become a great addition to the team.

Also, according to one of the respondents sometimes instead of laying off employees, banks provide opportunities to retraining in multiple dimensions. As a result, employees will become universal specialist, for example, combining positions of administrator, client's manager, and teller. Similar findings about job transformation are considered by Arntz, Gregory and Zierahn (2016)

Smaller banks cannot provide such help and tend lay off employees. Limited amount of financial resources do not allow to improve training processes. And these kinds of banks are always looking to become more efficient in terms of operation, so if the opportunity for automation arise, they will go for it and optimize processes as well as number of employees. Furthermore, it is cheaper and less time consuming for them to found new employees every now and then, than spend resources on creating their own training programs.

4.2. Theoretical contribution

Main theoretical contribution of this thesis is pointing out differences with Bondarouk (2017) study about the factors for successful implementation of digital technologies. Although, most of the discovered factors that influence automation were mentioned in Bondarouk study, the group of external factors were not considered. Also, Bondarouk consider importance of technological factors group, while it was discovered that actually this group was not relevant according to the respondents' answers.

4.3. Managerial implications

With regards to the managerial implications of the thesis – the following recommendations were created based on the research results. The recommendations provide an insight into which factors should be considered before an organization starts automation implementation. The role of HR in this process is also taken into account, and certain recommendations on building HR that would help with automation implementation are provided.

While automation is the first step towards digital transformation from the technological point of view, changing characteristics of the HR department is the first step towards digital transformation from organizational side. By firstly changing the HR department a company will be on its way to Digital Transformation. Even if there is currently no need for a company to change drastically and the plan is to automate only specific tasks or implement new technology in one particular department, sooner or later, a need for technological change in another department will arise. Without prompt changes, a company could lose its effectiveness and therefore lose its position on the market. For this reason, the creation of an agile HR department that uses the latest digital

technologies and focuses on developing the right culture and its employees will be an advantage. More than that, it will become a foundation for future digital transformation.

Before the recommendations are going to be provided, it is important to consider best and worst practices from the case studies.

The best practices are in Bank A. The bank has a strong corporate culture that supports innovation and creativeness. The employees could learn an entirely new profession in corporate university and then be moved to another department. Also, with the help of HR 3.0 technologies, the employees know their skills and knowledge gaps and could always choose a course to close them. More than that, courses and the overall learning process is customizable. The bank has both short and long-term strategies for digital transformation and automation. Although it is important to note that Bank A has plenty of financial resources and a large number of employees.

As for the worst practices – they were presented within Bank C. HR department in this bank focuses mostly on recruiting and administrative tasks. There is no strong corporate culture, and employees are rather conservative and face changes with a degree of resistance. Such reaction is understandable as in the case of automation development, the bank lay off employees. The bank also provides almost no opportunities for reskilling. In addition, the bank did not have a clear strategy for automation development until recently. Though it is important to mention that it is a local bank with the particular business model and a limited amount of financial resources.

Based on the case studies and analysis of academic studies as well as market reports, the following recommendations are provided:

- 1) For proper automation implementation, it is crucial to have an agile HR department that fully embraced the role of a change agent. To achieve that, a company could use HR 3.0 technologies (e.g AI, Big Data), which will help to lessen the burden of routine tasks and analysis of candidates. Without the need to be focused on routine tasks could focus on helping with automation implementation and training programs development.
- 2) HR department should build modern corporate culture to avoid user resistance. By modern corporate culture, it is meant to emphasize the following values – creativity, openness to innovation, empathy. Also, to avoid user resistance, the HR department should work closely with IT department during automation implementation or digital transformation to clearly show employees the benefits of technological changes.
- 3) The HR department should develop training programs based on the current skills gaps, such as critical technology skills, as well as on the forecast of future needs. Once again, technologies of HR 3.0 could help with this task as they will help to deliver individual learning models by taking into account certain characteristics of an employee.

- 4) For proper automation implementation, it is still important to consider the internal factors that are not within reach of the HR department, such as restrictions of financial resources or automation strategy; and external factors such as – political situation, laws and policies, the situation on the labor market and availability of technology

4.4. Limitations and further research direction

This thesis study has a few limitations. First limitation is connected with research design and number of respondents. Even though case study research method allows to get greater insights on topic and overall provides a good opportunity for innovation, it can be hard to generalize, especially when a few cases are being reviewed (Almeida 2017). However, the banks that were chosen for the research represents different groups of the banking sector. Bank A is a rather unique case even for European markets, the main focus of the bank is on IT development. Bank B is a representative of top 20 banks in Russia, most of them have similar strategies and level of development, while Bank C represents all of the other banks that are not in the top 100. Overall, three main groups which make up the Russian banking sector were included.

The second limitation is that the research was conducted in a Russian context and only within banks. Although Russian banks are more developed in terms of digital technology, some of the findings are still country and industry-specific. Also, specifics of banking did influence the research results and therefore, the universality of named recommendations is questionable.

The experience of the respondents is another limitation. All of the respondents have different job experience and their current positions within HR departments are different. Some of the questions were tough to answer for some of them due to lack of knowledge about the topic and lack of awareness of certain company policies.

As for further research direction, there are some directions that should be studied additionally. While the research goal of the study is stated as “how companies should handle automation from HRM perspective” some related issues have not been studied, for example, the connection between automation and staff turnover / other internal characteristics were not considered.

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Appendix

Appendix 1. Interview questionnaire:

I part. General Information

- Name of the respondent
- Age of the respondent
- Position of the respondent
- Number of years on current position

II part. Current state

- In your opinion, what is “Automation” with regards to banking sector?
- How do you perceive automation? Is it good or bad trend? Why?
- How would you describe the current state of automation in your bank?
- Does your bank have a strategy regarding automation development?
- What departments, functions and/or processes are most affected by automation?

III part. Factors influencing automation

- What current trends/factors are affecting automation development positively in your bank?
- What current trends/factors are affecting automation development negatively in your bank?
- Were there any challenges for your bank related to automation?
- Did your bank’s culture or/and organizational structure influence automation development?
- Did COVID-19 contribute to the further development of automation in your company?
- Which talent changes did your bank make in response to COVID-19? (for example, flexible schedules, virtualization of the workforce, layoffs, etc.)

IV part. HR role

- How did automation affect HR processes in your bank?
- How would you describe current involvement of the HR department in automation

development?

- Do you think HR department need to be more involved into adapting organization to automation development in your bank? Why or why not?

V part. Retraining

- Did requirements for jobs in your company change due to automation? How?
- What is a current portrait of starting position employee? Which competencies are valued the most?
- How is your bank dealing with employees which jobs (or certain tasks) were automated? Do any retraining programs exist within the company?
- Do you consider that your bank should pay more attention to automation from a human resource perspective (such as implement retraining programs to potential layoffs due to automation, etc.)? Why?

Appendix 2. Differences between automation, digitalization, and digital transformation:

Appendix. What is automation?

