

Relocation: influence to business infrastructure development and labour economics in digital age

Elena Schislyaeva ¹, Elena Balashova ^{1*}, Olga Saychenko ² and Evgeniya Panova ²

¹ Peter the Great St. Petersburg Polytechnic University, Politechnicheskaya str., 29, Saint Petersburg, 195251, Russia

² Saint Petersburg State Marine Technical University, Locmanskaya str., 3, Saint Petersburg, 190121, Russia

* E-mail: elenabalashova@mail.ru

Abstract. In the context of digital economy one of the key factors influencing the social and economic development of the country and regions as well as development of individual enterprises is labor mobility management. On the one hand the labor mobility reflects the busy status of all social and demographic population groups and on the other hand it reveals readiness and capability of the population to change the social status, professional affiliation and place of residence. The latter has a material influence to HR management system at some enterprises in particular to cope with personnel deficit in enterprises of various field located around the RF. The digital economy will inevitably cause global change of the Russian labor market. The country scale, unevenness of territories, total lack of modern rare professions demanded by digital economy considers the necessity to relocate the personnel. Relocation as an acknowledged transition of big groups of human resources between individual regions of Russia as well as between Russia and other countries should become an element of national development strategy as on the one hand it allows to solve the issue of lack of IT mobile and network technologies specialists and on the other hand allows to conscientiously manage processes of complete unemployment in such regions of the country which focus on the activities which inevitably become out-of-date in the closest future when the country moves to economy 4.0.

1. Study relevance

The digital economy or the economy of innovations develops through introduction of new technologies. Development of innovation systems change production processes. On the one hand, they are simplified. The simplifying of production processes is determined and explained by automated operational activities, reduced impact of human factor and lower possibility of errors. On the other hand the processes become more complex. Digitalization considers abandonment of many simple working professions and higher demand of engineering specialists with special professional competences, knowledge and skills. Prime minister of the Russian Federation D. A. Medvedev called to be ready that some professions be deceased due to digitalization of economy, he tipped off that development of digital economy can “kill” some professions and called to get ready to new challenges in occupation field as well as to modernization of governmental apparatus. The technological



transformation can cause not only the explosive growth of labor productivity but “kill” some professions and increase the risks of human profits polarization.”

In the approved in Russia “Strategy of development of information society in the RF in 2017–2030” a whole national economy is shaped and the typical characteristics of it are processing big data and use of analysis results which compared to conventional economy increase the efficiency of various production kinds, technologies, equipment, storage, sales, products and services delivery. Digital economy is the activity immediately related to development and wide introduction of digital computer technologies. Russia is a unique space to implement the strategy of information society development. Its unique nature is determined by such factors as scale of the country, unevenness of territories development and material differences between territorially different labor markets. In some regions of the RF the modern professions demanded by digital economy are not represented sufficiently, the population of these regions is specialized mostly in simple activities which will become irrelevant and out-of-date in the nearest digital future. According to IBM [1] the total volume of structured and unstructured data will be 160 ZettaBytes by 2025 and the largest part of it is unstructured data. Data processing and data science will influence all field without exclusions. In the nearest future there will be no a single industry which is not exploded by new approaches from the point of view of data use and processing. Relocation of labor resources as an acknowledged national strategy of labor mobility management can solve problems of potential unemployment on the one hand and lack of specialists of rare modern professions on the other hand.

Study of issues and problems of development of mobility of labor resources and processes related with that today is of key importance to development of economy in Russia in particular to stabilize and develop labor market in our country [2]. In a new digital economy the growth is determined by velocity of technologies development but can be provided only by a human. In this context a special attention should be drawn to develop a media for a person the success or defeat of which will be a key factor for development of technologies and innovations. Preparation of personnel and some other social aspects of investing climate are given a higher role. The employer aiming to provide a long-term growth of its business understands that “investments to humans” are no less important than renewal of material part of production as the professional capacities of employees as their development abilities are the competitive advantages of the company. Relocation of human resources is one of the factors which immediately influence solving the problem of personnel deficit in Russian enterprises. Besides development of labor resources mobility enable enterprises in some industries to increase their labor potential and human capital by engaging highly qualified resources in digital management from other regions and countries.

2. The issue to labor resources relocation on country scale

In modern environment relocation of personnel and intrabranche rotation applied by leading HR agencies and local enterprises are the most demanded forms of labor resources relocation. Their development is one of the most relevant tasks of modern enterprises the implementation of which will increase the enterprise level of labor potential and solve issues of staff deficit if any. Personnel relocation is determined as relocation of an employee to a new place of work or residence on economic reasons. It is a complex process which required resolving a whole complex of issues occurring during relocation if new job offer is received [3]. To make analysis more effective and to estimate processes of labor resources relocation first of all it is necessary to start from demands and capabilities of enterprises in this field. On this basis it is suggested to consider relocation as a concrete process representing influence of labor mobility and migration processes to HR management system of modern enterprise. Personnel relocation is a complex of sequential actions on territorial relocation of labor resources on the basis of enterprise demands aimed to increase the effectiveness of HR use. This approach allows to develop relocation programs data bases considering tendencies of labor mobility and increase effectiveness of human resources and human capital use estimation in enterprises and to optimize the personnel policy when resolving issues of personnel deficit and

mobility of labor resources. Personnel relocation is an integral part of manpower mobility and acts as its individual element aimed to satisfy needs of some enterprises in qualified personnel.

3. Analysis of foreign experience in relocation of labor resources

International practice of labor resources relocation lasts for over several decades. Special attention should be drawn to analysis of experience of People's Republic of China where 100 million people are planned to be moved from rural to urban areas by 2020. By 2026 the total scale of relocation will approach the amount of 250 million. Such unprecedented relocation is a component of "National plan of new type urbanization in 2014–2020" [4]. The purpose of such large-scale relocation is to develop national economy in digital age and matching contemporary macroeconomic standards. In USA around 80% of humans live in cities and in China – less than 60%. Moving farmers from countryside to urban areas the country plans to become one of global leaders in digital economy. Besides private terms of relocation plan 2020 considers development of urban and intercity infrastructure – expanded highways, construction of speedy railways. The importance of managerial attention to logistic component of development is determined by the fact that in the first year of program implementation the Government of China faced the issue that the existing infrastructure facilities – bridges, tunnels, highways – failed to cope with higher load and could not properly connect the cities. It needs to be mentioned that such a situation can inevitably be repeated in Russia where some geographical regions in particular Siberia and far north regions are difficult to access.

4. Relocation issues in Russian environment

To compete in a new economy of knowledge Russia should greatly increase the share of highly qualified persons at the labor market. By 2025 Russia may face a huge – over 10 million people – lack of highly qualified personnel which are not only owners of University diplomas but have actual knowledge and competences, skill to use them correctly, can do analytical creative tasks and can take decisions independently. We speak of managers, doctors, engineers, analysts, etc. According to the results of research of the Russian labor and human capital market "Russia–2025": from staff to talents" the only opportunity for the country to retain the competitive level in the global economy is to implement anticipatory modernization scenario – qualitative change of labor market and larger share of highly qualified specialists.

Considering that labor mobility is one of key parameters of labor flexibility that means it reflects its capability to move the foremost task is to develop the indicators of personnel relocation level at the enterprise [5]. New branches, divisions of a company always require such an amount of employees which provide uninterrupted flow of business processes. Today the employer faces actual difficulties in finding relevant staff within a metropolitan city and in its suburbs. The only way out is to engage personnel from other regions. Personnel relocation is one of the optimal solutions of staff deficit issue. It considers relocation of a person to another territory including change of place of residence as it gains job in another city or even country. Personnel search and engagement is taken by international and major Russian enterprises irrespective of their activity field. Relocation addresses specialist from each and every industry: from working personnel (movers, sellers, cleaners, etc.) to engineers, oil workers and drillers. According to Danish researcher Jens Rasmussen [6] all workers can be divided to three categories: "Rule", "Skill" and "Knowledge".

The "Rule" category in the system includes those who do physical work and most working time repeat typical tasks. The "Skill" category is those who do technical routine tasks and who take decisions following the rules (from foreman to hotel administrator as well as most economists and lawyers who are multiplied in Russian higher education institutions). And finally "Knowledge" category — those devoting the largest part of working time to analytical, creative tasks, improvising and consider independent decision making.

Today in Russia only 17% of working population falls into "Knowledge" category. On this parameter our country is at transfer stage from economy of resources and economy of knowledge represented by such leading countries as Japan, USA, Germany and Singapore. They are characterized

by higher profit level, developed digital economy, high index of human development and share of HR in “Knowledge” category (it is one of key indicators of country competitiveness) exceeds 25% [7].

Russia lacks “Knowledge” not through massive brain drain as in 1990s. The point is in the gap between skills got by specialists in educational institutions and actual demands of the economy. According to the study 80% of working population is not ready to work at modern markets. The guilt is shared between the educational system, labor payment principles and personal characteristics: 98% of country population prefers stability instead of growth capabilities; demand for knowledge is not as high as required [8]. It occurs in particular as labor payment does not sufficiently depend on qualification level. For example the gap between profit of category 2 a driver and profit of a doctor is only 17%; compare: in Brazil — 174%, in USA — 261%. Russia still lack a media for human development and self-fulfillment: 4.9 million of Russian (it is 6.5% of working population) live in labor poverty conditions (wage cover only existence needs); educational institutions are deaf to business. Accomplishment is frequently substituted by scholarship [9]. The system prepares mostly “Rule” category specialists instead of “Knowledge” ones and does not provide regular renewal of competences after graduation from educational institution.

“If the existing structure of labor market remains the same for the nearest seven-ten years the retention of Russia from leading economy countries can become irreducible”, — stresses one of study authors, chief partner and managing director, head of BCG in Russia Vladislav Butenko. The system approach to human capital development, requalification and reeducation system, transfer to talent management instead of staff management logic is the only correct answer to new era challenges”.

5. Two scenarios of market development in Russia

The first scenario is basic or catching up [10]. It considers increase of total number of working places by 2.2 million persons. Herewith “Knowledge” category will get 5.8 million working places and “Rule” and “Skill” category will lose 3.5 working places. This scenario can promote annual growth of country GDP at mean global level (3–3.5% annually). The risk of this scenario is that private business will be far forward in development than governmental institutions and the commercial sector will gain the most talented candidates.

The second scenario is advance modernization. It considers a more active role of state and companies with governmental participation. According to this scenario in the nearest 8 years “Knowledge” category will need 4.7 million workers. In total Russia will get 10.5 working places for employees of higher qualification. If the scenario is implemented the GDP extra growth will be 1.5% annually compared to basic one considering that 9.4 million persons from categories “Rule” and “Skill” will not be in demand. Risks of this scenario: unemployment growth as the scenario considers massive release of personnel using the outdated rules. This addresses both governmental institutions and private companies.

According to the study the country needs major requalification that means some specialists shall move from “Rule” and “Skill” categories to “Knowledge” category.

The new competitive level of Russia will be determined by its capability to develop and introduce the concept of human capital development which includes not only the issues of education and staff preparation but stimulating demand for “Knowledge” category specialists as well as development of media favorable for human development. Today nobody is surprised by velocity of changes in the Russian business. The managers become used to living in a chaos model which is well described by VUCA model: volatility, uncertainty, complexity and ambiguity. Now this tendency fully addressed HR: nearly all approaches in modern HR management have been developed for predictable conditions but they cannot be operated in variable media.

6. Introduction of digital technologies to relocation of labor resources: business capabilities and transformation

Resolving issues of relocation on national scale require the employers to apply modern methods to deal with employees — active use of social networks, referral recruiting, introduction of digital

technologies, using methods of predictive analytics and robotic automation of business processes [11]. HR Digital nowadays is the most popular market trend which should be given a special attention. Digital technologies are actively introduced to HR management: many companies are already using predictive analytics, machine training and artificial intellect. At the same time technologies allow to make screening and personnel hiring process automatic and interviews are taken not only by field-specific employees but by chat-bots and robots. Globally and in Russia companies aim to optimize business introducing the most modern digital instruments. Analyzing the issue of transfer of labor mobility to digital space enabled to determine several fundamental tendencies the use of which will help to move the working process to a new level increasing quality and effectiveness of personnel mobility.

The artificial intellect and robotic automation are one of the most perspective directions of development of modern market of personnel relocation. A robot contacts a candidate using audio or video-communication and draws a dialogue following the developed algorithm (gives open-ended and close-ended questions) and records the answers. The robot also learns to detect the emotions during the video-interview, records a talk, forwards messages, letters and invitations to any candidates – those whom he talked on the phone and those whom he failed to contact on the phone. All these make the possibility to get response to a vacancy higher. According to an independent estimation [12] a robot makes time and labor costs at least 10 times less and in this regard a development of Skillaz is very interesting, it demonstrates that robotic automation can be used not only as a part of conventional process but when processing complex requests of employers. Along with robots a higher popularity was gained by chat-bots which gain the important information following the set algorithm (documents and restrictions on works, personal data and readiness to study vacations), process the information and inform on a decision taken on the basis of received answers. Along with that bot can implement the administration tasks such as to plan meetings, compose detailed profiles of candidates and keep lists of candidates. Bot can be connected to a calendar to manage meetings with candidates. Today chat-bots can talk nearly in all known messengers including Telegram, Viber, WhatsApp, Facebook Messenger, Slack, etc. The most well-known bots at the global market have been developed by Mya, XOR, Wade&Wendy and TalkPush. In Russia the segment of chat-bots for HR-issues is represented first of all by XOR service [12]. Considering automation of business processes three main directions can be determined video- and audio-interviews, testing software and personnel evaluation systems. The main pros of automation for employers are the possibility to search for and choose candidates remotely, for candidates – to participate in online-interviews and testing at convenient time, for recruiters – to study recorded interviews and testing results. Such technologies materially decrease the time consumption and establish comfortable conditions both for recruiters and candidates. Remote communication with candidates is even more relevant when it concerns other regions. The most popular services for video-interviewing are VCV (immediate video-interviewing), Navicon (specialized service to find trainees), Preinterview (video-questionnaire of candidates), and Skillaz (integrated cloud platform for automatic search in various resources, distribute invitations, hold online-polling, cases, quests, keep a registry of video- and audio-interviews). Skill Tech and Retra Tech are worth special mentioning among testing programs as they are the most widely used to check knowledge of IT-specialists. In general SHL (verbal and digital tests) and Talent Q (digital, verbal and logical tests), Cut-e (aptitude tests) and Kenexa (logical, technical, verbal and computing tests) services are the most widely used to estimate the personnel.

Considering HR Digital we cannot turn our back on emerging flow of HR-analytics. Predictive analytics and big data operation is a powerful future technology the analytical tools of which allow to forecast many important factors which influence effective company operation (for instance, behavior of employees), estimate possibility of personnel withdrawal, have influence to employee turnover, motivate employees considering their personality, etc. The following are examples of such technologies: Sabbe, Xerox, Walmart, Bullhorn Reach Rada (analysis of friends social activity and finding those for whom the job offers can be relevant), Social CV (collecting and analysis of information on social activity of potential candidates), Taleo Radar (mobile application used to

determine which of candidates are in the nearest vicinity), system to analyze Twitter information (for example to determine emotional state of users). Integrated and cognitive analytics materially reduce labor costs and time spent by recruiter enabling it to upload reports online and development of analytical application enable to introduce HR-analytics considering particular region and develop analytical models to forecast and assign priorities to recruiting events (Oracle, ADP, Workday, Vltimate, Saba, Skillsoft, Success factors). Comparative analytics is also worth mentioning as it gives the candidates an opportunity to look for a job on a no-name basis. It analyzes career experience and personal specifics of the candidate and on the basis of that suggests vacancies to it. At the user consent the platform can use its social networks data and forward it to the employer (for instance, Workey, Tel-Aviv). The last tendency to which we'd like to draw your attention to is aggregation and uberization. Resume aggregators allow collect them to a joint base of candidates. In Russia an example of such service is "Yandex. Job", abroad — Indeed.com. Besides there are such services as AmazingHiring, Friend work recruiter, Go Recruit. AmazingHiring service aggregate data from more than 80 sources and allow viewing the information on IT-specialists which are not currently searching for a job. It also needs to mention the emerging tendency of employer interaction with third party recruiters whose portfolios are collected in digital platforms — this trend is called uberization. HRspace/stock exchange houses represent a service for interaction of employers and HR specialists similar to Uber when employers publish the vacancies and the recruiters send their suggestions. HRspace (HeadHunte servicer), Jungle Jobs, HRTIME (HR-orders exchange), Stafory (the first Russian service for employers and HR agencies) are the examples of such services.

Expert relocation fully using the tools of digital age of business development can give a visual profit to companies — widen the company scope of activity, meet requirements of science and technical progress, quick processing of big data volumes and choose optimal decision out of many available in the field of managing HR mobility. The enterprises get the opportunity to plan the "candidates' pool" and forecast long-term career development for the personnel. All these factors together allow developing business infrastructure in digital economy environment considering the big country scale.

References

- [1] Ryan A M and Tippins N T 2004 *Human Resource Management* **43** (4) 305–18
- [2] Direction in Hiring, <https://www.hbs.edu/faculty/Pages/item.aspx?num=50037>
- [3] Balashova E S 2016 *Bulletin of Voronezh State University of Engineering Technologies* **2** 287–92
- [4] Castels M 2017 *Information age: Economy, Society and Culture* (Moscow: Business) 608
- [5] Schslyaeva E R and Plis K S 2016 *Intellectual capital as an innovation resource of information economy of Russia. Collection of scientific works of the 18th International scientific and practical conference: "Economy, ecology and society of Russia in 21 century"* 492–94
- [6] Chepasov K P 2016 *Correlation dependences in social and economic studies* (Rostov-on Don: AOOT "RKE") 213
- [7] Here's Chins's genius plan to move 250 million people from farms to cities, <https://www.businessinsider.com/heres-chinas-big-plan-to-move-a-population-the-size-of-the-philippines-from-farms-to-cities-2015-7>
- [8] Oxtoby B, McGuinness T and Morgan R E 2002 *European Management Journal* **20** (3) 310–20
- [9] Pearce, J and Robinson R 2007 *Strategic Management: Formulation, Implementation and Control* (Boston: Mc Graw – Hill) 164
- [10] Penrose E T 2008 *The Theory of the Growth of the Firm* (Oxford: Oxford University Press) 134
- [11] Management Tools & Trends, <http://www.bain.com/consulting-services/strategy/fundamentals-of-growth.aspx>
- [12] Teece D J and Pisano G 1994 *Industrial & Corporate Change* **3** (3) 537–556

Reproduced with permission of copyright owner. Further reproduction prohibited without permission.