

Human Resources Transformation: Research Approaches

Anna A. Fedchenko

Department of Labor Economics and Management Basics
Voronezh State University
Voronezh, Russia
E-mail: faa1711@yandex.ru

Ekaterina S. Dashkova

Candidate of Economic Sciences
Department of Labor Economics and Management Basics
Voronezh State University
Voronezh, Russia
E-mail: dashkova-82@mail.ru

Galina A. Shkirenko

Candidate of Economic Sciences
Department of Labor Economics and Management Basics
Voronezh State University
Voronezh, Russia
E-mail: dashutic@mail.ru

Lidia P. Arzamastseva

Department of Labor Economics and Management Basics
Voronezh State University
Voronezh, Russia
E-mail: arzamas_lp@mail.ru

Abstract—The article focuses on the research of human resources transformation within the context of economy digitalization. The authors identify the factors and analyze their influence on the process of human resources transformation at different management levels. The article presents the algorithm of how economy digitalization influences the process of human resources transformation and proposes methodological approaches to conducting research. The article concludes on the need for constructive interaction between the parties of social partnership in the process of effective human resources transformation.

Keywords—human resources; digitalization of economy; factors of human resource transformation; strategy of socio-economic development; social partnership

I. INTRODUCTION

Human resources reflecting the set of qualities and characteristics of a person, a team or a society and predetermining the potential capacity to perform activities under certain socio-economic conditions are the groundwork for positive changes — that is why studying them appears to be relevant. Human resources possess quantitative and qualitative characteristics, as well as territorial belonging, and, depending on these factors, can be examined through a number of perspectives. The basic category when studying human resources is the individual potential of one particular person. All characteristics of human resources find expression in a team and at the level of any territory: a municipal formation, a region or a country. This being said, a synergistic effect occurs, the impact of which can be significant. When studying human resources at any level, it is important to take into account the influence of external and internal factors leading to the transformation thereof.

II. COMBINATION OF FACTORS AFFECTING THE TRANSFORMATION OF HUMAN RESOURCES

The combination of factors that affect the transformation of human resources and that are revealed at all management levels, can be categorized as follows: economic factors, social factors and institutional factors.

At the regional level, the interrelation of human resources and the factors affecting them was reflected in the strategies of the socio-economic development. Thus, the overarching objective — the formation of enabling environment for human life and endeavours, as well as for entrepreneurial development — is laid out in the current Development Strategy of Voronezh Region for the period until 2020 and it preserves its importance in the Strategy for the period until 2035. Moreover, the key role is given to human resources, which is confirmed by the sequence of the strategy-forming sections. The key focus areas of economic development of Voronezh Region (increase in the gross regional product, overall and per capita, labour productivity improvement and expanding volumes of manufactured exports, enhancing innovative activities, etc.) are preceded by the key focus areas of the development of human assets and social sphere, including:

- demography and migration development of Voronezh Region,
- preservation of health and extension of active longevity of the population,
- modernization of education in Voronezh Region,
- development of cultural environment, physical training and sports,

- improvement of living standards and social welfare of the regional population,
- optimization of labour market,
- development of the non-profit sector and the intersector social partnership,
- development of the system for protection of the population and the territories from emergencies and for maintenance of public security.

Thus, transformation of human resources is directly affected by all factors that form the lines of development of human assets and social sphere, regarded as internal environment factors, and indirectly affected by all economic factors, as well as legislative and legal regulation, which we conventionally refer to as external environment.

The peculiarity of the influence of the institutional factors on transformation of human resources in the present context appears, from our point of view, in strengthening of the role of, on the one part, the International Labour Organization (ILO), on the other part — in economy digitalization. The activities of the International Labour Organization have always been connected with solving the problems related to human resources. Despite the broad scope of the issues raised by ILO, one of the issues is a cross-cutting one — it's the development of the civilized society oriented towards social justice. This standpoint was followed up in the report of the Global Commission "Work for a brighter future." The key message of the report of ILO, in our opinion, is the fulfillment of the people-centered social contract.

The role of the social contract is revealed through the orientation towards a person, which finds expression in increasing the investments in development of human capabilities, in labour market institutions, in worthy and stable employment. Besides, the reason is given for the necessity for all social partners to take responsibility for revival of the social contract under conditions involving challenges of the multilateral system. But actual realization of the conceptual provisions laid down in the report is possible only, in our opinion, if the whole range of problems is solved.

The first problem is the absence of categorical identification of "the social contract," despite the fact that the first mentions of the role of the shared generally-held opinion in addressing the social problems due to the exercise of everyone's natural right were already made by such thinkers as Aristotle, Cicero, Seneca, Plutarch and others. Most-actively the concept of "the social contract" has been used since the 16th century (H. Grotius, J.-J. Rousseau). The social contract was considered to be an idealistic doctrine, according to which people had consciously curtailed their freedom and concluded the contract obliging them, supported by the general will, to secure the indefeasible right to personal life and property. But at the same time, according to the substantiation of this theory (Hobbes, Gassendi, Spinoza, Locke, Tasso and others), the right to terminate this contract in case of the abuse of authority was retained.

At present, the society is at the new spiral turn of grasping the essence of the social contract that needs an up-to-date identification. The social contract, from our point of view, represents a contract, which is concluded between the state and its population (the representatives of its segments) with the purpose of reaching the social justice.

The second problem is the absence of a legislative and regulatory framework governing the use of the contract, which is directly related to the social dialogue and the social partnership. The concept of "the social dialogue," which was first proposed by ILO in 1999, is used in Convention No. 181 and in two recommendations: No. 195 and No. 198. In accordance with the range of procedures, which are extensively carried out worldwide, the social dialogue includes all types of negotiation, consultations or exchange of information between the representatives of Governments, employers and employees concerning the issues of common interest and regarding economic and social policies.

There is a connection between the concepts of "the social dialogue" and "the social contract." In our opinion, the social dialogue is a basic, but not a unique tool for forming the social contract. Along with representation of interests of the employees, the employers and the executive authorities, as well as the local self-governing bodies, when dealing with formation and implementation of the State socio-economic policy, as well as, governing of social and labour relations, it's important to fully consider the interests of the disadvantaged segments of the population.

In the documents of ILO, the social partnership is considered as a standalone category possessing the content, which is distinct from that of the social dialogue. Beside the dialogue representing a form of communication, the partnership involves the joint actions of participants, and hence the social partnership is a more multidimensional phenomenon.

The Russian legislation stipulates such legal conditions for the existence of inter-relations between the employees and the employers, which allow for treating them as the social partnership relations. In accordance with the Labour Code of the Russian Federation, when governing social and labour relations, the concepts of "the collective contract and agreements" (Chapter 7) are applied, as well as "the labour contract" (Chapters 10, 11, 12, 13). The content of these concepts does not reveal all aspects of the social contract. Given that the system of social partnership in the labour area has been evolving over the years and is currently well-developed, in our opinion, it's this system that must form the basis for the social contract.

III. TOOLS FOR RESEARCH OF THE INFLUENCE OF THE FACTORS ON TRANSFORMATION OF HUMAN RESOURCES

The influence of the factors on transformation of human resources occurs under conditions of the digitalization of economic processes. The algorithm of effect of the economy digitalization on transformation of human resources may be presented as follows:

- The digitalization of economy implies the availability of human resources possessing the required level of competencies, which finds expression in professional standards.
- The professional standards affect the demand appearing at the labour market and the offer of workforce formed by the educational institutions.
- The demand and offer of workforce are formed in accordance with the development of flexible forms of employment and flexible organization of work activities.
- The flexibility in social and labour relations implies the specificity of evaluation of work results.
- The efficiency of evaluation of work results and the received remuneration are formed under condition of blurring of boundaries between work and leisure and existence of difference in value-based preferences of the uneven-aged human resources.

The digitalization leads to the strengthening of the role of using mathematical tools at the stage of making decisions concerning all aspects related to human resources. Thus, at the intra-corporate level, in the arsenal of a manager's toolkit there certainly are transportation problems, as well as problems of allocation, which are the particular case of the former, if it is necessary to allocate works to the workers so that the joint costs of execution of all works were the lowest and the efficiency — the highest. This approach is applicable also when solving a range of problems aimed at building of the efficient "teams," where the group members are most compatible with each other, which enhances the comfort and their labour productivity, as well as improves the image of the company.

There is a widespread recognition of the research of influence of the factors on transformation of human resources held by means of expert assessment, the distinctive feature of which is that with the help of a single method various problems may be solved and a single problem may be solved with the help of various methods. Absence of strict prescriptions making recommendations as to in which situations, which of the listed methods is more efficient, makes the choice of a certain method for solving a specific problem subjective to some extent, but when applied to a situation at hand it may be considered as an advantage. There is a widespread use of methods of evaluating the values on the basis of soft computing examined in the framework of artificial intelligence and development of the methodology of "soft" measurements.

In contrast to the intra-corporate level, at the municipal, regional and federal levels, where the volume of statistical information is significant, studying the influence of the factors on transformation of human resources can be brought out through the use of statistical and econometric methods with involvement of expert assessment for confirmation of the obtained results. Thus, the probabilistic models of payroll distribution are applied for assessment of various options for increase of wages, change of their differentiation

and calculation of the costs of living. The increase of people's income leads to the consumption growth, which is determined by regression dependence.

At all management levels at this stage of the digital economy development, the active use of the big data technologies and processing and storage facilities appears to be constructive, from our point of view. A need has emerged for development of software solutions for automated analysis of large volume and complex structure data. The evolution of this process has been noticeable since 1960s, when files and file archives have started to be used, at present we witness using "the datamart", Data Mining. The intelligent analysis of the data or Data Mining involves a range of interrelated operations beginning with formation, consolidation and preliminary processing of the data that are then transferred to the storage facilities. With the help of the intelligent analysis of the data, the regularities are identified and the models are built, which are examined, interpreted and visualized by analyst, which can be applied to the research of human resources.

At the core of the development of the strategy project for the socio-economic development of Voronezh Region for the period until 2035 is the strategic economic analysis forming the basis of strategic planning and oriented towards future rewards. The most important objectives of the strategic economic analysis as applied to the managerial activities at the regional level are, in our opinion: the evaluation of the expected results from implementation of the previously-made decisions, identification of key indicators for the forecast of change in the socio-economic situation in the region and the scientific substantiation of the development strategy. The strategic economic analysis allows for estimating the values of key indicators, taking into account the influence of new factors related to the innovation changes in the social labour sphere of the region, which can play a crucial role in the future.

The evaluation of the created situation can be made by using two approaches:

- qualitative approach (internal coherence, validity of strategy, its correspondence to the situation);
- quantitative approach (evaluation of available resources and anticipated results).

These approaches must be implemented comprehensively, when researching the influence of the factors emerging from external and internal environment. There are different methods of strategic analysis employed for studying the influence of the factors appearing from external and internal environment: SWOT-analysis, SPACE-analysis, PEST-analysis, SNW-analysis, PEST-analysis (the acronym corresponds to the first letters of the English words denoting the influencing factors). [1] In the Russian practice the most popular method is SWOT-analysis (the acronym composed of the first letters of the English words: Strengths, Weaknesses, Opportunities and Threats).

When performing the strategic economic analysis at the regional level, SWOT-analysis is the method for determining

the effects of the factors emerging from internal and external environment, whereas these factors are identified with respect to their strong and weak sides. The limitations of SWOT-analysis consist in the suggestion that the strong and the weak sides should be only internal, the opportunities and the threats should be only external. Although in practice either of the sides can be both internal, and external, of course, subject to presence of the points having definite correspondence to the sides in the SWOT-analysis matrix.

Despite the conditionality of results of SWOT-analysis, its application field is very large. It is even suggested that SWOT-self-analysis could be performed, for example, when addressing the issues of career advancement. That is why, employing SWOT-analysis when developing the regional strategy of socio-economic development is justified, in our opinion. The same standpoint is preserved, from our point of view, when developing strategies for any other territory (municipal formation, city), and also when choosing the priority lines of development for each point of the strategy. Thus, when developing the project for the strategy of socio-economic development of Voronezh Region for the period until 2035, SWOT-analysis is used at the stage of conducting the economic strategic analysis for each of the priority lines reflecting the socio-economic development of the region. Following the results of such analysis, we can evaluate with a certain degree of conditionality whether a given regional administration department has the internal forces and resources to realize the existing opportunities and to meet the threats, and which internal weaknesses require a prompt elimination.

The main purpose of strategic economic analysis performed at the regional level is to identify key factors affecting the results of activities of a given department and consequentially determining the choice of a strategy. One of the main objectives of strategic economic analysis is to identify the competitive advantages that a given department has at the moment, which facilitates the adoption of most constructive decisions allowing for the use of the strong sides and, based on the competitive advantage, elimination or reduction of the impact of the weak sides.

When performing the strategic economic analysis, it is important not only to identify the internal problems and to determine the causes of their emergence, but no less significant is to analyze the external environment. While fulfilling all the tasks, it is necessary to take into account their hierarchy, thus having predetermined the algorithm for solving the problems related to both internal and external environment. It's also important to give consideration to the goals and the suggestions lying at the core of the strategic economic analysis, which will make it possible to substantiate the choice of statistical methods. Some methods are best suited for studying the differences between variables, others – for evaluating the relationships between variables and the third ones – for making forecasts. As a rule, for strategic economic analysis, it is recommendable to employ several methods.

The results of the strategic economic analysis are used when forming a scenario forecast. The synthesis of the

literary sources devoted to the scenario forecasting has allowed us to single out the following main objectives: [2]

- Highlighting the key points of the development of the researched object.
- Development, on this basis, of the qualitatively-different development options.
- Comprehensive analysis and assessment of each of the obtained options, studying its structural peculiarities and possible consequences of realization with the purpose of building specific plans and programs for their realization.

Thus, the scenarios are formed on the assumption of the purpose at hand, while being the basis for development of the plan of actions. We share the standpoint of the authors, who consider that a scenario represents “the future outlook, which helps us see clearly the development of a certain process.” [3] The scenario represents a model of development of a social object subject to a specific combination of the main determining factors, contains the objective-setting and the description of possible actions aimed at bridging the gap between the anticipated and the desired outcome.

Some authors dealing with the development of scenarios at the regional level single out the stages of this process, which are completed with the comparative analysis of the parameters of the developed scenarios and the selection of the most preferred ones. [4] The formation of the scenarios is based on the strategic economic analysis, the identification of the economic mathematical dependencies and the expert assessment.

The scenario forecasting is one of the most effective instruments for prediction of trends and options for development of socio-economic phenomena and human resources. The advantage of the scenario forecasting consists in the fact that this method provides an opportunity to rule the future. As a rule, the scenario forecasting is developed when it is impossible or inappropriate to use the statistical methods or economic mathematical models. Some authors, when making long-term scenarios on the basis of the development regularities, highlight such approaches as simulation modeling of economic processes and expert-based computational method. [5] The forecast scenarios include the predictive models describing the probable lines of development with account for the effect of the main factors and a range of managerial measures aimed at the enhancing of the effective functioning of the socio-economic systems. The forecast scenarios make it possible to foresee in advance the threats emerging from inefficient managerial impact, hence, to increase the level of their justifiability, it is recommended to employ methods involving the expert assessment.

The scenario forecasting allows for developing the most probable lines of developments in a situation, which can have different denotation and interpretation. The most frequently used are the following denotations: pessimistic, realistic and optimistic scenarios. When focusing attention

on the sociological studies, four possible forecast scenarios are distinguished: modernization-and-integration scenario (innovative), evolution scenario (inertial), fragmentation-and-enclavement scenario (stagnatory), regression-and-polyvalence scenario (degradative). For realization of any of such scenarios, a resource social group is identified possessing the greatest social capital and defining the vector of social development.

The results of SWOT-analysis can be used combined with the grading scale. After analyzing the highlighted factors, it is necessary, firstly, to make assessment of the degree of their influence on the basis of the points-based system. To do this, the influence of all positive and negative factors (external and internal ones) on the results of the department's activities is rated on a points-based scale (for example, from -3 to +3). Zero grade means that the influence of this factor is weak and that there is no need to give consideration to this factor. Thus, each factor, which is put to SWOT-analysis, must be analyzed and taken into account appropriately, when developing a strategy. That is why, if a factor has either received a low grade for the degree of influence, or it is not clear how it can be taken into account when developing a strategy, then this factor must be excluded from further analysis and development of strategy.

The results of SWOT-analysis of the socio-economic situation in Voronezh Region indicate a relatively high level of human potential and human assets. The developed system of higher education is distinguished. By number of educational institutions for higher education, Voronezh Region is 3rd in the Central Federal District, behind only the city of Moscow and Moscow Region; in all-Russia rating it occupies 11th place.

As part of weak sides there is the decline in population, which is due to the gender and age structure. The median age of the residents of the region is 41.9 years (Russian Federation, 39.7). One of the reasons for the loss is the unfavourable, even against the all-Russia background, situation in the area of childbirth.

Besides, among the weak sides there is a relatively low level of labour productivity in the industrial sector. According to the values of this indicator, Voronezh Region occupies the 7th place in the Central Federal District. The reached level of labour productivity in the manufacturing sector is 70.8% of the Russian average level, which is due to preservation and prevailing of the traditional production enterprises established mainly at the fourth technological phase.

The above-mentioned weak sides related to the development of human resources correspond, in our opinion, to the key problems of the socio-economic development in Voronezh Region, including which: underutilization of human assets and innovative potential, which is manifested in the low level of labour productivity, considerable level of differentiation of the life quality of various population groups. Thus, the percentage of the population with cash earnings below the minimum subsistence level, as percentage of the total population in 2017 was 9.5%. A relatively low level of the effective consumer demand is due

to the high level of unemployment, low nominal average monthly wages and insignificant growth in real incomes of the population. Through the growth in labour productivity, the region has the opportunities for the outrunning growth in the economy, and inclusion in TOP 15 leaders in terms of the gross regional product per capita.

IV. CONCLUSION

The vector of enhancement of social justice defined explicitly in the social contract (life-long education for all, supporting people during transition periods, achieving gender equality, enhancement of social security, establishment of the general labour guarantee, strengthening of sovereign control over time, etc.) must be reflected in the Strategies of socio-economic development. The key role in the Strategy of socio-economic development of Voronezh Region for the period until 2035 is given to the development of human assets and social sphere, which implies: positive demography and migration changes, preservation of health and extension of active longevity of the population, modernization of education, development of cultural environment, improvement of living standard and social protection of the population of the region, optimization of the labour market, development of non-profit sector, etc.

Among the approved indicators, in accordance with the Strategy, the indicators directly relating to the transformation of human resources, in our opinion, are the following: the percentage of households having the broadband access to the information and telecommunications network Internet, in a total number of households and the percentage of the citizens using the mechanism for getting state and municipal services in electronic form; the expectancy of life; the percentage of the population with cash earnings below the minimum subsistence level and per capita cash earnings; unemployment rate at the complete labour market and employment rate. The rest of the indicators provided for in the Strategy have indirect influence on the increase of social justice. The positive trend is seen in the following indicators: nominal average monthly wages of one employee in the first half of 2018 have increased by 12.6% and amounted 30.3 thousand rubles, and real income has increased by 10.7%; the number of people officially registered as unemployed has decreased by 16% - down to 10 thousand people.

Transformation of human resources under the influence of the set of factors occurs against the background of implementation of the Program of Cooperation between the Russian Federation and the International Labour Organization for 2017-2020. The main purpose of the Program is the assistance in further development of the social and labour relations in the Russian Federation towards achieving and implementing of the principles of decent work through focusing the efforts in such areas as expansion of employment, social security, social welfare, working conditions and labour safety, the international labour standards and the fundamental principles and rights in the world of work, the social dialogue. The positive effects of the transformation of human resources are increased by the digitalization of economy promoting the improvement of the

living standards and the quality of life of the population, as well as the enhancement of the social justice.

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