

Assessment and Development of Human Resources Capacity in the Agricultural Sector of the National Economy

V P Neganova¹, N V Tonkikh², T L Markova³

¹Institute of Economics of the Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russian Federation

²Ural State University of Economics; Institute of Economics of the Ural Branch of the Russian Academy of Sciences, Yekaterinburg, Russian Federation

³Ural State University of Economics; Yekaterinburg, Russian Federation

E-mail: nvvorob1@mail.ru

Abstract. The article considers the findings of the research aimed to specify the methodological approaches to evaluating the factors that impact the formation and development of human resources capacity of the territory agrarian sector. The authors conduct the review, critically analyze the methods traditionally used in the Russian statistics to research the human resources capacity of the rural territories, and reveal their shortcomings which are not allowing to provide complex and reliable characteristics. The authors' conclusions are supported with the data of the retrospective analysis for 2001 - 2017, carried out on the basis of comparing quantitative indices of the structure, rural population shift and labor market figures in the agrarian sector. The research empirical data are based on open and governmental statistics of one of Russia's largest regions. There are also used the results of expert estimates generalization concerning the processes and trends occurring in the sphere of spatial distribution of the agrarian organizations. The main research findings include the following aspects. It is proved that there is a need to develop new approaches to assessing and forecasting human resources capacity in the agrarian sector of the national economy. The authors propose the block model for evaluating human resources capacity of the territory agrarian sphere with the account of sectoral specificities. There are identified the problem zones of forming and developing human resources capacity. It is concluded that there is a need to develop modern and adequate tools for forecasting staffing processes in the agrarian sector.

1. Introduction

At present, Russia's modern economy faces the urgent challenges that include implementing import substitution policy and developing mechanisms aimed to stimulate and support domestic producers. The state support of the agrarian sector is a priority direction due to the special importance of the country's food security and food sovereignty issues. The success of the strategic plans implementation designated in the Food Security Doctrine of the Russian Federation depends on various factors, including availability of labour resources of the necessary quantity and relevant quality [15].

The current research makes an attempt to critically comprehend approaches to evaluating the personnel capacity (human resources) of the agrarian sphere (agricultural production), to try them out by examining the Russian regional statistics data and offer the directions for their development with a view to improve the sector personnel capacity management on the basis of authors' development

model. Our project is implemented within the institutional theory that guides the considerable number of researchers in the sphere of labor market and employment. We rank human resources development as a driving force of institutional and technological changes in the agrarian sphere. We consider that human resources are one of the key factors of achieving target indicators of the agrarian policy and the Food Security Doctrine of the Russian Federation.

The recent research into the influence of institutional and structural shifts on the development of Russia's agrarian sector refers to negative consequences such factors as a decrease in agricultural employment, rural population, labour income [4.7]. Thus, the questions considered in the article have high relevance not only for Russia, but also for other countries with unstable economy [1-3,5,6].

The review of modern literature allows to draw a conclusion that, theoretically, the essence of human resources capacity without reference to the agrarian sector of the economy is considered rather fully. The scientific research note that human resources capacity serves as an element of the territory economic capacity, distinguish its characteristic as a special resource able to ensure effective realization of all other elements: natural - resource, production (property), innovative, financial and others [8.9]. The essence of human resources capacity is considered at three levels: macro - meso - and micro. The majority of researchers define the human resources capacity as a set of opportunities and abilities that an employee (territory or organisation) possess, their knowledge, abilities and labor skills which can be realized in social and economic activity under certain conditions [11, 22]. Studying the extent to which the concept of human resources capacity is identified as a part of the resource element of the agrarian sector of the economy showed its weak status. Most of the Russian researchers do not draw a clear boundary between concepts of human resource capacity of rural territories and human resources capacity of the agrarian sector of the economy. The publications devoted to the issues of human resources of the agrarian sector mainly provide the statistics of human resources capacity of the rural territories. The following most often occur among indicators and metrics: rural population; economically active rural population; population and employment rate in the rural territories; rural unemployment structure and rate; size and structure of human resources in the rural areas [12, 19, 21].

The specified points of view are caused by historically developed traditions, the experience in solving staffing problems of the agrarian sphere by attracting to workforce only village residents. Now these practices are changing, and quickly enough. The authors think that such factors as a significant increase in pendular internal mobility of Russia's population; an increase in the population vehicular mobility; automation and digitalization of agriculture; the formation and growth of consumer value of living in the country house (in rural areas) in the environment of urban population tend to promote changes in typical spheres of rural and urban population employment. It is required to review the methodical approaches to evaluating human resources capacity of the agrarian sector.

2. Methods

The purpose of the research is to develop methodological approaches to evaluating factors that influence the formation and development of human resources capacity of the territory agrarian sector. Within the framework of this goal the following specific problems are solved:

- searching new approaches to assessing human resources capacity of the agrarian sphere of the national economy on the basis of the critical analysis of methods traditionally used in Russian statistics to research the human resources capacity of rural territories;
- specifying authors' block model for assessing human resources capacity of the territory agrarian sphere on a sector-specific basis;
- identifying the problem zones of forming and developing human resources capacity in the agrarian sector.

The critical analysis of the method, traditionally used in the Russian statistics to research the human resources capacity of the rural territories, and definition of the directions for developing methodology of evaluating labor capacity of the agrarian sphere of the national economy, is carried out on the example of Russia's old industrial region - Sverdlovskaya Oblast. This Oblast belongs to the territories with risky agriculture and a low share of the working population in agriculture (29.3 thousand people, or 2.0% of the average number employed as of December, 2018 according to open

Russian statistics). The territory is experiencing active urbanization and agglomeration processes which are characterized by legal (formal) and actual relocation of the production organisations, including the agrarian sector of the economy, from the territories of large cities to small, rural municipal settlements. For this reason, this region is chosen as the pilot territory for confirming the expediency of theoretical and methodological approaches to human resources capacity formation in the agrarian sector of the national economy.

We applied as tools the standard calculation methods of the statistical, structural - logical and functional analysis. The examination of the region's strategic priorities in the agrarian sphere development was carried out on the basis of the content analysis of the strategic documents on the territory development till 2030 and generalization of expert estimates on developing and implementing the specified strategy, provided by the members of the working collective.

3. Results

3.1. Critical analysis of traditional statistical approach to evaluating labour capacity of the agrarian sector

The municipal statistics analysis of the region's administrative center (Yekaterinburg), and its local planned strategic documents confirms that there is a trend to relocate production and agro-production enterprises to the territories of the other agglomerative and adjacent territories, most of which often have the status of small rural settlements. At the same time sectoral specificities of the rural territories economy are not mono-agricultural. To confirm this conclusion, we will consider the following information.

Yekaterinburg is the megalopolis with the population over 1 million people. The city economy is differentiated. Financial, trade, administrative, educational and industrial sectors are well developed. In 2017 the Yekaterinburg Strategic Development Plan was updated, the policy and reference points till 2030 were specified. The objectives tree of the approved Strategic Plan, developed till 2025, envisage actions to increase the city self-reliance on locally produced agricultural products, implement new promotion and distribution technologies in the conditions of the agglomeration formation, as well as preserve and develop citizens' collective gardening [16]. The results of the project "The Production of Agricultural Products for Citizens" (further the Project) revealed its failure, as target indicators were not reached. The decision was made to revise the target reference points, and in the short term this project can be excluded from the strategic directions.

A steady decrease in the indicators of the megalopolis agrarian sphere is connected with the processes of enterprise liquidation, relocation of the production facilities outside the city, farmland reduction, production reorientation, "transfer" of the agrarian organizations out of influence limits of city settlements. Thus, it would be safe to assume that the traditional approach to evaluating human resources capacity of the agrarian sphere by determining the population and human resources size of the rural territories is rather reasonable.

Let's characterize modern trends in the field of demographic factors that create the conditions for human resources capacity development in the agrarian sphere of the region's economy based on the traditional approach to evaluating the human resources capacity of the rural territories. (Tables 1 and 2).

The human resources capacity of the region's rural territories has a long deterioration tendency in the quantitative and qualitative parameters. Our studies, and the findings of similar research in other regions of Russia, allow to make a rather full list of the factors which determined this trend. Let's list them: the price disparity in agriculture; worse working conditions and payment in the agrarian sector in comparison with other types of economic activity; social and cultural infrastructure, insufficiently comfortable and attractive to the youth; a low level of the health care system in rural areas. The regional statistics generalized for 2001-2017 proves the existence of a long -term urbanization trend, outflow of inhabitants from rural to urban areas. The year 2005 stands out of this trend only because some settlements changed their status from city to rural settlements. There was not observed a real gain in the number of rural inhabitants in 2005. Carrying out the regression analysis was complicated

by changes of statistical forms which resulted in incomparability of some data, therefore, we failed to present separate indicators in a uniform table or graph. The statistics of 2007 shows the migration decrease of the senior age groups in the city settlements with a simultaneous growth of the same groups in rural areas. There was recorded a steady outflow of the youth from the village to the city. Modern open sources of statistical information did not allow to monitor the migration processes by age groups, however, Tables 3 and 4 show that the trend continues. The youth tend to move to the city.

Table 1. Population of Sverdlovskaya Oblast as of January 1st of the relevant year*

2001	2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
City population, thous. people																
399	396	393	391	367	366	365	365	366	366	360	361	362	363	364	365	366
1.3	7.1	6.9	2.8	6.8	4.6	9.4	8.6	3.9	5.7	4.7	7.2	8.5	7.6	9.2	8.0	3.9
Chain growth rate, %																
100	99.	99.	99.	94.	99.	99.	100	100	100	98.	100	100	100	100	100	100
.0	4	2	4	0	7	9	.0	.1	.0	3	.3	.3	.3	.3	.2	.2
Rural population, thous. people																
554	547	540	535	751	745	740	737	730	728	692	690	687	683	678	671	665
.6	.0	.6	.3	.4	.1	.4	.0	.7	.1	.5	.4	.4	.1	.3	.9	.4
Chain growth rate, %																
100	98.	98.	9	14	9	9	9	9	9	9	9	9	9	9	9	9
.0	6	8	9.0	0,4	9.2	9.4	9.5	9.1	9.6	5.1	9.7	9.6	9.4	9.3	9.1	9.0

*Compiled based on the data by The Territorial Body of the Federal State Statistics Service of Sverdlovskaya Oblast [Electronic resource]. URL:

http://sverdl.gks.ru/wps/wcm/connect/rosstat_ts/sverdl/ru/statistics/sverdlStat/

Table 2. Quantitative evaluation of the human resources capacity in the agrarian sector of Sverdlovskaya Oblast for 2002 – 2016.*

2002	2003	2004	2005	2006	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016
Annual average of the employed, thous. people														
By types of economic activity (FEA):														
agriculture, hunting and forestry; fishery, fish breeding														
131.	126.	139.	139.	134.	No data		118.	111.	108.	103,	100.	89.	89.	89.
0	3	0	1	5			5	0	7	6	1	3	3	0
Share of the people employed in the agrarian sector in the rural population, %														
23.9	23.4	26.0	18.5	18.1	No data		16.2	15.2	15.7	15.0	14.6	13.	13.	13.
												1	2	2

*Compiled based on the statistical books by the Federal State Statistics Service of Sverdlovskaya Oblast «Labor input balance»

Table 3. The population age groups in the region’s urban and rural settlements by migratory flows¹

Population age groups, years			
In urban settlements		In rural area	
growth	loss	growth	loss
0-13; 20-24; 40-49	14-17; 18-19; 25-29; 30-39; 55-59; 50-54; over 60 y.o.	30-39; 40-49; 50-59; over 60 y.o.	50-54; 0-13;14-17; 18-19; 20-24; 25-29

Table 4. The region’s population structure by working capacity age groups as of the beginning of 2013 and 2017¹

Settlement type	Population group by age		
	Below working age (16 years old)	Working age (16 – 55y.o. for women; up to 60 - men)	Older than working age (over 55 y.o. - women, over 60 – men)
2013			
urban	16.6	59.9	23.5
rural	18.9	56.0	25.1
2017			
urban	18.9	56.1	25.0
rural	20.3	51.6	28.1

One of the main reasons why the youth are moving to cities is the employment complexity due to the limited number of vacancies in the labor market. The Russian statistics estimates the labor market tension based on the tension coefficient which is determined as the relation of the unemployed citizens, who approached the employment service, to the number of vacancies in the labor market. Tension coefficients in the labor markets of rural settlements many times exceed the region's average values, which range from 0.9 to 1.4 for 2012-2017. In rural areas, tension varies from 5.0 to 219 times. Yekaterinburg (megalopolis, the region's administrative center) saw the most favorable situation in the labor market – the tension coefficient ranged from 0.2 to 0.5.

Low pay rate is one more factor promoting outflow of able-bodied population from the agricultural organizations to alternative industries. According to our monitoring of the average monthly pay among employees of the organizations involved in different types of economic activity, over a long period of time the lowest pay is observed in the industry "Fishery, fish breeding" (twice as low as the average pay in the region). In the organizations "Agriculture, hunting and forestry" the pay is one of the lowest in the territory (it ranks 19th out of 23 in the ranged list of the industries by wage rate decrease). The monitoring of the pay differentiation in the agrarian sphere revealed a specific trend that is not characteristic of the other industries: there is observed a reduction in the average pay differentiation. In 2007, the pay rate of 10% of the employees with the highest pay rate exceeded 17 times the pay rate earned by 10% of the employees with the lowest pay rate. In 2011, the pay rate gap equaled to 7.6 times. On average, the pay rate differentiation in the region amounts to 11.5 times.

Nevertheless, in general, our studies confirm that social - demographic and economic factors of rural territories development make an adverse impact on the formation of human resources capacity in the agrarian sphere. We tend to think, that nowadays it is relevant to develop a tool for a reliable evaluation of the human resources capacity of the agrarian sphere. We consider that today the given above approach to studying employment in the rural areas requires significant revision. This idea is

¹ Compiled based on the data by The Territorial Body of the Federal State Statistics Service of Sverdlovskaya Oblast [Electronic resource]. URL: http://sverdl.gks.ru/wps/wcm/connect/rosstat_ts/sverd/ru/statistics/sverd/Stat/

justified by the statistics presented earlier in Tables 2 and 3. The share of the employed in the agrarian production among rural inhabitants is decreasing significantly (from 24% in 2002 to 13.2% in 2016). Rural territories are developing alternative types of employment. According to Table 5, the vacancy structure, declared by employers in rural territories, shows that the share of vacancies in the agrarian sector made up only 5.8% of the total number.

Table 5. Declared need for employees by activity type in the agrarian sector of Sverdlovskaya Oblast in 2016 (at the end of the reporting period)*

Activity type	Units	%
Number of vacancies, total, including:	2138	100.0
executives	216	10.1
high-level specialists	394	18.4
mid-level specialists	268	12.5
employees, involved in processing documentation, accounting and service	45	2.1
employees in service and trade sector, security and property	218	10.2
skilled workers in agriculture and forestry, fish breeding and fishery	125	5.8
including:	103	4.8
skilled agrarian workers, involved in production		
producers of forestry and fishery products, hunters	22	1.0
skilled workers in agriculture, fishery, hunters and harvest gatherers, producing goods for personal consumption	0	0.0
skilled workers in manufacturing, construction, transport and related professions	275	12.9
operators of plants and machines, assemblers and drivers	391	18.3
unskilled workers	206	9.6

*Compiled based on the reports of the Department of Labor and Employment of Sverdlovskaya Oblast: Form № 2-T (employment).

It should be noted that from the methodological point of view the issues of evaluating human resources capacity of the agrarian sphere by assessing human resources capacity of rural territories are handled rather fully and deeply [20]. Human resources capacity of rural territories is determined in two directions:

- social and demographic assessment of the available and perspective rural population size;
- analysis of the composition, structure and movement of economically active population of rural territories (employed plus unemployed).

The critical analysis of the specified directions in evaluating human resources capacity of the territory agrarian sphere, allowed to identify the zone that requires studying and considering modern trends when rural settlements move away from rigid specialization in agricultural activities. Currently, the indicators of human resources and labor market in rural municipalities do not allow to estimate parameters of agrarian human resources capacity. Reason number one: not all agricultural organizations are registered in rural territories. Some organizations are accounted in urban statistics though production facilities, fixed assets can be located in rural territories (the experience in strategic planning of the agrarian sphere of Yekaterinburg megalopolis is described above). Reason number two: not all organizations in rural territories belong to the agrarian sphere, only some of them. At the

same time in the regions of industrial type such as Sverdlovskaya Oblast their share does not always prevail in the rural settlement economy. Therefore, the analysis of human resources and labor market of rural settlements does not provide a reliable evaluation of human resources capacity of the national agrarian sphere.

3.2. The proposed block model for assessing human resources capacity of the territory agrarian sphere on a sector-specific basis

Thus, in our opinion and the opinion of other authors [17, 10], the human resources capacity of the agrarian sector is not identical to the human resources capacity of the rural territory. The human resources capacity of the agrarian sector should be viewed as a set of opportunities and abilities that the human resources only in the agrarian sector of the economy possess. The model for evaluating human resources capacity of the agrarian sector must contain both quantitative, and qualitative indicators of the agrarian organizations' human resources (fig. 1).

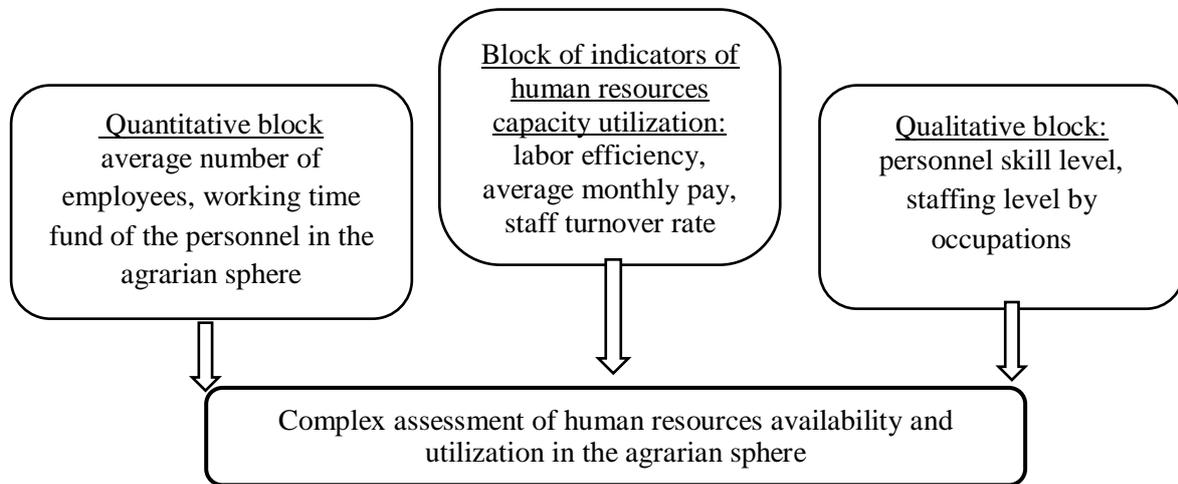


Figure 1. The proposed block model for evaluating human resources capacity of the agrarian sector of the national economy.

It should be noted that this model can be applied to assess human resources capacity of different industries relating to agro-food sphere. There are some of them. Now there can be identified four related systems (industries) where the proposed block model can be applied: agriculture; agrarian sphere; agro-food market; agro-industrial complex. Theoretically, it is possible to assess human resource capacity for each of them. These systems differ in the coverage of the organizations in their institutional field. Human resources capacity of agriculture is made up of personnel working in organisations that produce staple food (vegetables, grain, milk, etc.). It is the narrowest segment of the established system of the economic entities related to food supply.

Agro-industrial complex is a wider system. This term is one of the well-established categories in the Russian economy. The agrarian and industrial complex comprises organizations reproducing and processing agricultural products, that is apart from agricultural producers, it includes agro-processing enterprises, food-processing companies. Agrofood market is even a more complex network of organizations which contains agrarian and industrial complex organizations and intermediary organizations: sellers of agricultural products and foodstuffs. Carrying out practical assessment of human resources capacity of each of the presented systems appears to be quite challenging in terms of determining a range of organisations that should be researched and selecting statistical information.

Territorial statistics authorities do not keep account of indicators either of the agrarian and industrial complex organizations, or the agro-food sector. It is more realistic, in our opinion, to estimate at the first stage the human resources capacity of the agrarian sphere. It is proposed that the

agrarian sphere should comprise organizations from the approved all-Russian qualifier of the organizations by economic activity type: agriculture, hunting and forestry; fishery, fish breeding. We realize this sector-specific approach in practice.

Some blocks of empirical information are placed on the open Internet portals of the state statistics territorial authorities. For example, we will show the possibilities of the information block concerning the quality of human resources capacity.

3.3. Problem zones of forming and developing human resources capacity in the agrarian sphere

The region, chosen by the authors as a pilot research, sees the trend of employment reduction in agriculture accompanied by simultaneous shortage of skilled human resources. The industry has been characterized by poor quality of human resources already for a long time. According to the official statistics, skilled human resources in agriculture make up 30 - 40% of the average number of organization employees. The share of workers over 50 years old makes up 50%, over 60 years old – 23.7%. By contrast, the share of highly skilled workers aged over 60 years old in other sectors of economy fluctuates in the range of 2.6 - 8.3%.

This example is selected not accidentally. In our opinion, the quality of human resources is the "bottleneck" in the processes of forming and developing human resources capacity in the agrarian sector of national economy.

We support the point of view expressed by the experts who consider that it is expedient that program development objectives should include actions designed to develop a system of professional qualifications based on the involvement in the processes of professional standards introduction by industry occupations and specialties [11].

The development of indicators for assessing human resources capacity in terms of their quality must be based on the concept of professional qualifications system. It should be noted that the term "qualification" has been defined in the Labor Code of the Russian Federation rather recently (Article 195.1), it is understood as the level of employee's knowledge, abilities, professional skills and experience. This definition differs fundamentally from the widely-spread idea that qualification implies employee's education and experience.

Now, to evaluate qualification, it is not enough to study documents on education and experience. There are introduced new approaches to evaluating skill level based on developing measuring tools for employee's knowledge (instead of education level according to documents) and abilities (skills) assessment. What is more, the Labor Code of the Russian Federation now specifies the concept of the professional standard. Its essence is defined as characteristic of qualification required for an employee to carry out a professional activity of a certain type, including performance of a particular labor function.

The legislation determines the order for the development and approval of professional standards which can be accessed openly in the professional standards register on the website of the Ministry of Labour and Social Security of the Russian Federation [13]. There is a mechanism for developing a system of professional qualifications. Its curator is the National Council under the President of the Russian Federation on Vocational Qualifications, set up in accordance with the Decree of the President of the Russian Federation of April 16, 2014 No. 249 [14].

At present there operate 28 occupational skills councils, their structure incorporates the Council for occupational qualifications of agro-industrial complex. In general, the Council's key objectives include developing professional standards by sectoral occupations, working out a set of assessment tools for evaluating the staff qualification, participating in setting up independent assessment centers, providing independent assessment of employees' qualification. In December, 2017 the register of professional standards contained standards for 1086 types of professional activity, 4% of them related to the agrarian sphere: agriculture – 22 standards, fish breeding and fishery – 20. For the last year the register included more than 250 new professional standards, however, no new documents were developed for the agrarian sector of the economy.

Since July, 2016 professional standards have to be implemented in the organizations of various forms of ownership regarding ensuring compliance of employees' qualification to the requirements of

the standard concerning labor functions which are assigned to employees (in practice, a person appointed to the position performs labor functions from different professional standards). As envisioned by the developers of the idea, the implementation of professional standards must promote a growth in human resources qualification.

When developing the standard there were considered the modern requirements for a type of professional activity. All standards are developed in a standard form and contain the following main units: the purpose of professional activity; the description of the generalized labor functions and labor actions; possible name of positions; necessary level of abilities and knowledge for performing labour actions in labour function.

The process of introducing professional standards in organizations and enterprises at the final stage means assessing the employees regarding their compliance to the professional standard requirements not only in terms of their education and experience, but also the level of their knowledge and abilities. The latter two components of qualification can be estimated by means of appraisal: employees or job applicants can be offered to do theoretical tests or perform practical tasks. As options, employees' qualification can be assessed in two ways:

1. Carrying out employees' internal appraisal by the organization's appraisal commission, developing assessment tools for establishing the skill level of job applicants.
2. Carrying out external assessment of employees' qualification in the independent appraisal centers accredited by the Presidential Council for professional qualifications.

In case of mismatch between skill requirements of jobs and workers' qualification there must be compiled and implemented a plan for their training, retraining or professional development.

We conducted an expert survey of employers on the problems of practical implementation of the above-described stages. It was revealed that in most organizations of the agrarian sphere they either are not implemented, or are carried out formally. So far, there has been revealed no positive impact of professional standards introduction on the quality of human resources.

4. Conclusion

Our research confirms that Russia has a serious problem of providing the agrarian sphere of economy with highly skilled human resources.

The practical embodiment of legislative norms on implementing professional standards in Russian organizations of the agrarian sphere, as envisioned by reformers, must lead to professional development, growth in the quality of human resources capacity. However, in our opinion, there is a high degree of probability that the declared result will not be achieved.

We consider that operational risks can be reduced by developing a set of supporting actions that can remove specific difficulties, faced by the agrarian organizations in the process of introducing human resources management systems of the modern professional standards, and allow to reveal weaknesses in the human resources qualification.

The support mechanism must promote the solution to three main problems which are slowing down the introduction of professional standards. The key issue is connected with insufficient skills level of the human resource department staff. In agrarian organizations such experts are often absent. The second problem is of financial character. Agriculture is the industry with high specific weight of either low-profitable, or unprofitable enterprises, there are risks of the budgetary restrictions on carrying out independent skills assessment of employees. The same financial risks lie in the sphere of implementing programs of the human resources professional development aimed to meet modern requirements of professional standards.

The qualification characteristics of human resources capacity are a resource for the industry development, therefore, the next topical issue is the forecast component of human resources capacity. Today the forecast of economy needs for human resources is one of the least developed zones of public administration. The old methods of planning the industry size, mechanisms of determining additional needs and drawing up staff training plans, used in the USSR, are poorly applicable, as they demand revival of a balance method of planning based on the state targets for all industries. The

current system of planning does not have such tools, it generally relies on indicative planning, on the strategies of territory and industry development.

In our earlier research [18, 23] we tested the method of planning based on the regression analysis and considering the factors on the following indicators: actual volume of agricultural production; employment in agriculture; the expected growth rates of agricultural products, officially approved in the strategic documents; the expected levels of productivity increase, calculated on the basis of programme documents. We arrived at the following conclusion: the forecast quality is extremely low; it can be used only as an indicator of the desirable level of development.

Thus, the further development of methodical bases for assessing and forecasting the characteristics of human resources capacity in the agrarian sector of the territory is very relevant and is formulated as an objective of our future research work. The perspective direction is to develop the methodology of forecasting needs for human resources on the basis of synthesizing traditional methods, expert estimates and the benchmarking tools. The block model for assessing human resources capacity of the territory agrarian sphere on a sector-specific basis, proposed in the present article, can be used as the foundation for forecast.

5. Acknowledgments

The article was prepared in accordance with the Plan of Scientific Research Institute of Economics of the Ural Branch of the Russian Academy of Sciences for 2019-2021.

References

- [1] Dillon Brian 2017 Barrett Christopher Agricultural factor markets in Sub-Saharan Africa: An updated view with formal tests for market failure *Food Policy* T 67 pp 64-77
- [2] Stewart H, Race D, Curtis A 2011 Demographic Change and the Implications for Commercial Forestry: Lessons from South-East Australia *Landscape Series* T 12 pp 207-231
- [3] Ursu A, Cofas E 2014 Analysis of the factors that influence economic performance of Romanian Agribusinesses Case study: South- East and South Muntenia Regions Crafting global competitive economies: 2020 vision strategic planning & smart implementation T I-IV pp 1186-1197
- [4] Uzun V Y, Shagaida N I 2019 Evaluation of the impact of institutional and structural changes on the development of the Russian agricultural sector *Voprosy Ekonomiki* T 4 pp 39-58 <https://doi.org/10.32609/0042-8736-2019-4-39-582019>
- [5] Zhang Qian 2015 Forrest Class Differentiation in Rural China: Dynamics of Accumulation, Commodification and State Intervention. *Journal of Agrarian Change* vol 15 3 pp 338-365
- [6] Zhao F K, Hitzhusen F, Chern W S 1997 Impact and implications of price policy and land degradation on agricultural growth in developing-countries *Agricultural economics* T 5(4) pp 311 - 324
- [7] Anisimova N Yu 2017 The formation of staffing forecast model for the agrarian and industrial complex of the Republic of Crimea *Modern Economy Success* 6 pp 137-141
- [8] Vakhrameev R A 2016 Statistical analysis of staffing in the agrarian and industrial complex *System management* 2(31) pp23-45
- [9] Grigorieva I V 2016 The role of agrarian higher schools in solving the staffing problems in the village *Agrarian Russia* 5 pp 39-41
- [10] Gulyaeva T I, Buraeva E V, Grishaeva O Yu 2015 Staffing of the agrarian sector in the regional agrarian an industrial complex: analysis of the state and future improvements *Economic analysis: theory and practice* 31(430) pp 26-38
- [11] Ivanova T V 2014 Mechanism for reproducing human resources capacity in the region's agriculture *Issues of developing the region's agrarian and industrial complex* vol 20 4(20) pp 120-126
- [12] Marabaeva L V, Antipov I A 2013 Prerequisites of human capital formation in the agrarian and industrial complex of the Republic of Mordovia *Bulletin of Povolzhskiy State Technological University* 2(18) pp 64-71

- [13] Ministry of Labour and Social Security of the RF. Register of professional standards URL: <http://profstandart.rosmintrud.ru/obshchiy-informatsionnyy-blok/natsionalnyy-reestr-professionalnykh-standartov/reestr-professionalnykh-standartov/>
- [14] National Council under the President of the Russian Federation on Vocational Qualifications On National Council URL: <http://nspkrf.ru/about.html>
- [15] Objedkova L V, Opeykina T V 2016 Preparing human resources for the agrarian and industrial complex: similarities and differences *Regional Economy. The south of Russia* **3(13)** pp 114-122
- [16] 2010 Yekaterinburg's strategic development plan (Yekaterinburg: JSC IPP Uralsky rabochoy publishing house) 9 p
- [17] Stukach V F, Samsonova Yu V 2006 Workforce reproduction infrastructure of the regional agrarian and industrial complex (Omsk) 136 p
- [18] Tonkikh N V 2015 Employment transformation in agriculture on the territory of Sverdlovskaya Oblast – original solutions *Human Progress* **1** pp 60-78
- [19] Urbanskaya G G 2007 Tendencies in developing human resources capacity of rural areas (in the example of Samarskaya Oblast) *Economy of agriculture* **2**
- [20] Shaitan B I, Medvedev A V 2017 Methodology of assessing human resources capacity in rural territories: work research programme *Bulletin of staffing policy, agrarian education and innovations* **4-6** pp 21-25
- [21] Sharipov S A 2017 Population growth and human resources formation in rural territories Russia's agri-food policy **1(61)** pp 10-17
- [22] Shumakova O V, Nardina S A 2016 Organisation of human capital formation and utilization in the agrarian sphere *Bulletin of Omsk State Agrarian University* **4(24)** pp 276-284
- [23] Solovev D B, Kuzora S S 2016 Implementation of noise-immune Rogowski coils for busbar differential protection modernization *Electric Power Systems Research* **138** pp. 223-232. [Online]. Available: <http://dx.doi.org/10.1016/j.epsr.2016.03.039>.