

Agricultural Educational Cluster as a Mechanism of Successful Investment in Human Capital

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Abstract— The article determines the need to modernize the personnel training process for the agricultural sector of the Russian economy at the present stage of its development. The authors emphasize the importance of investment in human capital in the agricultural business. The analysis of statistical data on agricultural production in the region is carried out, wages in the agricultural sector are analyzed and it is determined that it is the lowest in comparison with wages in other sectors. The article shows the results of training of Russian agricultural enterprises at the regional level. The importance of use is emphasized and the necessity of introducing a cluster educational model for training agricultural workers is substantiated. The article analyzes the educational system of the agricultural profile of the Volgograd region and found that investing in human capital in many ways determines the level of development of agriculture in the region.

Keywords—*human capital, personnel, training system in the agro-industrial sector, regional economy, agrarian sector of the economy, cluster approach, agricultural educational system.*

I. INTRODUCTION

The development and investing in human capital is the basis for the functioning of any modern enterprise. Theorists and practitioners of managerial thought for many decades have proven this point of view.

As a result, a theory universally recognized in the world appeared - the theory of the development of human capital. A person, on the one hand, is an employee with a certain set of qualification characteristics necessary for the employer as the executor of his orders, and on the other hand, it is a person who has absorbed the entire stock of knowledge, intelligence, life and work experience, etc., which is generally significant more than just labor, it is already capital. It is concluded in the acquired education, skills, motivation that people can use throughout their working lives in the production of goods and services.

Human capital is a peculiar form of capital also because it is a source of current and potential income of a human worker. Human capital is the basis of employee's personal and professional motivational satisfaction. Compliance with the basic principles of this theory allows us to improve the competencies of company personnel, increase their

intellectual and labor potential, and as a result improve the quality of life of people. Different signs are characteristic of human capital, but education is dominant.

The transformation processes, which include Russian agricultural production, cannot be imagined without the development of the educational level of its employees [1]. The strategic and innovative tasks facing the current agro-industrial sector of the Russian Federation [2] are largely ensured by investments in human capital. The quality and effectiveness of the socio-economic policy currently being implemented by the state on the development of agriculture in the country depends on their quantity [3,4]. Naturally, the costs of invested human capital require serious management decisions and expenses from employers. As you know, the main costs related to investments in human capital include - direct costs, including tuition, lost earnings, moral damage. However, it is precisely the qualified specialists working at agricultural enterprises that belong to perform the functions of the socioeconomic and cultural order that are in demand and currently important. Firstly, the point is that it is necessary to constantly resolve the issue of ensuring food security [5]. Secondly, these are issues of social control, socialization and preservation of identity, environmental protection, the identity of rural areas and the maintenance of their cultural traditions.

All of the above makes the issues of developing agricultural education and raising the educational level of agricultural workers very important and relevant for most of the constituent entities of the Russian Federation, including the Volgograd Region.

II. METHODS

The methodology of the analysis in this article is based on a cluster approach and compliance with the foundations of dialectical development.

In our opinion, the cluster approach has long gone beyond pedagogy as a science and practice, and has become a form of integration of business enterprises operating in the economic space of the state. The advantage of the cluster approach in the economy is largely related to the achievement of a synergistic effect and general goals.

The agricultural education cluster seems to us to be a system in which educational institutions are united primarily

by industry. And a system in which horizontal ties between subjects of education and management are consistently developed and maintained. In other words, there is a logical chain of practice-oriented training for young specialists, traditional for the Russian education system, “science - education-practice”.

The implementation of the cluster approach, in our opinion, to the problem of training personnel for agriculture will simultaneously address such issues as the preservation of highly qualified specialists in agriculture and take care of the development of the system of agricultural education of our country and its regions. Scientific knowledge develops technology, the transformation of technology contributes to the emergence of innovative products, which in turn create new market segments. That is, the integration of scientific, educational and practical activities is basic for the existence and development of production in any sector of the state economy. The permanence of these elements is transforming the economy, including in the agricultural sector.

As you know, in the modern economic space, the production process includes the entire totality of transformations of knowledge into an innovative product according to the traditional scheme that has proven itself in practice: «science - technology - product – market».

III. RESULTS AND DISCUSSION

A. In our country, for the agricultural sector of the economy, the development of human resources has always been of paramount importance. Agriculture is a diversified economy. Functionally, it not only provides the population with food, but also is the main source of raw materials for most industrial sectors. Among which food and light industry occupy the first place. The level of agricultural development is always an indicator of the economic security of a country; therefore, its improvement cannot be imagined without qualified personnel. In addition, the current stage of modernization of agricultural sectors is associated with the introduction of modern information technologies. Informatization of agricultural production once again emphasizes the need for highly trained specialists and in the constant process of updating knowledge.

The problem of staffing for agricultural enterprises is largely based on a material basis, namely, the fact that their staff wages are significantly lower than the wages of workers in urban agglomeration enterprises.-

TABLE I. COMPARATIVE ANALYSIS OF WAGES BY INDUSTRY IN 2018

Kinds of economical activity	Average salary (rub)	Percents in forestry, hunting, fishing and fish farming
Agriculture, forestry, hunting, fishing and fish farming	29,295	100
Mining	77,383	264
Processing	44,901	153
Construction	38,750	132
Wholesale and retail trade	34,424	117.5
Public administration and military security, social security	43,591	148.8
Health and social work activities	39,088	133.4
Education	34,082	116
Activities in the field of culture, sports, leisure and entertainment	43,061	147

From the data in table 1 on the average wage at the enterprises of the region, it can be concluded that the accrued wages in agriculture, forestry, hunting, fishing and fish farming are 1.16-2.64 times lower.

Statistical analysis of the level of wages of graduates of agricultural universities «does not reach» up to 20 thousand. In addition to problems with material support, the most common reasons for the lack of qualified personnel in agricultural enterprises is a lack of funding for continuing education and retraining of existing specialists.

Like many other agro-industrial regions, the Volgograd region was faced with the problem of staffing and maintaining the educational level of its specialists at the proper level.

The Volgograd region is a region that has been preserved and continues to develop as one of the largest constituent entities of the Russian Federation for the production of agricultural products. Crop production and animal husbandry are the basis of the agro-industrial sector of the economy of our region. The volume of gross agricultural output currently produced at actual prices amounted to 144.6 billion rubles [6]. We can say that it is the agro-industrial sector of the Volgograd region that creates the gross regional product, according to experts at the level of 10-12%.

Crop production is developed in the agricultural sector of the region, the share of which is 70.2% of the total agricultural production of the region. In 2017, 2156.0 thousand hectares were occupied by grain and leguminous crops in the farms of agricultural producers of the region (113.5% by 2013 or 112.0% by 2016), industrial crops - 755.1 thousand hectares (107.4% or 83.8%). A special place is occupied by the production of oilseeds of sunflower; its share is about 26.8%, which makes it possible to take third place in gross taxes after the Krasnodar Territory - 40.6% and the Rostov Region - 28.1%. The share of cultivated areas of the Volgograd region in 2016, it amounted to 7.7% in the oilseed field of Russia, and 32.8% of the Southern Federal District. [7].

The volume of agricultural production in 2018 amounted to 128.0 billion rubles in actual prices. The profitability of agricultural production was 22%. The average monthly salary in the agricultural sector in 2018 amounted to 23,685 rubles.

Significantly increased measures of state support for agriculture, both from the federal center and from the regional authorities. For example, in 2018, budget financing amounted to 5.9 billion rubles, compared with 2017, this figure increased by 30%.

TABLE II. FINANCING AGRICULTURAL DEVELOPMENT FROM BUDGET SOURCES AT VARIOUS LEVELS IN 2018

Directions for the implementation of the regional state program “Development of agriculture and regulation of agricultural products, raw materials and food markets”	Federal budget (thousand rubles)	Regional budget (thousand roubles.)
Maintaining the profitability of agricultural producers in the field of crop production	520,747.2	99,773.2
Implementation of measures in the field of agricultural reclamation		3,423.7
Support for livestock producers	208,526.3	34,546.2
Support for research in the agricultural sector		6,000.0
Development of personnel potential and the image of the agro-industrial sector		19,506.0

The authors have repeatedly noted that in the Volgograd region issues of education and training of personnel, including specialists in agricultural specialization, have always been given great importance. Analyzing the educational level of workers, agricultural enterprises of the Volgograd region over the past five years showed that 71% have higher professional education, 28% have secondary professional education, and 1% do not have professional education. With regard to managers - these are the figures - 56% have higher education, 32% - secondary vocational, and 12% - managers who do not have special education. In general, generalized indicators of the educational level of the employed labor force in the Volgograd region for the 1st quarter of 2018 show that 29.7% have higher education, 28.9% have secondary vocational education in the mid-level training program, and vocational education in the qualified workers (employees) - 18.7% [8].

In the Volgograd region, a multidisciplinary educational platform for the training of specialists for agricultural enterprises has been created. It includes an agricultural university, as well as industry research institutes specializing in research in the field of irrigated agriculture, production and processing of meat and dairy products, etc. This educational space is the basis for the development and preservation of the quantitative and qualitative composition of the labor force involved in agriculture. It allows you to combine science, educational technology and the practice of commercializing innovations in agricultural production. Support the personnel planning of the agricultural sector of the region at the short and long term levels.

Volgograd State Agrarian University is a flagship in the structure of agricultural education in the region. In 2019, 1,800 people became its graduates. On its basis, as well as on the basis of the Volgograd Technical College, in 2017 the first agricultural cluster in the Volgograd region began to function. Educational clusters function very productively in the regions of our country, however, for the Volgograd region, as we noted earlier, this is the first experience, but it has already shown its positive results. For a university, the benefits are both in increasing the efficiency and quality of educational services, and in enhancing the prestige and image of agricultural education.

For students - this is the acquisition of new knowledge, the possibility of additional and continuous education, as well as first working experience and promising career achievements. For agricultural enterprises as potential and real employers and customers of research and development, this means job creation, additional education services, and access to the latest research results. And ultimately, this is an increase in the efficiency of agricultural production and agricultural gross output at the regional level.

Moreover, it should be noted that such types of clusters as chemical-pharmaceutical, textile, construction and alternative energy clusters are already successfully operating in the Volgograd region. The authors of the article have repeatedly noted that the current agricultural educational cluster of the region will not only improve the quality of educational services for the needs of agricultural producers, but will also contribute to the development of all types of clusters operating in the region.

B. In addition to the Volgograd State Agrarian University in our region for more than twenty years, an active educational activity has been carried out by a branch of the Russian

University of Cooperation. In the ranking of universities in the Volgograd region, he is one of the seven largest of them. The university implements various forms of training - pre-university training, secondary vocational education, higher professional education, graduate school, continuing education programs and additional professional education. In addition, as part of the social mission implemented by the cooperative structures, the institute is the initiator and participant of a number of social projects relevant to the development of the regional consumer market and rural settlements of the region. These are projects in relation to the study of consumer solvency in the first place of the rural population, measures to revive cooperative and other small forms of organization of agricultural business in the countryside.

The practical result of the educational policy of the university was the number of its graduates - more than 17 thousand from the moment of its creation to the present (Fig. 1).

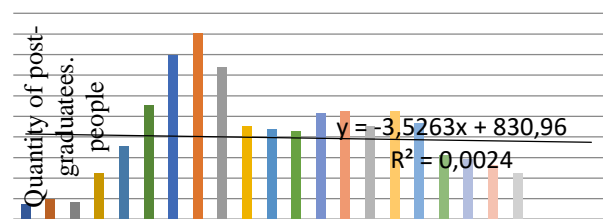


Fig1. The total number of graduates trained in the Volgograd branch of the Russian University of Cooperation 1998-2018.

It is the modernization of the cooperative educational sphere that made it possible, as we believe, to preserve the identity of cooperative forms of farming in the countryside, including in the Volgograd region. The preservation of the educational space of the Central Union of the Russian Federation took place thanks to its focused policy. This goal continues to be realized, and at present, since the personnel issue for reviving cooperative organizations continues to be open.

If we analyze the educational space of the Volgograd region as a whole, it should be noted that a multilevel education system has been created in our region. So, on the territory of the Volgograd region, 77 professional educational organizations carry out training of workers and mid-level specialists in secondary vocational education programs also in demand in agriculture. Currently, more than 50 thousand students are studying in professional educational organizations in the region, the number of teachers is more than 3 thousand people. Higher school of the Volgograd region as a whole, is represented by 16 higher education organizations, including: federal - 8, run by the subject of the Russian Federation - 1; municipal - 2; non-state - 5 [9]. In addition, in the region carry out educational activities under higher education programs, branches of higher education educational institutions - 29, of which state - 16, non-state - 1.

In other words, the educational platform of the Volgograd region is represented by several levels of training. The first level is a system of school education institutions. Currently, 17 classes of agricultural profile have already been created. They not only carry out career guidance activities, but also conduct master classes that introduce students to the specifics of agricultural production. Thus motivating students to

comprehend the professions of a veterinarian, agronomist, machine operator, livestock specialist, etc.

Another area of educational activity in the field of agricultural education is the holding of so-called profile sessions on the basis of the Volgograd State Agrarian University. On which, students actively get acquainted and make attempts to master the practical skills of working on modern agricultural machinery. Such sessions were implemented for students in grades 10-11 in Danilovsky, Dubovsky, Kotovsky, Ilovinsky and other areas of the region [10].

The second level is focused on primary vocational education on the basis of schools.

The third level is secondary and higher education systems.

The fourth level is additional education in training, retraining, advanced training programs, demanded by employers and agricultural workers.

However, in the agro-industrial sector of the Volgograd region, as well as in the country as a whole, the issue of modernizing agricultural education and investing in human capital continues to be in demand and relevant. In this regard, we consider it possible to emphasize that a transition should be made from the resource function of providing agricultural sectors with labor resources to a competency-based approach. The development of educational services should be open to all sectors of the agro-industrial sector, and not just agriculture. Increase government support measures to enhance research and innovation in the agricultural sector so necessary for the development of modern agricultural technologies. In the educational process, new information and communication technologies, including distance technologies, should be actively used. This will solve the issue of not only training personnel on the job from the rural way of life, but also to improve additional education and improve the qualifications of already working specialists. Today, agricultural enterprises are very reluctant to cooperate with universities in this matter. While high technology in agriculture is already a reality in which to invest and train staff accordingly.

IV. CONCLUSION

A. Informatization and innovativeness of the modern agrarian economy requires agricultural workers to constantly intellectualize knowledge. Therefore, the top management of modern large and small agricultural enterprises is faced with the question of the need to invest in human resources. Thus, it is important to emphasize the three basic points of the practical use of knowledge. Firstly, knowledge is not important in itself, but the knowledge used - knowledge in the process of use. Secondly, it is important not just the use of knowledge, but the technological effectiveness of their use, that is, the applied aspect. Thirdly, the degree of technological use of knowledge reflects the level of quality of labor, affecting the level of productive forces. Therefore, the issues of staff training in the organization are directly related to its

goals and development strategies. In this case, you need to know exactly what skills and skills needed to achieve them and are in demand on the labor market.

The modern economy is characterized by high technological progress. Consequently, the problem of lifelong learning and the actualization of knowledge requires improvement, forms, methods and technologies for the latest educational products for employees of all enterprises, including agricultural ones. In this regard, the cluster approach can be considered as a promising and effective tool to stimulate the agricultural education system in relation to staff training. On the one hand, the cluster will allow attracting and distributing personnel by accumulating applications for their preparation from agricultural enterprises. And on the other hand, it is a solution to the issue of jobs for graduates.

For many decades, world experience has successfully proved that investments in human capital are justified and necessary for both the employer and the employee himself. The era of post-industrial production and the digital economy is based primarily on intellectual capital.

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