

Mechanism for Human Capital Replenishment in Agricultural Sector of Rural Economy

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Abstract — Modern economy constantly faces new challenges of evolution. The most acute economic transformations are reflected in socially significant sectors of economy, where human participates most not only in obtaining results of activities, but also in the reproduction of resources for future development. The agro-industrial complex and the agricultural sector of economy as a whole belong to one of these formations. The agrarian sector of rural economy as a part of global economic system is inevitably transforming in the context of the transition to a post-industrial paradigm of economic development, where the main components are information, intellectual, intellectual and innovative capital. Moreover, the problem of the search of reserves for its effective functioning, the problem of the formation of human capital with new qualitative properties and characteristics, as well as the issues of its optimal use aimed to reveal the internal potential of the rural economy are extremely acute. The purpose of this study is to formulate the concept of maintenance, replenishment and consolidation of human capital within the boundaries of rural areas of the agrarian type. In this case, key characteristics of human capital, such as knowledge, skills, human abilities, including unique traits and creativity and motivational attitudes to its initiation, acquire particular importance. In this regard, the authors propose a mechanism for the replenishment of human capital in the agricultural sector of economy, based on the targeted impact on the key qualities of human capital, depending on the stage of its formation and use.

Keywords — reproduction of human capital, rural areas, agricultural sector of rural economy, tools, regulators.

I. INTRODUCTION

Recent decades are characterized by difficult periods in the development of economy, which negatively affected the development of rural areas and the basic sectors of economy, in particular agriculture. Therefore, they did not have a positive effect on the improvement of the characteristics of human capital itself and the conditions for its expanded replenishment.

The purpose of the study is to substantiate recommendations on the formation of a mechanism for human capital replenishment in rural areas of the agrarian type in the context of the transition to a post-industrial society. The object of the study is the territorial subjects of the rural economy of the region. Therefore, the subject is the processes of formation and use of human capital (HC) in the agricultural sector of economy.

This study is based on research materials on the problem of human capital replenishment as the main factor of production. Krasnodar Territory belongs to the region of traditional agricultural type. Almost half of the population lives in rural areas. This trend is reinforced by the active introduction of innovations, technical modernization and other challenges of digital economy. A special place is occupied by a professional person as a carrier of continuous knowledge, skills and experience.

The hypothesis is the assumption that the formation of expanded human capital replenishment should be carried out on a systematic basis due to the endogenous potential of the rural territory and its characteristic sectors of economy, as well as the “overflow” of human capital from related sectors of economy.

II. MATERIALS AND METHODS

The methodological basis of the research is represented by a complex of fundamental methods of scientific knowledge: analysis, synthesis, dialectical unity of qualitative and quantitative assessment, systemic and integrated approaches, induction and deduction. In the process of the substantiation of theoretical positions, conclusions and recommendations, we used diverse instrumental and methodological apparatus: abstract-logical, monographic and computational-constructive.

In accordance with global trends the stage-by-stage transition from a three-sector to a four-sector model of

economic development with developed tertiary and quaternary sectors of economy determines the outflow of human capital from agriculture.

As the authors note [6, 7, 3, 2], these factors include:

- reasonable consumption and lean production;
- digitalization of economy and technological processes;
- growth of the largest urban agglomerations, deliberate zoning of the area into industrial and service areas;
- “uberization” of economy and the transition from the concept of ownership to the concept of the use of material resources and benefits as an element of the saving neo-model of economic development;
- green production and life-sustaining activities in accordance with the principles of green economy and sustainable development;
- creativity and consolidation of the importance of creative work, reducing the role of material factors of production, etc.

The influence of such global factors on the local structural components of economic systems, taking into account the specifics of rural areas, leads to the appearance of glocalization effects, which can no longer be ignored if we pursue the declared goals of agrarian policy in relation to human capital.

In the context of the impact on human capital, the authors identified the following effects of glocalization [10, 9]:

- Firstly, the irreplaceable outflow of the most prepared and qualified part of the population from rural areas or its partial replacement by low-skilled migrants;
- Secondly, the change in the requirements for three key characteristics of human capital – knowledge, abilities and skills, as well as the transformation of the motivational component;
- Thirdly, the increase in the flexibility and mobility of population which results in the increased requirements for the conditions that the territories must offer in order to consolidate human capital within their borders.

III. RESULTS AND DISCUSSION

Since the localization of the tertiary and quaternary sectors of economy has mostly urban nature, the countryside will increasingly undergo the outflow of human capital. Taking this fact into account, there is an objective need not only to consolidate the human capital in the rural areas and the agricultural sector of economy, but also to develop tools to compensate human capital, which falls out.

As it is known, human capital in the agricultural sector of rural economy goes through four stages:

- Formation, including family-generational and cultural-ethical education, formation of social norms and rules, education at various levels, the development of ties

between the educational and vocational-labor spheres [4, 2];

- Distribution by sub-sectors of agriculture and agribusiness sectors, taking into account sectoral and territorial specifics [5];
- Exchange or localization of human capital, involving the choice of a particular enterprise – the subject of agricultural activity, as well as targeted training and internships for the specific requirements of an enterprise [1];
- Provision (use) of direct professional activity in agriculture, the implementation of labor, entrepreneurial, creative, intellectual and sociocultural potential of an individual [8].

The gradual transition of the economy to a four-sector model as part of the transition to a post-industrial society as key characteristics of human capital, corresponding to the imperatives of a new period of economic development, puts forward such qualities as knowledge, human abilities, including unique traits and creativity, business skills and motivational attitude. In this regard, it can be assumed that the mechanism for human capital replenishment in the agricultural sector of economy in the context of its transition to a post-industrial society should be based on the targeted impact on the characteristics of human capital, depending on the stage of its formation and use (Table 1).

For each of these stages we selected the tools and means that will contribute to human capital replenishment in the agricultural sector of economy in the context of its transition to a post-industrial society.

TABLE I. EXPLICATION OF KEY QUALITIES OF HUMAN CAPITAL BY THE STAGES OF ITS FORMATION AND USE IN ORDER TO DEVELOP TARGETED SUPPORTIVE MEASURES

Stage	Key qualities of human capital			
	Knowledge (I)	Abilities (II)	Skills (III)	Motivation (IV)
Formation (A)	AI	AII	AIII	AIV
Distribution (B)	BI	BII	BIII	BIV
Exchange (localization) (C)	CI	CII	CIII	CIV
Use (D)	DI	DII	DIII	DIV

According to the explication, we differentiated them into groups:

- Regulatory (providing the adoption of new regulatory documents at the regional or federal level, changing existing rules and regulations, etc.);
- Economic (including instruments to stimulate the “outflow” of HC into the agricultural sector of economy from related industries);
- Organizational and administrative (involving improvement of the functioning infrastructure of the agricultural sector of economy and the living environment of the countryside);

- Social-motivational, popularizing the rural way of life, proximity to nature and harmonious relations with urban communities.

In order to stimulate the processes of human capital replenishment in the agricultural sector of economy in the context of its transition to a post-industrial society, a matrix of tools was developed (Table 2).

According to the data of Table 2 and assessing the situation with human capital in the territory of a particular agrarian-oriented subject, industry management institutions can differentially manage the processes of human capital replenishment in rural areas – not only depending on the “problem” stage, but also with regard to its key qualities.

Considering the mechanism for human capital replenishment in the agricultural sector of economy and taking into account the conditions for its transition to a post-industrial development paradigm, we formulated a set of key provisions for its determination.

1. During the process of human capital replenishment of the agrarian sector, it is necessary to pay attention to the potential of HC for related industries, which in the agro-

economic environment of the countryside include the budgetary social sphere and the state, municipal government, trade and catering, technical service of machinery and equipment, as well as social services [4].

2. The development of a targeted policy of human capital replenishment in the agricultural sector of economy should be carried out taking into account not only the main stages of its formation and use, but also the activation of those properties that are most relevant in a post-industrial society [12];

3. In order to coordinate the actions of all institutional participants in the process of human capital replenishment in the agricultural sector of economy, it is necessary to determine a regional structure that is an operator with coordination powers.

4. During coordinated participation of a regional operator, the responsible structures monitor and diagnose the problems of the formation and implementation of human capital in the agricultural sector, systematize the “problem zones” and develop measures to solve them (Figure 1).

TABLE II. TOOLS AND MEASURES FOR HUMAN CAPITAL REPLENISHMENT IN THE AGRICULTURAL SECTOR OF ECONOMY IN THE CONTEXT OF ITS TRANSITION TO A POST-INDUSTRIAL SOCIETY [7, 11, 9, 5]

Cells stage/ quality»	Groups of tools and measures			
	<i>Regulatory</i>	<i>Economic</i>	<i>Organizational and administrative</i>	<i>Social-motivational</i>
A I	The adoption of strategic documents on the formation of human capital in the agricultural sector, development and implementation of the program for the creation of an agrarian cluster	The identification of priority areas for financing of human capital formation	The identification of the expected future needs for human capital, the creation of new faculties (for example, digitalization of agribusiness)	The formation of specialized agricultural classes in secondary schools in rural areas
A II			The formation of a unified register of human capital needs of organizations, orientation of the theory to the practical needs of an industry employer	The organization of mass events in order to popularize professional activities in the agricultural sector
A III				
A IV			The creation of a catalog of successful career examples	Career guidance
B I	The development of regional regulatory acts on the localization of young personnel in organizations of the agricultural sector, programming of staffing in agriculture, regulatory consolidation of industry guarantees	The introduction of innovations and digitalization of agricultural sectors, diversification of rural economy, development of alternative employment, small agricultural entrepreneurship	The use of the mechanism of targeted contract training of industry specialists, creating an open database of professions in agriculture	The implementation of measures to localize youth in the countryside. The stimulation of career development, crime prevention and marginalization
B II				
B III				
B IV				
C I	The creation of financial planning documents for the implementation of programs and projects for human capital training	The targeted financing of training for agricultural organizations, financing of training of mass workers for agriculture, tax preferences for agricultural organizations	The activities to improve the skills of personnel in agricultural organizations	The formation of public-private partnership projects in order to improve the level and quality of life of the population in rural areas, the creation of conditions for internships, one-time payments to young professionals, interest-free loans
C II			Skills training of project-based approach	
C III			The creation of a database of fair employers in the agricultural sector, a portfolio of leading farms	
C IV				
D I	The adoption of science-based standards for retraining of specialists in automation and robotics in agriculture, implementation of rural social development programs	The education of challenged people and their involvement in agricultural activities, business education for the organization of agricultural organizations' startups	The increase of recognition of leading economies, saturating society with information about their activities	The development and implementation of measures to targeted localization of specialists in rural areas, providing housing and other resources, subsidies for renting housing, utilities; opportunities for professional growth and job for members of their families, etc.
D II				
D III		Financing contracts for the training of specialized specialists	The implementation of measures to stimulate increased labor productivity in agricultural organizations	
D IV		Grant support		

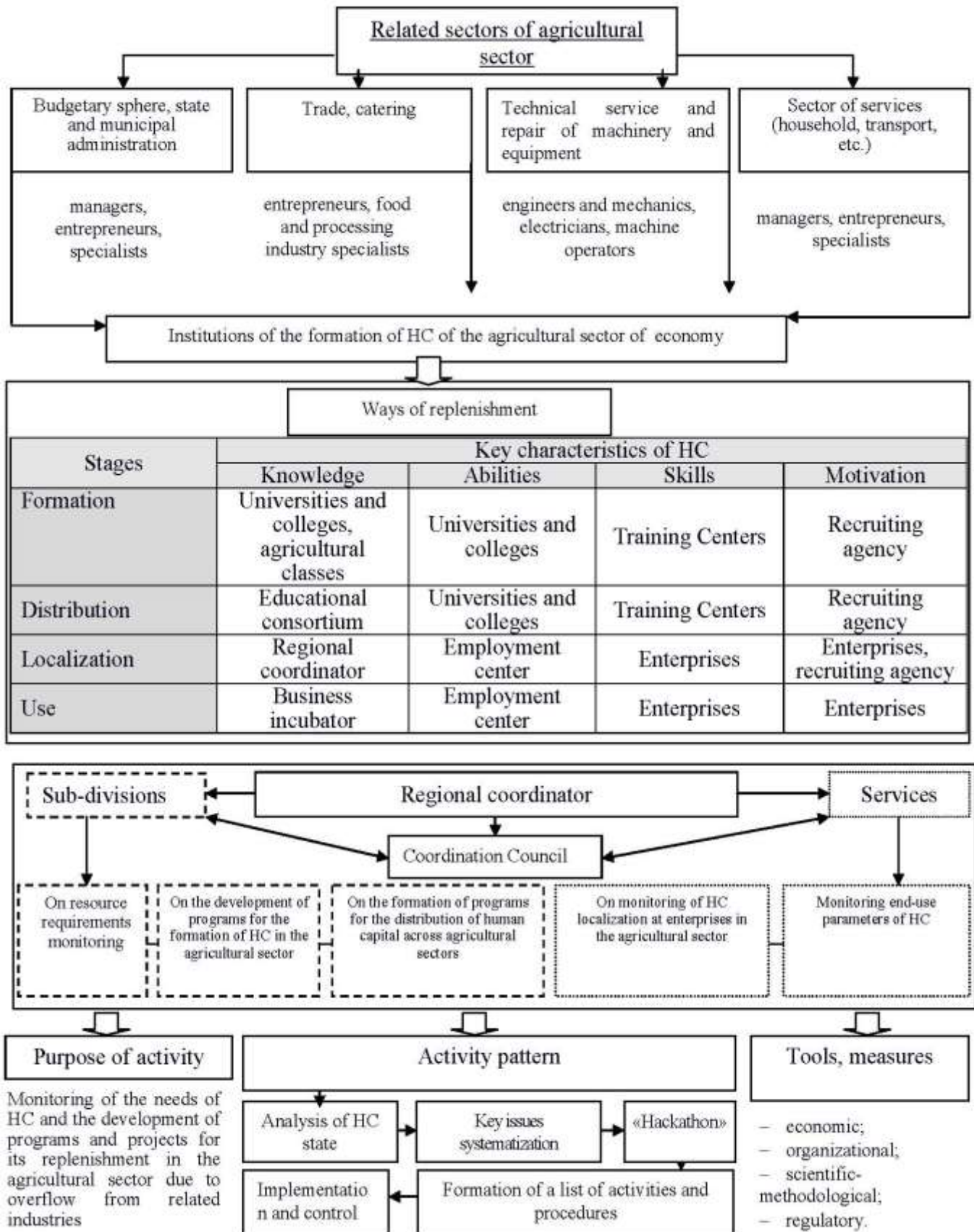


Fig. 1. Mechanism of human capital replenishment in the agricultural sector of economy in the context of its transition to a post-industrial society

Taking into account the significance of the problem of the outflow of human capital from the agricultural sector of economy, it is necessary to create such mechanisms in each region with a significant share of the agricultural sector in the gross regional product. Of course, in each individual subject, the structure and functions of such a mechanism may vary, but the principle of the use of the transformative potential of human capital in related sectors of economy will be universal for all regions with agricultural specialization.

The full-fledged transition to the paradigm of post-industrial development that has been outlined in the last decade of active economic transformations highlights the issues of the revision of the basic requirements for human capital in agricultural sector. Moreover, the necessary knowledge should include not only basic ideas about the organizational, economic, technical, technological, biological aspects of agricultural activities and the functioning of the agricultural sector as a whole, but also a number of specific knowledge originated from the Foodnet market, digitalization of agriculture and the transition to experimental technologies of remote monitoring of land, the use of hydroponics and aeroponics in the production process, etc.

The abilities of human capital in these conditions should include the possibility of a subjective assessment of the prospects and required volumes and list of resources for personal and social functioning, understanding of own competencies as well as market, social and socio-cultural values, etc.

The requirements of the evolutionary stage to the skills of human capital will be characterized by the condition of their continuous improvement and expansion. Entrepreneurial-oriented type of use of human capital will imply (and already implies) an extensive outlook and organizational and managerial practices in completely different areas of the applied sphere of activity.

We expect the changes in the subject focus of scientific and applied research. In our opinion, the most relevant and demanded one will be scientific research in the field of unification of requirements for human capital in the agricultural sector of economy without taking into account the territorial factor in its implementation. In addition, we believe that urbanization will lead to the revision of the problem of the harmonization of relations between cities and villages in the formation and use of human capital.

In terms of the transformation of the infrastructure for acquiring knowledge in the formation of human capital, the idea of continuing education in the format “from the school bench to the director's chair” comes to the forefront and with the development of online and distance learning technologies, it is becoming a practically realized task today.

All these transformations in the processes of formation, distribution, exchange and use of human capital in the agrarian sector of economy will require revision and correction of the objectives of the agrarian and associated socio-economic policy, development of new approaches to the assessment of qualitative changes in the agro-economic sphere of rural

communities through the prism of human capital, improving the infrastructure and service environment of the countryside.

Only complex and systematic measures planned and implemented on a scientific basis will help harmoniously “integrate” the agricultural sector into the post-industrial “picture” of the civilization world, prevent a mass exodus of the rural population and consolidate the human-oriented status of rural territories in the legal and public space.

IV. CONCLUSION

The agricultural sector as part of the global economic system is inevitably transforming under the conditions of the transition to the imperatives of the post-industrial paradigm of economic development. In this context, sectoral barriers between economic sectors are blurred, which can be considered as a reserve for the “outflow” of a part of human capital into the agricultural sector of economy from related industries. Thus, the paper substantiates the key elements of the mechanism for the replenishment of the human capital of the agricultural sector of a village through related industries. The stage-by-stage implementation and use will create the prerequisites for the consolidation of human capital in the agricultural sector for the effective solution of food security tasks and social and economic stability in rural areas.

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