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INNOVATIVE APPROACHES IN THE MANAGEMENT OF HUMAN CAPITAL DEVELOPMENT IN THE CONTEXT OF RURAL POPULATION'S LIFE QUALITY IMPROVEMENT

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Abstract: *The potential of human capital of the rural population of Ukraine has been assessed by calculating the livelihood fund as a product of the population size and life expectancy. It is found that the creation of gross value added in agriculture is three times higher per unit of labor among the branches of the country's economy. This leads to the farmers' wages underestimating and their low standard of living. The solving of the correlation-regression model confirms that the greatest impact on the creation of gross value added in agriculture is made by wages. Agrohholdings apply innovative approaches to human capital development for high productivity, even creating their own universities; other enterprises develop human capital in accordance with organizational, economic and legal factors. The necessity of systematic selection of approaches to the development of human capital at different levels of management (the state, economic entities and individuals) is justified.*

Keywords: *Human capital; Livelihood fund; Staff; Innovative approaches; Quality of life; Rural population.*

1. Introduction

The history of economic research and the evolution of knowledge confirm the relevance of the problem of human capital development and its importance for developing the economies of countries, improving the well-being of the rural population and improving the quality of life of its carriers. The transformation of all aspects of the social and economic life of the rural population, manifested by the announced reforms in Ukraine: land, administrative-territorial, education, health care, local self-government. It requires the generalization of existing approaches and development of innovative methods for human capital development. The problem is strengthened by the fact that changes cause a

disruption of the systematic approach in the development of human capital at different levels: the state, industrial; at the level of the enterprises, territorial units and individuals. We aim to assess the potential of the existing human capital of Ukraine's agriculture; identify the most determining factors for its development and quality of life; to characterize existing approaches of personnel development in agricultural enterprises; justify a set of innovative approaches to human capital development at different levels of management.

2. Literature review

In the conditions of social, economic transformation and globalization challenges, each organization, region, industry or country

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as a whole is aware of the importance and exclusivity of the human factor in generating competitive advantages, creating innovation and delivering economic growth. We consider human capital as the capital accumulated by a person due to his innate (physical and intellectual) abilities and talents, which are developed through education, qualification, knowledge and skills, competencies and which can provide a feedback. The higher human capital Mykhailova (2008), expressed in terms of education, skills, knowledge and experience is, the greater is the human capacity for productive high-quality work. Such work results provide the person with a higher reward, which is a prerequisite for improving the quality of life.

Receiving the Nobel Prize on December 8, 1979 in Stockholm, T. Schultz (1979) in his report once again informed about the need for human capital investment. He noted that scientists had deepened their knowledge of such simple processes as the farmers' response to new, more efficient methods of growing crops or livestock. They were also aware of relations between production and welfare. Nevertheless, there exist some errors among the economic growth factors that have not been eliminated until nowadays. However, there is a turning point. More and more economists have followed the point of view that conventional economic theory applies equally to both poverty on low-income and the relevant countries with high income. Knowledge about poverty and the poor people, their achievements in the past and the changes in their life circumstances over time, challenges and opportunities to overcome poverty in today's low-income countries become clearer for understanding. In his work "Human Investment" T. Schultz (1971), he noted that for countries with low level of development, the investment in human capital and agriculture is much more important than investment in machinery and plants. It emphasized the fact of human development and continuous learning.

Harry Becker, who formalized the theory of human capital development into the theory of investing in education through a comprehensive empirical analysis of investment in knowledge. In his fundamental work "Human Capital: A Theoretical and Empirical Analysis", G. Becker (1964) identifies and confirms the connection between human capital and the income of its carriers. That is, when making decisions about investing in education, health or vocational training, a person consciously increases his or her capital, focusing on the expanses covering and profitability of these measures in the future. In 1992, Becker was awarded the Nobel Prize in Economics for promoting the ideas of human capital theory.

While researching the structure and fundamentals of human capital creation in German agriculture, some scholars consider human capital as a set of economically significant and applied abilities, knowledge and forms of individuals or groups of individuals' behaviour. Describing the importance of human capital for improving the economy and quality of life, G. Bartels (1999) notes that, as a carrier of human capital, the person must be educated before he can participate in the process of productive manufacturing. Thus, in the introduction to the publication "Investing in People: economy of population quality", E. Boyther explains the basic premises of "German economic miracle" (West German post-war revival of the economy). It was possible, as noted by Schultz (1986), to renew the lost capital within relatively limited period. It was done in the in the conditions provided tangible capital destruction but saved subjective people knowledge, accumulated knowledge from libraries and understanding it values. The use of different approaches in the management of human capital development processes is evidenced by the works of Bitsch (2003), Boon (2000), Bartels (1999), Memon (2018), who have developed modern technologies of continuous training of personnel in agricultural enterprises.

Due to the results of rapid integration processes in the agricultural sector of Ukraine, which led to the launching of large agricultural holdings and caused a significant reduction in the number of employees in agriculture and changes in the requirements for professional training of workers, the issue of human capital development was discussed and estimated in the works of Borodina & Rykovska (2011), Diyesperov (2012), V. Riabokon (2010), Kyrychenko (2019), Mykhailova & Mykhailov (2015).

3. Materials and methods

The methodological basis of the study was the position of economic theory and system analysis. Quantitative indicators of livelihoods of rural population, production volumes of gross value added of agriculture and others were determined using the statistical-economic method. The correlation method of analysis was applied to establish the quantitative impact of human capital development factors on the gross value added of agriculture. The constructive and calculation method, method of comparison and graphical analysis were used to evaluate the factors of human capital development and life quality improvement of the rural population. Using the logistic-heuristic method, in particular, the method of expert evaluation, we evaluated the innovative approaches in managing human capital development in agricultural enterprises. The substantiation of the main factors of human capital development was carried out by the methods of systematization and generalization. The argumentation of the theoretical propositions and the obtained conclusions regarding the prospects for the development of human capital in Ukraine at different levels of government is based on a systematic approach and an abstract-logical method.

4. Results

Nowadays, there is not much research in the agrarian economy, which deal with the problems of examining the relationship between human capital investment and its individual elements, as well as the impact of these processes on sectoral economic development. The individual variables of human capital (age, experience, education) are reflected in the analysis of the use of human resources. But the importance of agriculture's human capital in general economic issues is ignored. In particular, they are insufficient in the study of the interaction between investment in human capital and business activity. This is due to the complexity of measuring and analysing investment in human capital, as well as its effectiveness and return. We try to evaluate the potential capacity of human capital development in agriculture at the state level in Ukraine. Suppose that the rural population is potentially a carrier of human capital, and its impact reflects the opportunities to form the quality of life. Applying the methodical approach of Zaivert (1991), on the estimation of the fund of potential human activity, we estimate the indicators of vital activity fund of the rural population of Ukraine in the dynamics for the years 1990-2019 (Table 1.). The human life fund is the product of life expectancy and population number. The data in Table 1 show that over the last thirty years, the rural population's livelihoods in Ukraine have decreased by almost three times more. Such processes have occurred at the expense of a rapid decline in population, even though increasing its life expectancy. We have identified significant regional differences using this indicator. Thus, the livelihood potential of the rural population in the Sumy region is characterized by significantly lower indicators (by almost three times less) compared to the total level of it in Ukraine.

Table 1. Indicators of livelihood fund of rural population of Ukraine (dated January 01)

Years	Number of existing rural population, thous.of ppl	Average life expectancy at birth, years	Life Fund	2019 to 1990, %
1990	16969,3	70,42	1194978,1	100,0
2000	16091,2	67,72	1089696,0	91,2
2010	14438,1	70,44	1017019,7	85,1
2011	14336,9	71,02	1025393,8	85,8
2012	14252,7	71,15	1014079,6	84,8
2013	14174,4	71,37	1011626,9	84,6
2014	14089,6	71,37	1005574,7	84,1
2015 ¹	13256,2	71,38	946227,5	79,1
2016 ¹	13175,5	71,68	944419,8	79,0
2017 ¹	13102,2	71,98	943096,3	78,2
2018 ¹	13015,4	71,76	933985,1	78,1
2019 ¹	12896,5	71,58	923131,4	77,2

1- the temporarily occupied territories of Ukraine (Autonomous Republic of Crimea and Donbass) were not taken into account.

Source: compiled and calculated according to:

http://www.ukrstat.gov.ua/operativ/operativ2007/ds/nas_rik/nas_u/nas_rik_u.html

We analyse the effective indicators of the use of human resources in agriculture (Table 2). In order to assess the level of agricultural labour productivity, we compare the creation of gross value added by types of economic activity in Ukraine. The data presented indicate that agriculture accounts for 12.1% of Ukraine's gross value added; while at the

same time the wage fund is only 5.2% (these figures are proportionally balanced for the industry). This is mostly due to the low level of education of the rural population, the use of low-skilled labour, the unit of which is 8945 UAH. of gross value added, while the national average is 3848 UAH and in industry it compiles 3649 UAH.

Table 2. Gross value added (GVA) by type of economic activity in Ukraine, 2017

Branches of the national agriculture	Gross value added, UAH million	Structure, %	Wage Fund, UAH million	Structure, %	GVA for 1 UAH. wages, UAH.
Total	2519561	100,0	654636	100,0	3848
Agriculture, forestry and fisheries	303949	12,1	33979	5,2	8945
Industry	632887	25,2	173398	26,5	3649

Source: compiled and calculated according to Quarterly gross domestic product estimates of Ukraine for 2010–2017. Statistical Publication. Retrieved from: http://ukrstat.gov.ua/druk/publicat/kat_u/2018/zb/05/z_b_krvvpu2017pdf.pdf

Our long-term research of the level of education of agricultural workers and their advanced training confirm that the proportion of people with tertiary education in the country's economy as a whole is about 60%; in industry it compiles 46.5%, and in agriculture - 30.1% (January,1,2014). At the same time, the share of those who undergo advanced training in agriculture was only

1.1%, overall in the economy - 9.9%, and in industry - 15.1%. This is the last year for which this information is provided in the statistical reports. This situation in recent years tends to get worse. The wage is a reflection of the value of human capital. So, we analyse the use of the working time fund and its evaluation by types of economic activity in Ukraine (Table 3).

Table 3. Use of the Working Time Fund and its assessment by type of economic activity in Ukraine, 2018 (in average per employee)

Branches of the national agriculture	Working hours	Coefficient of use	Average monthly salary, UAH	Payment for 1 hour of working time, UAH.
Total	1695	0,85	8865	62,75
Agriculture	1811	0,909	7166	47,47
Industry	1725	0,866	9633	67,00

Source: Compiled and calculated according to (*Quarterly gross domestic product estimates of Ukraine for 2010–2017. Statistical Publication. Retrieved from: http://ukrstat.gov.ua/druk/publicat/kat_u/2018/zb/05/zb_krvvpu2017pdf.pdf*) and (*Labor rate in Ukraine in 2018. Statistics annual report. Kyiv, “Book – Publish”, LLC, 2019, 231pp.*)

The analysis shows that agriculture has the lowest payment for one hour of working time, although the working time ratio is higher. The cost of one hour of work in agriculture is estimated at 47.47 UAH, which is 40% less than in industry. At the same time, agricultural productivity (as it is shown in Table 2) - by the indicator of gross value added per UAH 1, is almost three times higher than in industry.

The research shows that Ukrainian agricultural workers continue to be a donor for the development of the country's economy as a whole, and the rural population is considered to be the poorest in the country. At the same time, the scientific and expert community regards the agrarian sector to be a locomotive for further development of the national economy of Ukraine. At the beginning of 2018 it forms about 20% of gross domestic product, provides more than 40% of foreign exchange revenues to the state budget from exports. It is the only branch of the national economy, which has shown a positive profitability dynamics over the past five years.

To identify the quantitative impact of individual factors on the creation of gross value added in agriculture, we have introduced a correlation-regression model. The result indicator of this model is the volume of gross value added of agriculture (Y), and the factors of influence are: x1 – rural livelihood fund, x2 – average monthly salary, UAH, x3 – payment for 1 hour of

working time, UAH, x4 – coefficient of using working time in the industry, x5- the share of gross value added in the total structure,%. The indicators are selected in the dynamics for the period of 2010-2018.

We calculated the correlation matrix in several steps, as the detection of multicollinearity required some factors to be excluded. In the first stage, we eliminated the factor: x4 – coefficient of using working time in the industry.

In the next step, we solved the model without the x4 factor and tested its quality and adequacy using the correlation and determination coefficients, as well as the Fisher and Student criteria. The correlation coefficient was 0.996, which indicates a close linear relationship between the resultant index and the factors included in the model (Table 4). The coefficient of determination, which value is 0.992, and the Fisher criterion, whose value is much more critical confirm the quality of the equation.

However, by estimating the correlation x, we found that all the factors correlate with each other, so we chose as the most important factor x2 - the average monthly wage, UAH, and built a regression correlation. The quality and adequacy of the model were confirmed by the determination coefficient, Fisher's criteria and Student's t-statistics. The regression equation looks like:

$$Y = 500956,3 + 356,8 x_2 \quad (1)$$

Table 4. The results of solving the second stage of the correlation-regression model of the gross value added of agriculture of Ukraine

	Y	X1	X2	X3	X5
Y	1				
X1	-0,8899506	1			
X2	0,99645783	-0,85703304	1		
X3	0,9951512	-0,8508181	0,99971821	1	
X5	0,65016527	-0,8637206	0,593084393	0,579389	1

Therefore, as a result, the correlation dependence of the volume of gross value added in agriculture on the average monthly wage of agricultural workers is obtained. It is clear that this factor is the most influential, but although other factors are important. According to the equation, it can be noted that an increase in the average monthly wage of an employee by 1 UAH causes an increase in the resultant indicator by 356.8 UAH. However, the price of labour in Ukrainian agriculture remains low.

It is well known that most people in the world are poor nowadays. If we were more familiar with the poverty economy, we would have a better understanding of what really makes it possible to change the situation that afflicts so many people nowadays. It is well known that most of the world's poor people earn for living working in agricultural sector. At the same time, most economists have estimated that the poor people, no less than the rich ones, care about improving their lives and their children wellbeing. At the same time, it is a well-known paradox that there is a high and untapped potential for agricultural development in countries with low welfare levels. It would not only ensure the production of the required amount of food. It would also improve incomes and the standard of living of the poor people. However, the situation remains difficult. One of the main, decisive reasons is that the factors of improving the living situation of the needy population have not been attributed to the increase of the quality characteristics of the population and the progress, development of knowledge. It should be noted that the ability of farmers in low-income countries, which

require the modernization of agricultural production, generally tends to increase. The experience of developing countries shows that the farmers have learned how to evaluate their production chances, justify the economic expediency of land, labour and capital use to modernize their economies. They represent a new generation of comprehensive farmers, who are able to demonstrate high results of financial and economic activity; to do something that is completely unrelated to old traditional agriculture. These phenomena are the evidence and confirmation that the knowledge, skills and experience that form the human capital of each individual are the determinants of the success of the activity.

The research provides the basis for conclusions that the state has moved away from solving the problems of managing the permanent development of human capital in agriculture. We observe the share of those who are educated; who improves their skills and study; who has decent wages; who has a sufficient level of financial support to cover the cost of labour and to restore health, which in total forms a system of indicators of quality of life for the rural population.

There is a question: why has Ukraine achieved such high outputs of agricultural activity with human resources, which have lower levels of education and wages? It should be noted that the problems of human capital development have shifted from the level of responsibility of the country, branches of industry, to the level of responsibility of socially responsible agricultural units and individuals. The foreign investments cause the introduction of not only

the latest innovative technologies in the production of crop and livestock products, but also the import of innovative management approaches into the system of formation and development of human capital in the integration structures of agricultural business. In this case, some agroholdings demonstrate their own unique approaches to the HR system: including all the elements of HR work. They are: ensuring the continuous development of employees; evaluating of their activity and testing; developing effective approaches to work motivation and career management. We conducted the empirical studies on the example of definite agricultural holdings in Ukraine. Our choice (Mykhailova & Mykhailov, 2015) is caused by the fact that almost half of land resources in Ukraine (almost 43%) is under cultivation by agroholdings: at the same time the 30 largest agroholdings cultivate up to 10% of leased lands, and up to one third of it is at the disposal of a large group (about 300 of them) of holdings.

According to the results of the research using logic-heuristic methods, in particular, the expert interviewing of HR services representatives, we found that large agricultural enterprises introduce their own innovative approaches in the development of personnel, formation and accumulation of human capital: training, professional

development, competence development and improvement.

Thus, one of the largest agricultural holdings in Ukraine, Kernel, implemented a training project “The University of International Programs” for staff development. That was a joint project accomplished together with Sumy National Agrarian University. Today, Globino Corporation conducts training seminars for various categories of staff throughout the year and involve the University scientists.

The other large agricultural holding in Ukraine is “Investment Holding NCH, Ukrlandfarming”, which is the leader in arable agricultural land (over 650 thousand hectares) and has a total staff of nearly 20 thousand people. Personnel management system and existing development approaches the company's human capital are original ones. In total, there are six departments in the head office of the agroholding, whose activities are mainly focused on the implementation of innovative approaches in personnel management and the introduction of management technologies through the resistance management to changes and innovations. Table 5 summarizes the innovative approaches to human resources management and human capital development of the company.

Table 5. Content of human capital development functions of agroholding units

Unit name	The content features and characteristics of tasks
Department of Personnel Management	Coordinates all functions in regional offices of agroholding.
Department of Personnel Administration	Functions of personnel employment, dismissal, transfer; administering these processes; formation of the staff list of the company.
Department of Organizational Development	Organizational construction of business processes; detailed coverage of their content and staff tasks; characteristics of individual components of activities to vacant positions.
Department of Internal Communications	Tasks for the company's image development in the market; promotion of the company brand among employees.
Department of search and selection of personnel	Coordination of company relations with the labor market; rapid response to changes in the labor market; search for the most suitable employees to the requirements of the enterprise.
Department of Personnel Training and Development	Training and updating of knowledge of management personnel; interaction with educational institutions in practical training; individual plans for personality development, formation of reserve of personnel.

At first glance, a large company is worried about the future, aware of the importance of human capital and provides the detailed functions of personnel management. However, the work of Personnel Training and Development Department is of great concern. For example, the company has adopted the concept of staff retraining, which provides the knowledge updating for professional and personal development. The senior managers acquire more knowledge in communication skills and in leadership skills development. The training programs for middle-level managers provide the following distribution of material: 50% for professional knowledge, 30% for personal growth; 20% for gaining of managerial knowledge and skills.

The agroholding has its own corporate university, the system of distance learning, test forms of control are applied. The company has two full-time business trainers who provide training in sales management, time management, technology management and others. Recognizing the importance of investing in human development, the employees of the Department emphasize that saving on staff development is extremely unacceptable. However, the use of such innovative approaches in the development of human capital of enterprises is solitary and only large companies can afford it. In the modern conditions of agrarian transformations, the prevailing number of agricultural enterprises fulfils single, occasional measures. We conclude that the main prerequisites for the development of human capital in the organizations are organizational programs, economic capacity and legal regulations.

Conducting the research, we summarized the main directions of improving the organizational, economic and legal principles of human capital development in the personnel management system of agricultural

enterprises. The development of the enterprise personnel and the accumulation of its human capital can be realized through the set of all the above-mentioned principles (Figure. 1).

We have grouped the main factors that provide the increase of human capital of agricultural enterprises by functional features into three groups: organizational, economic and legal. It should be noted that all components of the isolated principles are regulated, and the senior management of the enterprise can influence them. The work with personnel is a continuous process that must be continued, developed, improved.

Organizational factors provide a high level of production and use of resources, including human when they are implemented at the enterprise. There is a rapid emigration of the population, including rural because of unemployment and little wage level. Large companies use innovative technologies (e.g. recruitment, headhunting, exclusive search, etc.) in the selection of staff.

The economic factors include the guarantee company's reward to the staff for the work, the quality of work, qualification, productive labor growth, the introduction of social packages, bonuses and awards. Among the legal principles of human capital development (Figure 2), we identified the laws and regulations of Ukraine and local regulations on personnel management.

Among the legal foundations of human capital development at the enterprise level, we have highlighted the following: Laws of Ukraine on labor and economic activity, as well as local normative legal acts on personnel management: Statute, Regulations on remuneration, Regulations on departments and official instructions; Collective agreements, other legal acts (training, certification, and career management).

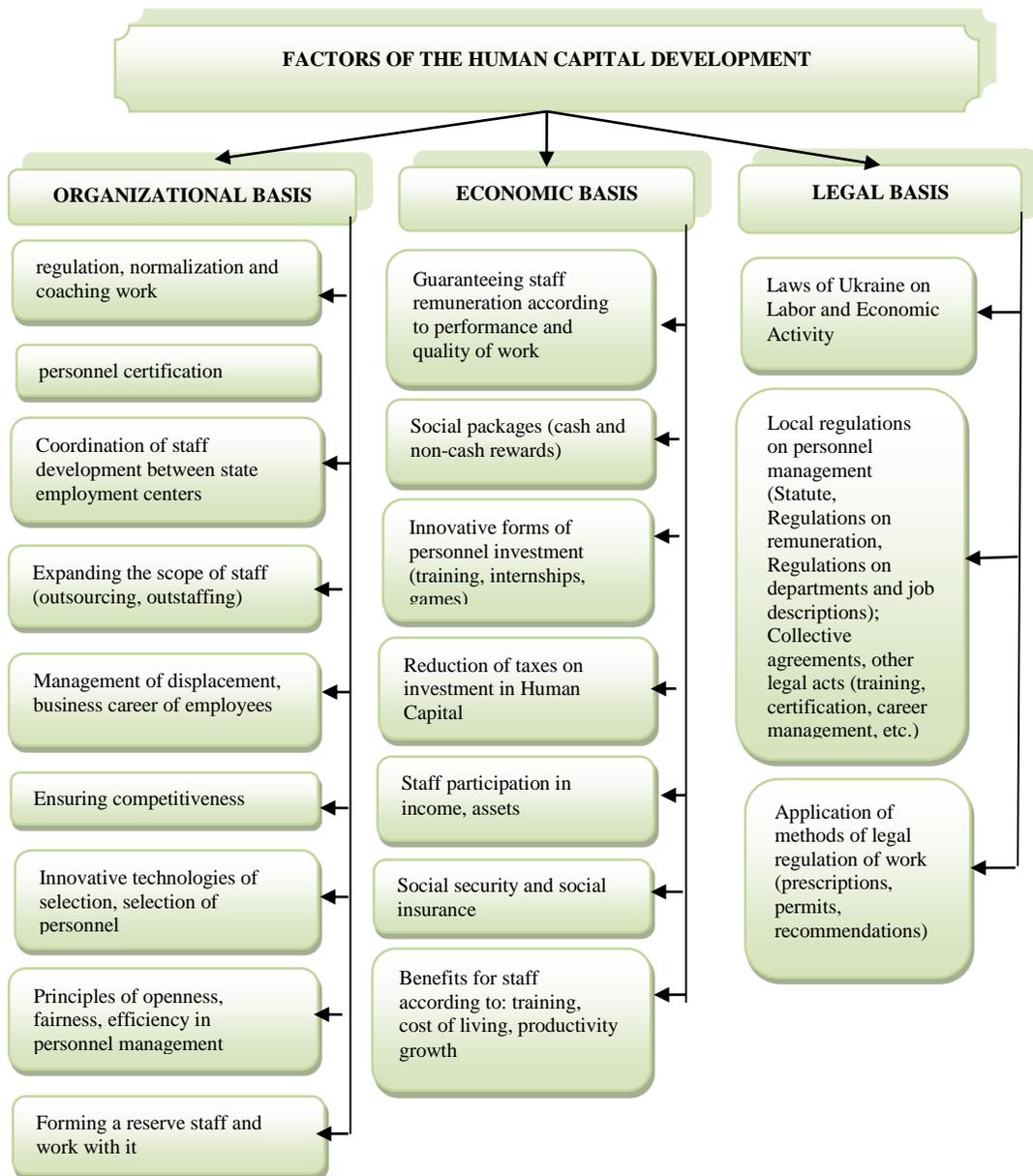


Figure 1. The main directions of human capital development in the personnel management system of agricultural enterprises

Source: results of own research

The study of various theories of staff motivation by scientists, such as Huo Zhiping et al. (2019), at different times proves to be an indisputable fact that the development of the enterprise occurs under the conditions of staff

development, which is motivated to achieve the goal, facing the enterprise, whose needs are met by the use of appropriate forms and methods of stimulation. Klymchuk & Mikhailov (2018), note that the evolution of

scientific ideas about the development of forms and methods of stimulation was influenced by changes in various motivational concepts. They expressed themselves at the turn of the XX and XXI centuries, due to the processes of globalization, a developed competitive environment and a profound transformation of industrial society in information (postindustrial), where knowledge, innovation and intelligence must play a decisive role.

Adherence to the organizational, economic and legal principles of human capital development in the system of personnel management at the enterprise level forms the prerequisites for effective use of human resources and for the realization of the full potential of the enterprise.

5. Conclusion

The research of the formation of innovative approaches to the development of human capital in the context of improving the quality of life of the rural population of the country shows both positive and negative aspects. It has been established that the livelihood fund of the rural population of Ukraine for the years 1990-2019 decreased by one third due to the rapid decrease of the rural population. At the same time, the agrarian sector of Ukraine provides almost half of foreign investments to the country; 12.1% of gross value added is formed in agriculture, and the wage fund for agricultural workers is only 5.2% (these figures are proportionally taken for industry). This situation is due to the low level of education of the rural population, the

use of low-skilled, unpaid work. This explains the poor quality of life of the rural population. In the period of agrarian transformations, the system of investing in human capital was ruined. The state does not pay the appropriate attention to the problems of organized advanced training of employees - even since 2013, these figures have been removed from the reporting form of the enterprises.

Large-scale agricultural enterprises (agroholdings) use innovative approaches to work with personnel to develop and accumulate human capital. The enterprises of different organizational and legal forms of management, which do not have such organizational and financial capabilities, should be focused on compliance with the organizational, economic and legal aspects of human capital development in the personnel management system.

We consider the following issues should be provided at the state level. They are: the mandatory allocation of funds to economic entities for investing in the development of human capital of enterprises; foreseeing of payments increase to the unemployed, provided that they are engaged in self-education, advanced training and acquisition of new competences.

At the personal level, the innovative approaches to human capital development can be applied using both formal and non-formal learning. However, the motivation for the development of human capital will exist when the person is convinced that it will ensure the growth of his / her business career, protect from decline and facilitate the wage increase.

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