

## The Role of Human Capital in the Development of the Region

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**Abstract:** Human capital in particular region has its own specifics. In the research, the identified factors of formation and development of the human capital of the Chuvash Republic are detected, a model of the index of human capital in the region is offered. The strategic orientations of human capital formation on the basis of the requirements of sustainable innovation development of the region is suggested.

**Key words:** Human capital, social progress, regional development, formation, sustainable innovation

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### INTRODUCTION

Effective development of the domestic economy in the first place, should be provided at the regional level which provides a balanced development of the control mechanism of the macroeconomic system. As we move into the new millennium and in the existence of an economy based on knowledge it is impossible to deny that it is the people to be a source of profits. The key to maintaining the company's profitability or to a healthy economy is human capital.

The present level of technological development has reached such heights that it became impossible to obtain any significant benefits only at the expense of technical equipment and in the foreground there is a man as a more powerful and promising resource, considered as human capital.

**Literature review:** The Human Development Index was designed by Pakistani economist Mahbub ul Haq and today is used as an alternative to the United Nations Economic evaluation indicators of social progress. His initial idea is that social development should be assessed not only on the national income as it was practiced for a long time but also on measurable achievements in health and education (Kazmalova, 2012).

Later, the theory of T. Schultz was very popular which regards human capital as the country's accumulated cost for reproduction of labor power, regardless of their source of coverage (the state, the family, the cost of production and so on). The result of these investments are accumulated ability of people to work. Schultz believed that human capital tends to accumulate and played on the basis of updated (Dayneko, 2011).

Widely known words of Mr. Becker in which human capital is formed at the expense of investment in human, among which are education, training in the workplace, expenditure on health, migration and the search for information on prices and incomes (Becker, 2003).

Today the popularity of more advanced interpretation of the concept of human capital which include a broad set of personal qualities, values, can have an indirect impact on the results of the productive activity. Recognition of human capital as a part of the artificially created, reproducible wealth is the basis for its calculation by summing up efforts to its formation, carried out in the past. But this method is limited by the complexity of the accounting of implicit and indirect costs, and non-obvious relationship between costs and results (Nikolaeva *et al.*, 2015). So, human capital cannot be equated to artificially create wealth, as innate qualities of the individual such as talent, learning, health and so on are of great importance. Additional investments in human capital can develop these natural quality and increase the return on human capital (Kokotkina *et al.*, 2015). Investing the same quantities can lead to different results, depending on the initial parameters of human capital. This substantiates the view that the most effective approach that focuses on the measurement result of past accumulation, assessment by the impact of human capital (Gurban and Myzin, 2011).

### MATERIALS AND METHODS

Considering human capital as one of the main resources of the economy, its main features should be noted, compared with other types of capital.

The first the human capital can be both increased and decreased over time. The capital increase requires efforts from both the media capital-human as well as from the public while the effectiveness of investments in human capital also depends on the individual to a greater extent, and from the external environment.

The second an investment in human capital are more long-term, returns are also more durable and high. For society, the return on investments in human capital is not only economic but also social. The income received by a person fully belong to him, he disposes of them yourself. The third the functioning of the human capital depends on the person from his personal interest in this.

Human capital of the particular region has its own specifics associated with the existing division of labor, specialization of production, demographics, national characteristics and traditions. Analyzing the process of development of human resources of the Chuvash Republic, we cannot ignore the fact that the region is characterized by a slow pace out of the long depression of the 1990s, related to the problems of adaptation of the leading industrial enterprises to new economic conditions. The vulnerability of the country's economy also emerged during the crisis of 2008-2009 and 2014-2015 which resulted in a decline in industrial production and the growth of tension in the labor market.

A characteristic feature of Chuvashia in the beginning of the 21st century has become a process of depopulation which was based on the natural decline in the population due to its high rate of mortality. In 2000, the death rate exceeded the birth rate by 33.7%. This trend continued until 2006, then decreased to 20.4% but it was nevertheless still quite high. Fundamental changes have occurred in the region in 2009, when the difference between mortality and fertility was 7.9%. The turning point for Chuvashia began in 2012 as the birth rate exceeds the death rate by 5.2% and this trend has continued to the present, today the figure is 4.0%.

The sustainability of economic development of the region is determined by the employment rate of the working population. It should be noted that the rate of employment during the study period did not undergo any major changes. Firstly, it retained the overall rate of the economically active population of the republic. At the beginning of 2000 it amounted to 676.1 thousand people, in 2005-658.9 thousand people, in 2010-664.8 thousand people, in 2014-683.7 thousand people. Secondly, the total number of economically active population in 2000, 90.9% were employed in the economy of the Chuvash Republic, in 2005-88.3%; in 2010-90.5%, in 2014-95.0%. These figures suggest that the number of unemployed in the economically active population does not exceed 10%, except in 2005.

There have been structural changes in the distribution of employment in the economy in terms of

education. The number of employed in the economy with higher education during the study period increased by 4.9%; with secondary professional education 0.5%; with an initial vocational education by 9.5%. At the same time there was a decrease in employment in the economy, with an average full-time education by 4.1%; having only basic general education by 7.1% with no basic education by 3.7%.

Particular attention should be paid to the gender aspect of unemployment as a social phenomenon. In Chuvashia in a total number of unemployed as a rule, the male population prevails. Thus in 2000 the number of 61.3 thousand unemployed men accounted for 55.6%; in 2005 from 75.3 thousand 60.9%; in 2010 from 63.4 thousand 61.5%; in 2014 from 34.0 thousand 55.9%.

In our view, it is interesting to analyze the distribution of unemployment by level of education. During the study period the number of unemployed with higher education increased twice from 11.6% in 2000-28.4% in 2014 remains stable share of the unemployed with secondary and primary vocational education: by type of secondary vocational education is 18.9 and 22.3% category of primary vocational education is 27.7 and 25.6%, respectively. At the same time there was a decrease in the share of the unemployed with secondary education from 35.4-20.7%.

This situation has a fairly simple explanation. In the republic, there is a fairly high interest in receiving vocational training. The vast majority of high school graduates as a rule, tends to further education, especially in the higher education system. Thus in 2014 the certificates of secondary education received a 6834 graduate schools. At the same time, set only in higher educational institutions for full-time education has made 4156 people. It should be noted that a significant portion of graduates also comes in leading universities of Russia, including Moscow, St. Petersburg, Kazan, Nizhny Novgorod and others.

Despite the relatively high interest in receiving vocational training, currently there is a certain imbalance in the labor market of Chuvashia. The labor market and the market of educational services are not part of a single system and act as a stand alone system with its goals and objectives. The key issue in our view is the absence of an order by an employer for training both in quantitative and qualitative terms.

Currently, vocational education Chuvash Republic is represented by a network of educational institutions educational institutions of primary, secondary and higher education. At the same time, the largest share belongs to high school students (46.6%) are relatively less in the total number of full-time students in vocational education-students studying for the secondary vocational education program (36.4%). The proportion enrolled in initial vocational training programs is 16.9%.

A curious situation occurred in the development of vocational education structure in the country. There was a sharp decline in the number of educational institutions of primary vocational education from 32 in 2000 to 2 in 2014 (16 times). The system of vocational education, on the other hand, there has been an increase in the number of educational institutions from 31-35. The number of higher education institutions has increased 1.5 times from 15 in 2000 to 21 in 2014.

According to forecasts in the next few years the number of people of working age will start to shrink fast enough. This trend will continue until 2025 and even under favorable circumstances, the number of people of working age will decrease by the end of 2025 > 100 thousand people.

Despite the fact that the country has undertaken the process of optimization of the educational institutions of primary and secondary vocational education, educational services infrastructure for today does not provide the real needs of the economy.

At the same time, graduates with higher education exceeds the needs of the region's economy. Analysis of the structure of training universities of the republic and its compliance with the prospective needs of the economy for specialists testifies to the existence of structural imbalances in many areas of training. The demand for specialists with higher education in the field of Economics and management exceeded 13.5 times in vehicles 5.1 times, construction and architecture by 3.4 times in the technology of food and consumer products 3 times in the energy, power engineering and electrical engineering by 2.2 times. At the same time is not satisfied with the forecast demand for specialists of chemical technology and biotechnology, production of which is 7.8%, instrumentation and optical engineering 19.1%, physical and mathematical sciences 38% of electronic equipment, radio and communications 61.6%.

A significant impact on the social characteristics of the Republic has the level of security of the population. In the 1990s, the scale of the spread of poverty Chuvashia belonged to the most troubled regions of the country, along with Mari El, Mordovia and Penza region. In 2000, the share of the population with incomes below the subsistence minimum was 51.3%. By 2003, thanks to economic growth and increased federal subsidies, the poverty rate has been reduced to 33% in 2010-18.2% in 2014-16.1%. But despite the positive dynamics of growth of real money incomes, a significant part of the population has an income below the subsistence minimum. There are also significant disparities in wage levels in the various sectors of the economy.

Nevertheless, per capita cash income of Chuvashia population grow from year to year. In 2000, they amounted to 1140.0 rubles in 2005-241.6 rubles in 2010-1085.9 rubles in 2014-6648 rubles. Real disposable

income of the population increased in comparison with 2000 by 2 times, the nominal average increased by 4.2 times while real wages increased by 2.4 times.

According to official statistics, the average monthly nominal wages, accrued in 2014 to employees of organizations for the Chuvash Republic was 20,862 rubles which is quite insufficient to ensure a decent standard of living. This situation contributes to a formal migration, and especially young people as well as labor migration, when part of the working-age population is forced to seek income from outside the region which in our opinion, does not contribute to reduce social tension in society.

## **RESULTS AND DISCUSSION**

The analysis of formation of labor potential of the Chuvash Republic allows us to formulate a number of propositions and conclusions. As a result of spontaneous liberalization of the labor market, in consistent economic policy and employment policy has worsened the qualitative component of the republic's labor potential. There is a discrepancy between the current skill mix required, the imbalance between supply and demand in the labor market, the deterioration of the skill-mix staffing needs of the economy.

The major humanitarian challenge of our time is the problem of human socialization with disabilities. The universal declaration of human rights guarantees to all people, including persons with disabilities or intellectual disabilities, the right to full and equal participation in all spheres of society. But in reality, these people are often deprived of the possibility of such participation and because of the current in relation to them of indifference on the part of society and the lack of necessary conditions (unsuitable premises, public transport, lack of work, etc.), they are often marginalized members society.

To determine the effect of human capital on the sustainable development of the regions of the panel analysis techniques were used. As the dependent variable indicator GDP per capita of employed in the economy has been selected. There were built models of influence of parameters of human and physical capital in the development of resistance. Three indicators representing the various types of evaluation of accumulated human capital were chosen as human capital parameters.

Assessment of human capital in the share of graduates with higher education in employment in the economy as the main form of human capital is considered to be the training in universities in each of which there are generally accepted standards of education. This estimate contains information about an indirect knowledge stock.

Evaluation of human capital on the basis of the consolidated budget expenditure on education as human capital as well as physical is estimated on the basis of invested investment in it.

Evaluation of human capital on the basis of wages. This approach is based on this assumption that the minimum wage shows the return on labor, excluding the human capital and the rest of the salary account for the impact of human capital.

As a parameter of physical capital we use capital-labor ratio which characterizes the working equipment production asset. Cobb-Douglas function was built which evaluates the contribution of workers with different levels of education in the population's income:

$$I_i = AK_i^\alpha L_{1i}^{\beta_1} L_{2i}^{\beta_2} L_{3i}^{\beta_3} \quad (1)$$

Where:

- $L_i$  = Incomes of the population in  $i$  region
- $K$  = Capital assets of the economy in  $i$  region of the full book value
- $L_{1i}$  = Strength of workers with higher education in  $i$  region
- $L_{2i}$  = Strength of the number of employees with secondary vocational education  $i$ th region
- $L_{3i}$  = The number of workers co secondary general education full  $i$ th region

To build a model of the impact of physical and human capital to the income of the population of the Chuvash Republic we will use statistics for the period 2009-2014. Indicators such as assets-ratio and fixed assets in the economy were included in the model separately from each other, other factors included in Table 1 in the model simultaneously and insignificant are excluded each time at 5% significance level. The constructed model has the form:

$$\ln I = \ln 95.4 + 11.72 \ln k_1 + 51.4 \ln L_1 + 37.8 \ln L_2 - 19 \ln L_3$$

Thus, according to the Cobb-Douglas Model it turned out, that per capita income is influenced by the physical in the country and human capital. Special contribution to the formation of the income of the population in the country make it occupied in the economy with higher and secondary professional education. This once again proves the importance of human capital in the sustainable development of the republic. To calculate the index of the region's human capital it is proposed to use.

**Table 1: Baseline characteristics for the Cobb-Douglas Model**

Designation	Indicator name
$I$	Per capita income (rubles)
$k_1$	Capital-labor ratio (ths. rub)
$k_2$	Fixed assets in the economy for the full book value (mln. rub)
$L_1$	The number of employed in the economy with higher education (th. people)
$L_2$	The number of employed in the economy with secondary vocational education (th. people)
$L_3$	The number of employed in the economy, having secondary education complete (th. people)

**Results indicators:** The proportion of economically active and able-bodied population of the region; the level of intra-regional migration and mobility; the proportion of employees with higher education; the incidence of the region's population, including chronic diseases; the birth rate; arrears of remuneration attributable to a single region of the employed in the economy; degree of national differentiation in the region.

**Indicator-effects:** Life expectancy, the proportion of budget expenditure on the operation of regional education and health systems, the level of household income exceeding the subsistence minimum. According to the equation the human capital of the region:

$$HC_{reg} = \frac{(K1 + K2 - K3 + K4 - K5 + K6 - K7 + K8 - K9 - K10 + K11 - K12 - K13)}{C} \quad (2)$$

Where:

- HC reg = The human capital of the region
- $K1$  = The share of the working age population in the total population
- $K2$  = The proportion of the economically active population in the number of working-age population in the region
- $K3$  = The level of gender inequality in the region
- $K4$  = The proportion of immigrants in the total population of the region
- $K5$  = The proportion of immigrants in the total population
- $K6$  = The proportion of the population employed in high-yield areas
- $K7$  = The proportion of the population employed in industries with profit margins below the average value
- $K8$  = The proportion of the employed population with higher education in the region
- $K9$  = The incidence of the region's population
- $K10$  = The level of intra-regional mobility of the population
- $K11$  = Regional fertility rate
- $K12$  = The proportion of debt on wages, attributable to a single region of the employed in the economy
- $K13$  = the level of differentiation of the national population of the region
- $C$  = Budgetary constraints of the region

Budgetary constraints of the region calculated as follows:

$$C = I \times T + E + H \quad (3)$$

Where:

I = The ratio of incomes of the population and the minimum subsistence level in the region

T = The life expectancy of the population of the region

E = The share of the regional budget spending on education

H = Share of regional budget expenditures on health care

Imagine the optimum value of the index of human capital in the region. In accordance with the figures of the national socio-economic security of the proportion of the economically active population in the number of able-bodied should be 0.93; the proportion of the working age population 0.35; the proportion of people in higher-yielding sectors 0.56; the proportion of the population employed in industries with profit margins below the average value 0.07; wages payable 8.6; the level of gender inequality 0.1; fertility rate 0.2; the proportion of the employed population with higher education 0.5; the level of morbidity 0.35; the proportion of immigrants in the total population of the region 0.16; the proportion of immigrants with less than average 0.02; the proportion of immigrants in the total population 0.10; the level of intra-regional mobility of the region's population 0.72; the level of national differentiation of the region's population 0.12; life expectancy 70 years; the ratio of incomes of the population and the subsistence minimum 3.5; the share of the regional budget spending on education 0.44; the share of the regional budget spending on health care 0.28. Thus, the optimal value of the index region of the human capital in modern conditions will be 0.03.

Summarizing the above information, based on the theory of human capital, we can trace the relationship between economic growth and government expenditure on education, training and health care. This relationship is defined as "an investment in the human." From the point of view of the development of modern society, the costs of education and health are no longer considered as overhead and are seen as investments that generate income.

Development of human capital and investment is closely connected with the formation of innovation infrastructure in the region. The fundamental problem of the formation and development of the regional innovation system of the Chuvash Republic, identified as a result of the study, the low level of coordination and collaboration between its three main components-the higher education sector, the sector of research and development and the business sector. In this connection, it is necessary to consolidate efforts and resources at the disposal of the

Chuvash Republic for the solution of strategic tasks, its sustainable economic growth and competitiveness.

Describing the state of the regional innovation system of the Chuvash Republic as a whole it may be noted that at present it is already established and the basic elements of work but the innovation support tools today are poorly coordinated with each other. The individual cycles of the innovation process fragmented and poorly coupled to each other.

All this leads to the importance of creating a unified republican innovative system within the national innovation system which will ensure the management of innovation processes and solve the most important problems in the field of innovation.

## CONCLUSION

In the Chuvash Republic there are following strategic guidelines of human capital formation through sustainable innovation development of the requirements:

- The preservation of national identity and cultural identity as a synthesis of tradition and innovation
- Gradual introduction into the education system of the principles of sustainable development on the basis of universal measuring instruments for the integrated presentation of harmonization of the laws of nature and of life based on them
- Strategic approach to the formation of human capital on the basis of monitoring, analysis and process control in the field of social and professional development, participation in social transformation

Thus, the social component of sustainability is focused on the person and is aimed at preserving the stability of the social, economic and cultural systems. As a part of the concept of human development, a man is not an object and subject of development. Based on the expansion of human choices as the main value, the concept of sustainable development implies that people should participate in the processes that shape the scope of its activities to promote the adoption and implementation of decisions, monitor their execution. Accordingly, one of the conditions for increasing the sustainable development of the national economy is the development of human resources (capital).

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