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IMPROVEMENT OF THE HUMAN CAPITAL MANAGEMENT METHODS

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Abstract

The modern economy development and the constantly growing competitive struggle require the search for new, more efficient strategic opportunities for enterprises. Due to this, improvement of the enterprise management methods is of particular relevance, as it defines the enterprise's belonging to an innovation-driven economy, where the competitiveness of enterprises and the economy are generally determined by the level of innovation and the degree of intellectual development based on knowledge and information.

Keywords

Human capital – Human resources – Capital

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Introduction

Recognizing the possibility of using innovation as an economic development tool, numerous aspects of the innovation strategy should be studied, developed and influenced, where special attention should be paid to the development and improvement of the HC management, where workers are considered not as human resources, but as a strategic economic factor of growth, securing the success of the introduction and application of any innovations. At the same time, the employee's knowledge and qualifications are considered as a special form of the human intellectual property, and many useful properties of employees are used in production activities, contributing to labor productivity and, consequently, to the income of an enterprise, improvement in the employee's welfare, economic growth in the industry, region, and state in general.

The human resources and the HC are not identical concepts. Human resources can potentially become capital if knowledge, skills, and abilities embodied in an individual bring real income and create wealth, i.e., if individuals are able to realize themselves in social production through the personally organized activities¹.

Scientists have not agreed on a single definition of the HC concept because it covers a significant part of relations in the society and there was certain theoretical and methodological evolution in the papers of foreign and domestic scientists, which can be a basis of several scientific approaches to the HC definition (Table 1).

Approach	Authors
Certain amount of knowledge and skills that are innate and acquired through education	H. Bartels, G. Becker, R. Dornbusch, L. Turow, S. Fisher, T. Schultz
The wealth of the society that is formed as a result of educating people at a young age and secures an increase in labor productivity throughout the entire work activity of an individual	K. Errod, R. Lucas, P. Romer, R. Solow
Form of expressing the productive (production) human forces at the post-industrial stage of the society development with a socially-oriented market economy	S. Dyatlov, M. Kritsky
Qualitative characteristics of the workforce	T. Razumova, S. Roshchin
Special type of labor resources	V. Shchetinin
The result of such investment and savings as health, knowledge, skills, and abilities used to obtain a useful result through their implementation by intellectual work	O.Yu. Vorozhbit, T.E. Danilovskikh, I.A. Kuzmicheva, A.A. Uksumenko

Table 1

Systematization of the researchers' approaches to the "human capital" definition².

Summing up various approaches to defining the HC and research into it, the following definition can be given: the HC is a socioeconomic category that reflects the idea and results

¹ S. A. Dyatlov and L. A. Mizrin, *Investitsii v chelovecheskiy kapital Rossii: sostoyaniye, problemy, perspektivy*: monograph (S-Pb.: Publishing House S.-Pb. (SUTD), 2003).

² V. T. Smirnov; I. V. Soshnikov; V. I. Romanchin and I. V. Skoblyakova, *Chelovecheskiy kapital: soderzhaniye i vidy, otsenka i stimulirovaniye*: monograph (Moscow: Mashinostroenie-1, 2005); K. A. Ustinova; E. S. Gubanova and G. V. Leonidova, *Chelovecheskiy kapital v innovatsionnoy ekonomike*: monograph. (Vologda: ISED T RAS, 2015) y O. Yu. Vorozhbit; T. E. Danilovskikh; I. A. Kuzmicheva and A. A. Uksumenko. *Chelovecheskiy kapital organizatsii v razreze stoimosti biznesa*: monograph (Vladivostok: VSUES. 2017).

of investments and savings in the form of health, knowledge, skills, abilities, motivation, mobility, and other qualities of employees that generate income when applied in the manufacturing sector and in nonmanufacturing activities.

The HC management assumes the existence of its formation, use and development that occur at three levels of management: the individual, the enterprise, and the state. Subjects of economic relations on the formation, application, and development of the HC are the following:

- individuals and households that manage the HC at the individual level;
- employers such as enterprises that manage the HC at the micro level; and
- the state and public organizations that participate in the HC management at the macro level³.

Employers, being subjects of economic relations who are directly involved in the HC management processes at the micro level, can have twin characteristic. First of all, they are consumers of the HC because they involve hired workers into operation in order to use their competences in creating products, works, and services. Secondly, they form and develop the HC by increasing new key competencies, i.e., those professional and personal qualities that an employee requires to take a particular position. Forms of the personnel development include the increase in employees' competence, which they already possess, based on training and retraining, advanced training, and professional experience⁴.

The state and public organizations secure the HC formation and development in the population by financing education, healthcare, and cultural development, protection of interests and human rights. The HC is initially formed due to primary education, which, above all, is the HC intellectual component and further contributes to the quality of the perception of new knowledge, skills, and abilities due to vocational and higher education. Besides, new requirements for the HC are formed at the macro level, which is an impetus to a steady increase in the level of knowledge, skills, and behavioral characteristics of both an individual through the independent development of their professional and personal qualities and an enterprise that should constantly raise the level of its HC employees for efficient operation.

The HC formation requires continuous updating of knowledge and skills, which is determined by the rapid change of equipment and technology in the modern conditions.

³ A. L. Owen, *Experience, Education, and Human Capital Accumulation* (NY: Hamilton College, 2000).

⁴ O. V. Voronkova; Y. E. Semenova; O. V. Lukina; A. Y. Panova and E. N. Ostrovskaya, "Assessment of the Influence of Human Factor on the Working Process Effectiveness as a Factor for Improving the Efficiency of Production Management at Industrial Enterprises", *Espacios*. Vol: 39 num 48 (2018): 1-25; A. Sokół and I. Figurska, "Creativity as one of the core competencies of studying knowledge workers", *Entrepreneurship and Sustainability Issues*. Vol: 5 num 1 (2017): 23-35; T. Pritvorova; B. Tasbulatova and E. Petrenko, "Possibilities of Blitz-Psychograms as a tool for human resource management in the supporting system of hardiness of Company", *Entrepreneurship and Sustainability Issues*. Vol: 6 num 2 (2018): 840-853 y E. Chitsaz; M. Tajpour; E. Hosseini; H. Khorram and S. Zorrieh, "The Effect of Human and Social Capital on Entrepreneurial Activities: A Case Study of Iran and Implications", *Entrepreneurship and Sustainability Issues*. Vol: 6 num 3 (2019): 1193-1203.

This should take place every 4 – 5 years to ensure the efficient operation of economic actors, while in some leading sectors of the economy such changes should occur every 2 – 3 years⁵.

This causes the emergence of the main HC management tool – investment. Investment in the HC pays off over time, ensuring a return in the form of higher salaries or the ability to perform work that brings more satisfaction⁶.

Indicators, such as working time spent on performing a certain amount of work before, during and after training, the total cost of training, the payback period of training costs, and the annual economic effect are used at the microeconomic level to determine the economic efficiency of investing in the professional development of employees [9]. However, using only these indicators does not provide a complete picture of the efficiency of investing in the HC because they reveal only the efficiency of investing in education and professional training of employees of the enterprise and do not evaluate the feasibility of all other types and components of the efficiency of investing in the HC.

Evaluating the level of individual components of the overall efficiency from time to time is insufficient and uninformative for the implementation of a comprehensive assessment of the efficiency of investing in the HC. It should be more reasonable and expedient to define a complex system of performance indicators, the permanent use of which would quantitatively and qualitatively determine the change in performance or efficiency under the influence of certain types of investment in the HC.

The goal of the study is to develop a list of indicators for assessing the investment in the HC at the enterprise level.

Hypothesis of the study is as follows: a generalized system of indicators for evaluating the efficiency of investing in HC is a factor in improving the efficiency of the HC management.

According to the results of the study, it can be concluded that the goal set in the study has been achieved.

Methods

The methodological basis of the study is a set of general scientific and special research methods, among which the following should be highlighted: methods of analysis and synthesis, dialectical, systemic methods for the study of a generalized system of indicators for evaluating the efficiency of investing in the HC, and structural functional analysis method to develop new indicators for estimating investment in the HC.

⁵ F. Xh. Krasniqi, "The Importance of Investment in Human Capital: Becker, Schultz and Heckman", *Journal of Knowledge Management, Economics and Information Technology*. Vol: 6 num 4 (2016): 1-18.

⁶ V. Giziene; Z. Simanaviciene and O. Palekiene, "Evaluation of Investment in Human Capital Economical Effectiveness. *Inzinerine Ekonomika*". Vol: 23 num 2 (2012): 106–116.

Results and discussion

The emphasis was placed on the human aspect as the main factor for ensuring efficiency in determining indicators for assessing the financial component of the efficiency of investment in the HC. However, based on the fact that investing in the HC is a component of the overall investment process of an enterprise, its level of efficiency can also be estimated using the discounting indicators of financial analysis and investment theory generally accepted in the world practice (Table 2)⁷.

Indicators	Specifics of use
Net present value (NPV) allows establishing the alternative economic feasibility of obtaining a certain level of education	The costs are the sum of the funds invested in the HC by the enterprise during a certain period. The discount rate can be taken at the level of the average deposit bank rate. It is also advisable to increase the discount rate by 2 – 3 % in order to minimize the risk that arises when investing in the HC.
Relative profitability index (PI) describes the relative return on investment	The volumes of investment in the HC should be considered efficient if the net present value is positive for them.
Internal rate of return (IRR) allows assessing the economic feasibility of investing	IRR describes the rate of return on investment in the HC, at which the income received as a result of investing in professional development and protecting the health of employees is equal to the amount invested.
Payback period (PP) is the expected payback period of invested funds	Period of time when the volume of funds invested in the HC is fully covered by the total income from its implementation

Table 2

Specifics of using financial indicators to assess the efficiency of investment to assess investment in the HC

The specifics of using financial indicators to define the level of efficiency of investing in the HC through discounting involve the reduction of the information load of each indicator due to the fact that the employer is the investor. As such, the main purpose of the inclusion of the investment criteria in the overall assessment of indicators is to create favorable conditions for increasing the level of employers' motivation to increase investment.

The social and economic components of the investment efficiency in the HC are tightly interconnected and have a common influence. According to many scientists, it is almost impossible to determine either the economic or social effect of the increase in the efficiency of social labor by a single generalizing indicator due to the multidimensionality of the nature of this phenomenon. That is why it is advisable to use a comprehensive system of indicators for assessing the socioeconomic component of the efficiency of investment in the HC. The indicators of such a system may include the share of employees who have received professional education during the reporting period, in the total number of employees; the share of employees with higher education; average level of labor productivity; overall turnover rate; average wages of employees; and coefficients of constancy and stability of personnel; absenteeism rate, etc.

⁷ A. I. Dobrynin, *Chelovecheskiy kapital v tranzitivnoy ekonomike: formirovaniye, otsenka, effektivnost ispolzovaniya* (SPb.: Science, 1999) y I. A. Zimin, *Realnyye investitsii* (Moscow: EKSMO, 2000).

Each of the assessment indicators can be used as a performance criterion by comparing its values calculated before and after investing in the HC. However, the use of this system allows to get only a summary of the efficiency of investment in the HC because these indicators simultaneously describe both the labor results of the employees whose professional development was and was not invested in during the period under study. This circumstance does not allow to objectively establish the impact of investments on the loyalty of employees and their labor results.

It is suggested to supplement the composition of the indicators of the socioeconomic unit for evaluating the efficiency of investment in the HC with special indicators, in order to increase the objectivity of the assessment results in regard to efficiency of investment in the HC (Table 3).

Indicators	Formula	Legend
Return on investment in the HC	$R_I = NP_i / I_{HC}$	NP _i is the net profit of the enterprise, which was obtained as a result of investing in the HC, rub.; I _{HC} is the amount of funds that were invested in the HC, rub.
Ratio of the financial capacity of investment in the HC	$R_F = I_{HC} / NP$	
Turnover rate of promising employees	$R_{TURN} = N_{TURN} / N_{AV}$	N _{TURN} is the number of promising* employees laid off due to the turnover, people; N _{AV} is the average headcount, people.
Intensity rate of disposal of promising employees	$R_{D.P.} = N_{L.P.} / N_{T.P.}$	N _{L.P.} is the number of laid-off promising employees, people; N _{T.P.} is the total number of promising employees, people
Investment priority ratio	$R_{PR} = I_{IHC} / I_{IFA}$	I _{IHC} is the index of growth of investment in the HC, rub.; I _{IFA} is the index of growth of investments in the fixed assets, rub.
Ratio of reducing unproductive use of working time through investing in the HC	$R_{W.T.} = (UE_0 - UE_1) / I_{HC}$	UE ₀ , UE ₁ are the amount of unproductive expenses and loss of working time before and after investing in the HC, man/hours
Growth rate of the average salary due to investment in the HC	$R_{AS} = (S_1 - S_0) / I_{HC}$	S ₀ , S ₁ are the average salary of employees before and after investment in the HC, rub.

*employees in whose professional and personal development the investments have been made over the past three years

Table 3
Indicators suggested for assessing the investment in the HC

The period of three years has been chosen as a deadline for evaluating the efficiency of investment in the HC because the specialists believe that it is the period for which the professional knowledge is devalued and requires further updating. The overall level of investment efficiency will depend on whether the enterprise gets a socioeconomic effect from the funds invested in the professional development of employees during this period.

Aside from assessing the efficiency of investment in the HC, it is also advisable for the enterprise to monitor the level of the investment intensity, as its reduction can lead to a decrease in the level of expected payback and socioeconomic effect of the invested funds. The most common indicator of assessing the intensity of investment in the HC is the frequency of advanced training, which can be determined based on data on the number and

share of people who increased their qualification during the reporting period. In this case, it is suggested to define the actual periodicity of advanced training by averaging the length of the period between the previous and subsequent advanced training procedures for employees of the enterprise or its production and business unit.

At the same time, the intensity of investment in the HC can be found using an indicator describing the amount of funds invested by an enterprise in the HC, per employee, which can be supplemented with two derivative indicators describing the specific volume of investment aimed at professional development or healthcare for in-depth analysis. Studies of the values of these indicators over time will allow to find coverage of the company's employees both with investment in general and with its individual types.

It is expedient to determine the share of funds invested by the company in the HC in the total costs of the enterprise when assessing the intensity of investment in the HC. The increase in this indicator over years will indicate that there are trends in the general business management policy developing towards the human factor and the humanization of labor. In this context, more information for the assessment will be provided by an indicator that determines the share of investment in the HC in the labor costs rather than in the total enterprise costs. The normative level of this indicator can be determined for a particular enterprise by finding the optimal ratio of the amount of funds allocated for salaries and funds invested in the professional development and protection of the employees' healthcare.

As such, the analysis allowed to systematize and classify indicators for estimating investment in the HC as two interrelated blocks of indicators: efficiency and intensity of investment in the HC (Table 4). Each of these blocks consists of a complex system of indicators describing certain aspects of the socioeconomic efficiency of investment in the HC.

Indicators of the investment efficiency		
Financial component	Economic component	Social component
Profit from the HC	Share of employees who received professional education	Average incidence rate
Rate of return on investment in the HC	Average level of the labor productivity	Average level of industrial injuries
HC value added	General staff turnover rate	Average salary
Added economic human cost	Ratios of the labor stability and sustainability	Growth rate of the average salary due to investment in the HC*
Market value of the HC	Absenteeism rate	
Net present value	Integral rate of the working time usage	
Profitability index	Turnover rate of young workers (younger than 30) with work experience in a particular enterprise up to three years	
Internal rate of return	Savings on the headcount	
Payback period	Turnover rate of promising employees*	
Return on investment in the HC*	Intensity rate of disposal of promising employees*	
Ratio of the financial capacity of investment in the HC*	Investment priority ratio*	
	Ratio of reducing the unproductive use of the working time by investing*	
Indicators of the investment intensity		
Periodicity of advanced training		
Share of the funds invested in the HC from the total payroll of the enterprise		
Amount of the funds invested in the HC, per employee		
Amount of the funds invested in the professional development of employees, per employee		

Amount of the funds invested in healthcare, per employee
Share of the funds invested in the HC from the total costs of the enterprise
Share of the funds invested in the HC from the total labor costs
Average number of training days per employee
Level of implementation of the vocational training plan

* suggested indicators

Table 4
System of indicators for assessing the investment in the HC at the enterprise

The efficiency of investment in the HC using the provided system of indicators should be measured in stages and in a comprehensive manner, which to a certain extent allows avoiding systematic errors caused by the risks that could arise when calculating some indicators of efficiency or intensity of investment in the HC. At the same time, the use of the suggested system of indicators allows obtaining generalized information on the efficiency of investing in the HC only, due to the fact that most of the indicators describe both labor results of the employees whose professional development was and was not invested in by the enterprise at the same time.

At the same time, the value of each of the suggested indicators may be influenced by other factors that are not directly related to changes in the employees' performance. The influence of external factors on the assessment of the efficiency of investment in the HC can be minimized by monitoring all or most of the proposed indicators and drawing conclusions about the efficiency of investment based on the systematization of results.

It must be noted that the experience of leading companies in investing in the HC reflects high living standards and comprehensive concern for employees. Examples of the leading companies investing in the HC are provided in Table 5.

Company	Example of investment
Google	Creative relaxation centers. Sports grounds. Free meal. Regular gifts to managers. Permission to bring pets. Extra childcare leave. Payments to a family in the amount of 50 % of the salary for ten years after the death of an employee. Introduction of interactive educational laboratories. Attracting students through the Google in the Residence program.
Facebook	Free meal, fitness centers, swimming pools. Medical insurance and 50 % insurance for family members, unlimited sick leave. Laundry, bicycle workshop, hairdresser, dog care service, and break rooms. Weekly performances of celebrities who can share experiences and broaden the horizons of employees.
Microsoft	Broad opportunities for education and professional growth. Wide health insurance package for employees and family members. Compensation for meal.
Twitter	A wide range of health insurance. Convenient retirement plan. Free breakfasts and lunches. Subscription for sports, corporate laundry, dry cleaning.
Apple	Compensation of medical expenses, compensation for freezing eggs in the amount of \$20 thous.
Ultimate Software	Payment of 100 % medical insurance, organization of exotic cruises for employees twice a year.

Table 5
Examples of leading companies investing in the HC Compiled by the authors based on⁸.

⁸ N. Bondarenko, "The Role of Companies in Human Capital Accumulation: Cross-Country Analysis", Foresight-Russia. Vol: 9 num 2 (2015); 6–23; M. Pasban and S.H. Nojehdeh, "A Review of the Role of Human Capital in the Organization", Procedia – Social and Behavioral Sciences. num 230 (2016): 249–253; A. Kucharcíková; M. Miciak and M. Hitka, "Evaluating the Effectiveness of Investment in Human Capital in E-Business Enterprise in the Context of Sustainability", Sustainability. Vol: 10 num

As can be seen, one of the priority areas of investment by American leading companies is medical care and healthcare. Choosing a strategy of investing in the HC, companies should clearly recognize its focus on the future and decide on the means of achievement: tactics and resources.

Conclusion

The modern trend of the world economy development is intellectualization of the society activity, where the competitiveness of enterprises and the general economy is defined by the level of innovation and the degree of intellectual development based on knowledge and information. Under such conditions, the main goal of the HR management of any enterprise is to ensure their transformation into the HC, the cost of which is a long-term factor of economic growth of an enterprise, industry, region, and economy in general. The study reveals that the generalized system of indicators for evaluating the efficiency of investing in the HC can be considered balanced if it allows establishing the feasibility and efficiency of investment through the integrated definition of the three efficiency components: financial, social, and economic. Each of the indicators can be used as a criterion to justify the feasibility of investing funds by the enterprise in a particular type of investment and an individual employee. At the same time, an enterprise independently establishes the criteria for an acceptable level of their values for most indicators, which may change along with the economic situation. To establish the efficiency, values of the selected indicators can be studied over several periods or by comparing the reporting level of the indicator with its value before the start of investment. However, the possibility of this analysis largely depends on the availability of objective and sufficient statistical information, generally accepted and internal base of which should comprehensively reflect all aspects and components of the efficiency of investment in the HC during the entire period under study.

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