European Proceedings of
Social and Behavioural Sciences
EpSBS

www.europeanproceedings.com
e-ISSN: 2357-1330

DOI: 10.15405/epsbs.2020.03.31

II International Scientific Conference GCPMED 2019
"Global Challenges and Prospects of the Modern Economic Development"

HUMAN CAPITAL IN THE INNOVATIVE ECONOMY OF THE COMPANY

G. P. Gagarinskaia (a), E. V. Volkodavova (b), T. N. Obuschenko (c)*, A. V. Gagarinskii (d)
*Corresponding author

(a) Samara State Technical University, 443100, Molodogvardeyskaya str., 244, Samara, Russia, eyo080505@mail.ru
(b) Samara State University of Economics, 443090, Soviet Army str., 141, Samara, Russia, vev.sseu@gmail.com
(c) Samara State Technical University, 443100, Molodogvardeyskaya str., 244, Samara, Russia, tatyanaobushenko@mail.ru
(d) Samara State Technical University, 443100, Molodogvardeyskaya str., 244, Samara, Russia, cantstoped@gmail.com

Abstract

Mobilization of the full intellectual potential of employees is very important for achieving high economic performance of the company. At the micro level, high-quality labor resources can guarantee employers effective implementation of the company's current activities and innovative technologies. The authors' hypothesis: human capital, the employee's knowledge without physical form involved in production, is able to bring economic benefits. Human capital is an object of private property, has evidence of existence, may arise or cease to exist in the organization at an identifiable point in time. The purpose of this research is developing a methodological approach for the valuation of human capital and recommendations for the presentation of information on human capital in the financial statements. The study revealed the contribution of society and the company in the accumulation of human capital, established the role of the human capital in the company's means of production. The authors consider methodological, empirical, practical aspects of personnel assessment and the availability of information in financial statements of the company. The authors use an approach based on calculated investments and current costs applied by the method of the standard cost of component stages of basic, professional, and additional education. Human capital is put on the account when signing an employment contract stands as an independent accounting unit. Human capital is evaluated by notional value. The method is based on the calculation of costs for each stage of education and then the costs are summed up.

Keywords: Human capital value, methodology, analytical balance.

https://doi.org/10.15405/epsbs.2020.03.31
Corresponding Author: T. N. Obuschenko
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

1. Introduction

The relevance of this study is due to the fact that the valuation of human capital allows you to manage, evaluate and develop personnel, to find out if human capital corresponds to the characteristics of a particular production, company strategy. The purpose of this study is to develop a methodological approach to the valuation of human capital and recommendations for the presentation of information on human capital in the financial statements of the company. The authors present hypothesis of accounting for human capital, and give practical recommendations for its application.

2. Problem Statement

The asymmetry of financial statements of the modern fifth technological structure of the economy, when the company becomes the main means of production, can be solved by reforming the balance sheet structure and providing users with information on the cost of human capital. This is in line with investors' expectations regarding human capital valuation in terms of their ability to create and increase the value of the company.

3. Research Questions

The theory of human capital has been criticized, while its deep influence on a number of disciplines from economics to education and sociology is undeniable (Tan, 2014). In our study, the theory of human capital is considered in the framework of accounting (financial accounting).

The applicability of methods for assessing the value of human capital is not theoretically developed. The economic community proposes an investment, cost, income method, based on goodwill, based on the cost of the workplace, etc. Human capital is considered in a broad sense, taking into account education, upbringing, health, labor protection, environment, while the wider the set of variables, the less we implement the assessment method. The authors of the study illustrate the theory without showing practical implementation in calculations. Human capital acts as an integral element of intangible capital (Belyaeva, 2014).

4. Purpose of the Study

The purpose of the study is to develop a methodological approach to solving the problem and to conduct an empirical study of the dependence of the value of human capital on variable components.

The practical aspect will include:

- Human capital valuation of the company,
- Analysis of human capital by components,
- Building the structure of the analytical balance,
- Calculation of the organic capital structure of the company.

https://doi.org/10.15405/epsbs.2020.03.31
Corresponding Author: T. N. Obuschenko
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

5. Research Methods

5.1. The assessment methodology is based on the theory of human capital by the method of system analysis; taking into account the purpose, the authors propose private approaches to the assessment.

5.2. For the formation of a model (formula) of the value of human capital, the authors reviewed suitable methods, taking into account the available information (Kuzminov, Sorokin, & Frumin, 2019).

5.3. The estimated value of an employee takes into account variables: the number of stages of education, the number of years of education at a stage, the cost of 1 year of training (Obushenko, 2016).

5.4. Then the assessment was carried out on the basis of quality information obtained from the financial and non-financial statements of a company specializing in design and installation of water treatment systems.

5.5. The analytical balance is built by integrating the obtained data on the cost of human capital in the financial statements of the company.

5.6. At the final stage, the results are analyzed and conclusions are drawn.

6. Findings

6.1. Defining components of human capital

The initial cost of human capital for the company is the amount of investments made by the company in education of the employee, subsequently, the initial cost increases with the current costs of continuing education.

The components of human capital for completed stages of education: human capital (HC) of general education (GE - cost of preschool education, primary school education, basic general education, secondary general education), human capital of vocational education (VE - cost of primary vocational education, secondary vocational education, higher vocational education); human capital of additional professional education (APE - the cost of advanced training, retraining, additional education), the authors calculated capital for the entire period of labor activity based on the above components, taking into account combinations of employee education components.

We had data on normative (budgetary) costs per student / pupil per 1 year of study. The application of standard costs will make it possible to level out the impact of external factors on education, such as the amount of capital investment on housing for teachers, the type of ownership of the educational institution, and the region where a school or university is located.

The conditional estimated initial cost is the value determined by adding up the sums of the components of values of human capital.

This approach adequately reflects the key characteristic of personnel-education and allows us to carry out meaningful inter-regional, inter-industry and inter-company comparisons and assess trends in changes in the volume and quality of human capital.

6.2. Approbation of the methodological approach

Empirical indicators are obtained using inductive methods that fix the cost dependencies obtained by comparing the facts of observation. The total number of employees of the company is 115 people;

https://doi.org/10.15405/epsbs.2020.03.31
Corresponding Author: T. N. Obuschenko
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

information was obtained from certificates, diplomas and certificates of graduation. Human capital of all employees was subject to valuation, regardless of whether the employee is on vacation, on a business trip, or on sick leave (Table 01).

Table 01. Distribution of components of human capital of the company by values

Values of human capital	Volume		Cost	
	Accumulated education (number of years) of all employees at the date of assessment	%	thousand rubles	%
Preschool education	805	34,2	49080,9	32,75
General school education	1197	49,9	71518,6	47,74
Vocational education	354,3	15,0	23752,8	15,85
Additional professional education	21,16	0,9	5492,8	3,66
Total	2377,46	100	149845,1	100

Source: authors.

It is important to link education with the needs of employers (Bandaranaike, 2018). Current human capital valuation:

- Accumulated education (number of years) - 2377.46 years;
- Cost in the assessment in 2017 - 149845.1 thousand rubles.

The human capital of one employee:

- 20.67 years of education;
- 1303 thousand rubles costs incurred by society.

6.3. Analysis of human capital of the company

Almost half of human capital is school education, followed by pre-school education, then vocational education and further vocational education. Current trends in the formation of the total stock of human capital: the contribution of the formal education system is gradually decreasing, the role and importance of continuous training in the process of activity is growing.

Continuous professional development is available through the widespread introduction of digital technologies in the educational process (Gagarinskaia, Obuschenko, Gagarinskii, & Potokina, 2019). Vocational retraining is important sources of replenishment of human capital (Reimers & Chung, 2019). Countries close to the technological border spend significant amounts on these purposes and annually cover up to half of all workers with training. In Russia, the costs of enterprises for these purposes account for about 0.3% of the total labor costs (Gimpelson, Kapeliushnikov, & Roshchina, 2017).

In our company, human capital is 84.1% formed due to general knowledge and 15.9% due to professional knowledge, most of the costs incurred are in the preparatory period. Human capital cannot be identified with a simple amount of investment (Valente, Salavisa, & Lagoa, 2016; Bondarenko, 2015).

It is a complex mechanism that includes a number of different aspects. Basic general education involves the implementation of simple tasks under the supervision of a leader. An employee with secondary vocational education can perform work requiring a significant amount of specialized knowledge, be independent in solving problems, analyze the working situation and its predictable

https://doi.org/10.15405/epsbs.2020.03.31
Corresponding Author: T. N. Obuschenko
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

changes, independently work with information and search for information. An employee with higher education is given tasks that require the use of professional knowledge of a technological and methodological nature, including innovative ones, establishing interaction between performers, independent search, analysis and evaluation of information. The effect of expanding higher education on labor productivity and on the stock of human capital was considered in the works of foreign and Russian researchers (Yao, 2019; Gimpelson, Kapeliushnikov, & Roshchina, 2017).

The optimal structure of human capital is such a combination of general, professional and special education that maximizes the return on human capital, increases the total value of the company, and provides an opportunity for further innovative development.

In the context of measurable human resource management, a model (formula) of the value of human capital is applied, taking into account the components of which it is composed. The model (formula) of the value of human capital of our company in 2017:

HC = 80.5GE + 15.8VE + 3.7 (1) APE

Optimization of human capital based on a cost model is a complex process; a lot of work will be required to identify existing or strategic labor functions in the innovative economy and human capital to perform functions. The necessary human capital means that the labor function cannot be performed with a smaller amount of human capital, excess and deficit volumes are identified, measures are being taken to find the necessary capital and measures to eliminate the over expenditure of resources, an action budget is being drawn up.

6.4. Integration of information on human capital in the structure of financial statements. Building an analytical balance

In the course of the history of economic development, assets, liabilities and capital were filled with completely different contents. More recently, the statement was considered correct that the assets of the company are assets of the balance; today, researchers believe that it is necessary to represent the company's resources in assets of the balance. The proposed analytical balance sheet (Table 02) presents economic resources owned and under administrative control.

Table 02. Analytical balance sheet of the company, 2017

Assets			**Liabilities**		
Indicator	**Value of the indicator**		**Indicator**	**Value of the indicator**	
	thousand roubles	**%**		**thousand roubles**	**%**
Assets under administrative control			Human capital		
1. Staff of the organization	149845	36,48	1. Human capital	149845	36,48
Immobilized assets			Sources of equity		
2. Non-current assets	48900	11,90	2.Home equity	117024	28,49
Current assets			Liabilities		
3. Current assets	212030	51,62	3. Long-term liabilities	13770	3,35
			4. Short-term liabilities	130136	31,68
Balance currency	410775	100	Balance currency	410775	100

https://doi.org/10.15405/epsbs.2020.03.31
Corresponding Author: T. N. Obuschenko
Selection and peer-review under responsibility of the Organizing Committee of the conference
eISSN: 2357-1330

The general idea of analytical balance is quite simple. There is labor as the main productive force of society, legally independent, but interconnected in production and labor relations workers. We need a balance that allows getting an idea as a whole about economic resources necessary to fulfill the tasks taken by the company. A balance structure is proposed in which all production resources are reflected in assets, and all capital capable of bringing benefits is represented in liabilities. The balance is analytically orientated.

6.5. Balance analysis

As empirical studies showed, the total amount of available resources in 2017 was 410775 thousand rubles. Asset structure: current assets - 51.62%, human capital - 36.48%, non-current assets - 11.90%. The amount of human capital reflected in the balance in relation to the current market value is significantly underestimated. Firstly, not all forms of human capital are taken into account by our methodology. Secondly, they are not reflected in the assessment in which they exist at the balance sheet date. Even the results of the underestimated value of assets should be perceived as a direct result of certain ratios of means of production in the company.

Liabilities structure: human capital - 36.48%, liabilities - 35.03%, equity - 28.49%.

Human resources and their interlinks are critical to the performance of any company, nation, economy, or global economy (Deepali, 2014).

The organic structure of capital shows the ratio of constant capital to variable capital. Economists took the annual wage fund of workers as an estimate of variable capital. The authors use the indicator of the cost of human capital. Permanent capital in the form of means of production is 122589 rubles (fixed assets and stocks), variable capital - 149845 thousand rubles.

Organic capital structure of a company specializing in design and installation of water treatment systems in 2017: 122589 ÷ 149845 or 0.81.

1 ruble of permanent capital accounts for 1.22 rubles of human capital. It is necessary to rethink the theory of the organic structure of capital, created in the era of industrialization. In the post-industrial period in the structure of capital there are trends that cause a decrease in the share of expenses for the fixed part due to the development of innovative technologies and increase in the share of highly skilled labor. There are calculations of human capital of companies (Ignashkina & Kovalenko, 2015; Klees, 2016). The formation of the information base will help to reasonably establish standards for the values of the structure and value of human capital from the point of view of modern and promising technologies. We had the reporting and accounting information of the company and did not have planned and regulatory economic information, the lack of data for several periods limited the dynamic assessment of the cost of capital.

7. Conclusion

From our perspective, the determining factor in the value of workers is the knowledge factor, which is not measurable and is estimated through the cost of education. Human capital is a new topic in the field of human resources. They are a strategic resource of the company, play an important role in the development of personnel, affect the economic growth of the company (Pasban & Nojedeh, 2016).

Testing of the methodological approach has shown its practical applicability for assessing human capital of the industrial enterprise. The proposed algorithm can serve as the basis for a more detailed assessment, taking into account other factors, if they are material, reliable and computable. The introduction of indicators of human capital in the accounting system will expand the boundaries of the balance sheet; will make reporting more necessary for investors to form a conclusion about the resource orientation of the company; will carry out an express analysis of human capital and assess the potential of the team.

The model (formula) of the value of human capital is used in the conclusion on the correspondence of the value of human capital to the labor functions of workers. Using the model, one can determine the surplus of human capital and the deficit of human capital, can develop a field for managing human capital: attraction, increase in value, modernization, liquidation, structural adjustment, etc. An assessment of human resources helps to alleviate the shortcomings of corporate reports and apply cost-based approaches where quantitative indicators do not work.

References

Bandaranaike, S. (2018). From research skill development to work skill development. *Journal of University Teaching & Learning Practice, 15*(4), 7. Retrieved from: https://ro.uow.edu.au/jutlp/vol15/iss4/7/ Accessed: 18.09.2019.

Belyaeva, L. A. (2014). Intangible capital: To the methodology of research. *Sociological Studies, 10*, 36-44. [in Rus.].

Bondarenko, N. (2015). The role of companies in human capital accumulation: Cross-country analysis. *Forsyth, 9*(2) 22-37. [in Rus.].

Deepali, S. (2014). Bridging human capital and social capital theories. In M. Russ (Ed.), *Value Creation, Reporting, and Signaling for Human Capital and Human Assets* (pp. 113-140). New York: Palgrave Macmillan.

Gagarinskaia, G. P., Obuschenko, T. N., Gagarinskii, A. V., & Potokina, E. S. (2019). Digital transformation of the educational program for state and municipal staff training. In V. Mantulenko (Ed.), *Proceedings of International Scientific Conference "Global Challenges and Prospects of the Modern Economic Development", Samara, 2018. European Proceedings of Social and Behavioural Sciences, LVII* (pp. 1846-1858). London: Future Academy. https://doi.org/10.15405/epsbs.2019.03.188

Gimpelson, V. E., Kapeliushnikov, R. I., & Roshchina, S. Y. (Eds.) (2017). *The Russian labor market: Trends, institutions, structural changes*. Moscow: CSR, HSE. Retrieved from: https://csr.ru/wp-content/uploads/2017/03/Doklad_trud.pdf Accessed: 18.09. 2019.

Ignashkina, I. V., & Kovalenko, E. V. (2015). Assessment of human capital of the enterprise employee. *Concept, 13*, 3171-3175. [in Rus.].

Klees, S. J. (2016). Human capital and rates of return: Brilliant ideas or ideological dead ends? *Comparative Education Review, 60*(4), 644-672.

Kuzminov, Y., Sorokin, P., & Frumin, I. (2019). General and special skills as components of human capital: New challenges for the theory and practice of education. *Foresight, 13*(2), 19-41. [in Rus.].

Obushenko, T. N. (2016). Accounting human capital. *Internet journal "Science", 8*(3). Retrieved from: http://naukovedenie.ru/PDF/93EVN316.pdf Accessed: 18.09.2019. [in Rus.].

Pasban, M., & Nojedeh, S. H. (2016). A review of the role of human capital in the organization. *Procedia - Social and Behavioral Sciences, 230*, 249-253.

Reimers, F. M., & Chung, C. K. (Eds.) (2019). *Teaching and learning for the twenty-first century: Educational goals, policies, and curricula from six nations*. Cambridge, MA: Harvard Education Press.

Tan, E. (2014). Human capital theory: A holistic criticism. *Review of Educational Research, 84*(3), 411-445.

Valente, A. C., Salavisa, I., & Lagoa, S. (2016). Work-based cognitive skills and economic performance in Europe. *European Journal of Innovation Management, 19*(3), 383-405.

Yao, Y. (2019). Does higher education expansion enhance productivity? *Journal of Macroeconomics, 59*, 169-194.