

Perfection of Evaluation System of the Effective Use of Human Capital in Terms of "New" Economy

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Abstract. With the transition to a post-industrial type of development, new requirements for the main productive power of society have emerged, caused by the dynamics and content of scientific and technological progress and the peculiarities of the new technological way of life. Evaluation of the professional skills of the employee has become particularly important due to the awareness of the key role that a person plays in solving the problem of improving the efficiency of public production. Economics has always relied on the human factor, which most of scientists have repeatedly emphasized throughout the development of economic thought since the days of the classical economic school. The priority of the social and economic development of modern society in post-industrial economy makes human capital an essential point of actual economic relations. However, the problems of assessing human capital remain the least studied part of the whole range of issues relating to its functioning. The lack of universal assessment methods, the complexity of the environment of human capital, caused by the requirements of the "new" economy - all this makes important any detail of existing approaches.

1. Introduction

With the increasing international competition, the emphasis on achieving competitive advantage has shifted towards improving the quality of knowledge and human capital. In this regard, the necessary efforts on the part of the State and society should be made to stimulate the development of science, technology and innovation. Competitiveness should first imply the innovation of the economy at all levels. The innovative nature of the economy can only be achieved through improving the quality and competitiveness of human capital. That is why there is a strong need to develop new theoretical approaches to understanding the essence of human capital in the context of the "new" economy, methodological tools for assessing human capital, which contribute to its effective use. This includes defining the structure of human capital on the basis of existing approaches, justifying methodological grounds for assessing human capital, highlighting the factors influencing the choice of approaches to the assessment of human capital and the development of a system for evaluating the dynamics of the use of national human capital. But in the conditions of the "new" economy, the attention paid on the person was connected with the fact that it was possible to consider his potential as a source of capitalization. The ability to develop determines the intellectual potential of a person, as well as knowledge should be associated with the latest advances in modern science, especially relevant in the context of accelerating pace of «aging knowledge» and technological progress. The study of the place and role of human capital in the "new" economy, the methodology of its assessment and the factors that influence

its effectiveness are important and relevant research issues. This can be explained not only by the interdisciplinary scientific interest in the concept of "human capital" but also by the activities of all levels of government institutions concerning developing strategies and tactics.

2. Modification of the essence of human capital in the evolution of technological practices and refinement of the category of "human capital" in the context of the "new economy"

The "new" economy represents the final stage of the fifth technological order and the first stage of the new "post-industrial" system that has begun. Depending on the used criteria and the dominant parameters, it is characterized by researchers in different ways (table.1).

Table1. Interpretations of the meaning of the term "new" economy.

The "new" economy	
Options	Content
Manufacturing goods and services	- Manufacturing goods and services through the Internet and its derivatives; - Manufacturing goods and services using information technology, as well as for the development of industries that use these technologies. [3]
Industry structure	The predominance of industries with a high share of intangible, human capital (information and communication technologies, education, science and intellectual services).[13,p.12]
The direction of the economy	An economy in which knowledge is created, absorbed, transferred and used more effectively by enterprises, organizations, individuals and communities, contributing to faster economic and social development (by classification of OECD and World Bank).[8]
Economic infrastructure	Economic infrastructure characterized by the predominance of intangible assets (services and technologies) and the decline in the role of tangible assets.[11]
Stage of development of society	Final stage of the fifth technological order, the first stage of the new "post-industrial" system [6, p.83]
Role in the cyclical development of the economy	A long-term economic cycle that opens the ultra-long-term cycle of post-industrialism.[6, p.84]
Objects of socialization	Socialization of the latest scientific and technological developments, especially in the field of information technology.[3]
Social and economic consequences	The enormous benefits - rapid growth in productivity, incomes, low unemployment and moderate inflation resulting from the synergies of technology advantages, business practices and economic policies.[12, p.70]
The environment of human capital	Organizing activities and social environments and conditions that contribute to the fullest use of knowledge and intellectual potential.[9]

Regardless of the diversity of interpretations, the main sign of the "new" economy is the inclusion of human capital in the combination of factors of production and its further development, which fundamentally distinguishes the new type of economy from all previous ones.

In this regard, the following definition of the term "new economy" is proposed: "new economy" is the order of socio-economic relations in the information society, characterized by the leading role of human capital as the main economic resource that ensures economic development through the preferential use of quality components of human capital, such as knowledge, mental and intellectual abilities and social activity.

With the development of technological systems, the role of man as a carrier of the labour force, and, consequently, the requirements for his abilities, knowledge and skills, changed. The study showed that human capital in the "new" economy has become the main resource and factor of economic growth, and at all levels of aggregation (theta-, mega-, macro-, meso-, micro-, mini-, nano-levels). The basic concept for studying the development and use of human resources in the "new" economy is the theory of human capital.[2]

The concept of human capital was formed in the process of natural development and generalization of concepts that in one way or another reflect the role of man in the economy. The characteristics of the essence of human capital are quite diverse, each of them clarifies, deepens or expands its classical interpretations, given by T. Schulz and G. Becker. In the enlarged form they can be presented in the form of seven, most significant aspects. In such a grouping, human capital is seen: first, as a labour force; second, as a stock; third, as a resource; fourth, as potential; fifth, as a source of income; sixth, as a special form of capital; seventh, as a form of economic relations.(Figure 1).

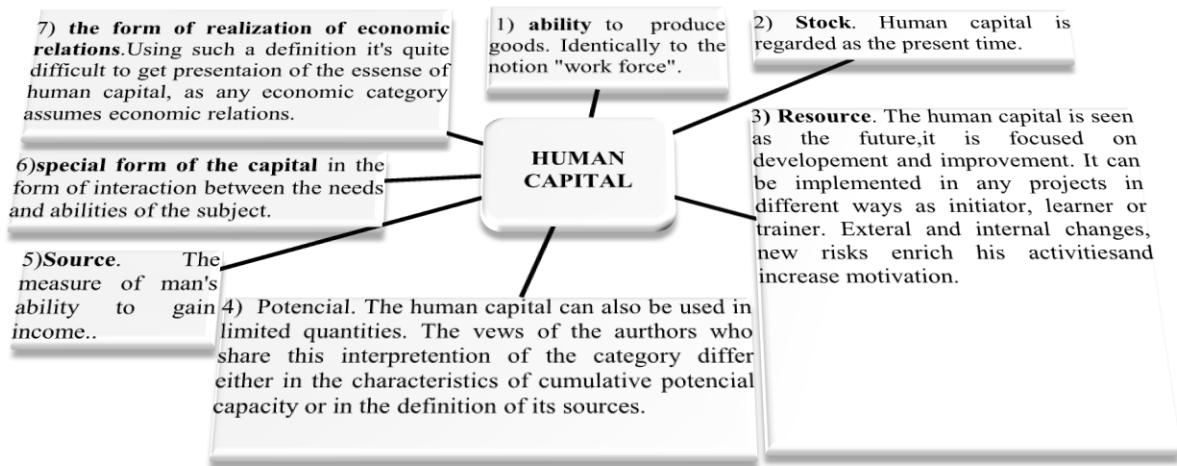


Figure 1. Key approaches to identifying the essence of the concept "human capital."

The most recent studies relate to the understanding of the essence of the concept of "human capital" in relation to the different levels at which a person functions in the economy, as well as the inclusion of its social component in human capital (more broad interpretation). It is advisable, in our view, to distinguish the categories of "human capital," "human resources" and "human potential," as well as "labour" and "labour potential. Human resources are a quantitative measure of the ability to perform any activity, human potential is a qualitative characteristic of human resources. Human capital in relation to human resources is their socially active part, engaged in economic activity and able to bring economic effect.

As for the ratio of human capital to labour and labour potential, these are the same relationships, but in a narrow interpretation, where human capital is structurally limited to the ability to work only. This set of definitions is already insufficient to study the role of man in the modern economy. Thus, the concept of "human capital" reflects a wider range of human capabilities than manpower, and differs from them by various increments, improvements accumulated by additional reserves, which corresponds to the "New" economy. In determining our own position on the essence of the category of "human capital" in the work, a synthetic approach was used, which allowed to formulate this concept

as follows: "human capital" is a set of natural and investment-based properties and qualities of a person, his ability to work, implemented in socially useful activities in the form of economic and social effects, providing income generation, wealth accumulation, growth and development at all levels of economic activity, serving as the main resource in the "new" economy. [7, p.320]

3. Classification of the structure of human capital on the basis of "accumulation of abilities and the degree of their implementation."

The content of human capital is directly related to the understanding of its constituent elements. Differences in the perceptions of the classification in question are also associated with the unidentical views of researchers on understanding the quantitative and qualitative characteristics of human capital. The examined views show that the types of human capital in their classification are presented in complementary combinations. But in general, species are such as:

- Health capital;
- Education capital;
- Work and entrepreneurial capital;
- Consumer capital;
- Social capital;
- Structural capital;
- Organizational capital;
- Intellectual capital.

If we follow the philosophical methodology of the dialectic of universal, general, special and separate, consideration of the structure of human capital should reflect all levels and directions of connections and interactions. [1] From these points, elements of human capital are differentiated by the following criteria:

- The level of human existence and civilization;
- the scale of involvement and place in economic life;
- role in the economy and society as a whole;
- conditions and factors of reproduction and development of human capital in general and its

types.

Based on the known characteristics of the components of human capital, as well as taking into account certain assumptions and expansive interpretations, it is possible to get an expanded idea of its structure (Figure 2):

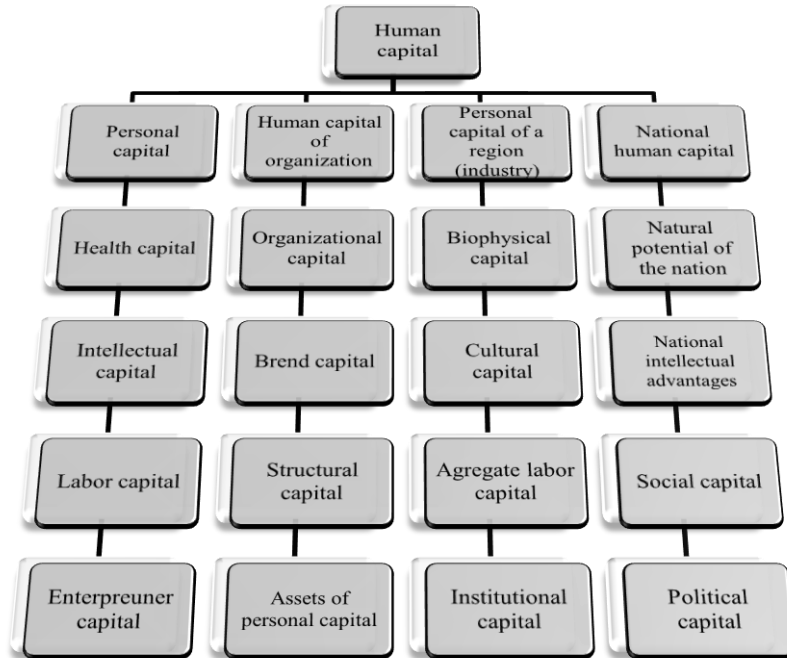


Figure 2. The structure of human capital.

However, such a structure is not complete. In the context of the "new" economy, the possibilities of human capital development are of particular importance, so its structure should be supplemented, highlighting the sign "accumulation of abilities and the degree of their implementation". We believe that this will provide an opportunity to focus on those components of human capital, which at various stages of its life cycle can become objects of investment and sources of efficiency of use. In our opinion, the following types of human capital may correspond to this trait:

- the original human capital,
- supplemented human capital,
- potential human capital,
- realized human capital.

The structure of human capital on the basis of "accumulation of abilities and the degree of their implementation" is presented in the table 2.

Table 2.The structure of human capital on the basis of "accumulation of abilities and the degree of their implementation."

Original	Human capital		
	Supplemented	Potential	Realized
	Content		
The combination of mental and physiological abilities of a person, the original human capital, obtained as a result of heredity and family edu-	The totality of a person's mental and physiological abilities, formed by investing in the components of a per-	The totality of a person's mental and physiological abilities, obtained in a hereditary, theoretical and practical way, formed through multi-level in-	The totality of a person's mental and physiological abilities, obtained in hereditary way and formed by invest-

cation. Education, health, appearance, ability to learn, talents, predisposition, genetics, cultural, moral and material potential of parents, geography and living conditions, up to the country, etc.

sonal human capital: Capital of health and healthy lifestyle; Education capital; The capital of culture; The capital of science; capital migration.

vestments, taking into account the perspectives and alternatives to its application.

ment in the components of the personal human capital, which is realized in the process of production activities.

Laid in advance, impossible to change

In this part, a person can adjust, improve or worsen the basic component (treatment, education, change of status, residence etc.

Variability

In this part, a person will be able to implement a plan of self-modernization, acquire new abilities, adjust the accumulated human capital, taking into account the alternative ways of its use.

In this part, a person will be able to put into practice and implement the full range of diverse abilities and talents accumulated in previous components and evaluate incomes from his own human capital.

This is the basic part of the human capital before investments to its formation

This is the acquired part of the human capital, obtained through training, development, acquisition of new knowledge, abilities and skills, which is formed through investment.

Theneedtoinvest

This is a potential part of the human capital, requiring constant investment, depending on the influence of endogenous and exogenous factors. As in the conditions of innovative production, a person requires a high speed of information processing, endurance, speed of reaction, speed of decision-making, due to the ever-changing alternatives to the effective use of human capital.

This is a practical part of the human capital, obtained as a result of practical experience, which requires investment not only in the components of personal capital, but also in the components of the organization's capital: training at work; possession of economically relevant information; motivation for economic activity

This characteristic of the structure of human capital allows to have a new look at the methodology of its evaluation, to identify factors that influence its choice and directions of its improvement.

4. The relationship between factors influencing the choice of human capital assessment methodology.

The study identified six main theoretical approaches to assessing human capital (table 3).

Table 3. Approaches to the methodology of human capital valuation.

Approach	Content
Expensive (by expenses)	<ul style="list-style-type: none"> - on the cost of forming, using, training and developing the recovery of the workforce; - on the value of the workforce for the organization (calculating the value of future profits that a firm using the human capital can count on); - total cost assessment (methods: calculation of direct staff costs, assessment of initial and recovery costs, assessment of competitive value of human capital, assessment of prospective value of human capital).
Effective (by income)	<ul style="list-style-type: none"> - calculating the capitalization of the return; - the present cost of future employees' incomes; - evaluation by results (methods: assessing the individual value of an employee, estimating the value of human capital based on tests in the business environment, determining investments in human capital); - analyses of natural indicators (skills, competencies, literacy).
Factor Combined	<p>The approach which takes into account a number of economic factors:</p> <ul style="list-style-type: none"> - income factor (reflects the final result of human capital management, related to productivity); - expenditure factor (organization's human capital expenditure); - added value of human capital (calculated by subtracting all costs, excluding labour costs from income and adjusted income from total staff); - profits from human capital investments
Comparative	<p>The cost of human capital is determined by the price at which you can hire such an employee in the market. The approach involves an indirect estimate of the value of human capital based on comparing the company's performance with that of competitors, and the human capital of the company is equal to the amount of "cost" of all its employees.</p>
Systematic	<p>An approach that takes into account:</p> <ul style="list-style-type: none"> - Economic level (macro, micro); - The interpretation of human capital; - Assessment type (quantitative and qualitative); - the goal of assessing human capital.
Situational	<p>It may be applied to different branches of economic activity, depending on the state of the external and internal environment in which the carrier and user of human capital operate.</p>

As a part of a cost-effective approach, the assessment is considered in terms of the cost of human capital, determined by the summation of the various costs associated with its formation, use and reproduction.

The resource approach is aimed at identifying the potential of human capital, so it is dominated by a qualitative assessment of its parameters. In a comparative approach, the assessment takes into account the positions of competitors, factor combined approach assumes the action of a group of factors that affect the functioning of human capital. Combined approach is used to assess human capital in a broad interpretation that includes social capital. The study concluded that it was appropriate to introduce a situational approach in the classification, in which the choice of the methodology for assessing human capital depends not only on the purpose of the assessment, but also on the environment that influences the functioning of the object being evaluated. The need to highlight factors is due to the different needs of carriers and users of human capital. This statement forms the basis for selecting these factors from all their diversity (table4).

Table 4. Relationship of factors influencing the choice of methodology of human capital estimation.

Approaches to assessment	The priority goal of using human capital	The estimated element of the structure of the human capital from the point of view of "Accumulation of abilities and the degree of their implementation"	Employee requirements	Dominant human needs
Expensive	Productivity growth	Initial	Physical endurance	Physiological
Resource	Revenue growth	Complemented	Qualification	Security
Factor, comparative	Growth in economic effectiveness	Potential	+ Vocational education	Social
Combined, systemic	Growth in socio-economic efficiency	Implemented	+ Communication, learning ability, creativity, development	Recognition, self-fulfillment
Situational	According to the situation, depending on the stage of the economic cycle	By situation	By situation	By situation

5. A methodology of the assessing the involvement of human capital in the national economy

A macro level has been chosen to assess the effectiveness of human capital. Micro-level methods consider the characteristics of the human capital of certain organizations, so they are specific and relevant for internal management. In addition, when assessed at the firm level, human capital is seen as a resource to increase the income of a particular company, which is not a priority in the "new" economy. While developing a methodology for assessing the effectiveness of the use of national human capital, the following provisions were prioritised in the terms of "new" economy:

1. Do not overcomplicate the task, so we did not use integral indicators, multi-stage functions and economic and mathematical modelling.
2. Measuring only what can be measured and what is of strategic importance, so only we did not use the qualitative parameters of the assessment of human capital indirectly.
3. Measuring only what is calculated in the same units of measurement, so the indicators measured in thousands of people were used.
4. Focus only on the part of national human resources that creates or is able to create intellectual wealth, which is most relevant in the "new" economy.

On the basis of the differentiation of the categorical apparatus reflecting the activity of the human capital carriers and the above provisions, the economic components used for the national capital assessment system were identified through authors' understanding. (table5)

Table 5. Components used in the evaluation system of national human capital in the "new" economy.

Human resources,			
The total population of a country that, in terms of the efficiency of the use of human capital which consists of two parts:			
Active part		Passive part	
includes an economically active population that already sells or wants (ready) to realize personal human capital, in other words active national human capital which includes two components:		includes an economically inactive population whose personal human capital is either impossible to use or ineffective, in other words it is inactive national human capital. There are two reasons for passivity:	
Human potential	Labor resources		
includes an active part of the population that is ready and willing realize personal human capital, so this component is unemployment	includes an active part of the population, which already sells personal human capital, so this component employment		
the conditions of the "new" economy require the delineation of the active part of human capital on the potential effectiveness of the use of intellectual capital; according our study, the availability of higher education provides the necessary advantages for its effective use, reproduction and development in the modern knowledge economy, so both components of active human capital are delineated by the following components:			
Working Potential	Intellectual Potential	Labor Potential	Workforce
includes an active part of the population that is ready and willing realize personal human capital, but has no higher education, this component is made up of unemployed without higher education	includes an active part of the population, which is ready and willing to realize personal human capital, and has a higher education, this component is made up of unemployed with higher education	includes an active part of the population, which already realizes personal human capital and has higher education, this component is represented by employees with higher education	includes an active part of the population, which already sells personal human capital, but has no higher education, this component is represented by employees without higher education
			1) The individual wants to realize personal human capital, but so far (or already) can not 2) An individual can, realize personal human capital, but so far (or already) does not want to do it.

We believe that the basis of effective national human capital, which can be used by the government in the conditions of the "new" economy, includes two components: intellectual potential and labour potential. The study of different methods for assessing human capital has revealed the following problems associated with their application:

- they are borrowed from western model of management and can be poorly adapted to the domestic economy,
- none of these techniques is flawless,
- all the techniques give only an approximate result, so they need to be improved,

- their use is limited to the microlevel.

Without claiming full coverage of all the indicators by which it is possible to characterize, analyze and evaluate such a complex and multifaceted phenomenon as human capital, we offer the simplest and most visible method of assessing human capital on the macro-level. It can serve as a basis for analytical and comparative work, and its application can help to develop the most effective mechanisms for improving efficiency, both in individual components and in national human capital in general, in a "new" economy. Some components can be refined and detailed depending on the purpose and objectives of the study, and another structural division of national human capital is also possible. Based on the developed method of assessment, using the official data of statistics in Russian Federation, we made the necessary calculations to determine the dynamics of the efficiency of the use of national human capital, expressed in the degree of its involvement in the economy (table 6).

Table 6. Dynamics of the use of Russia's national human capital in terms of its essential categories in the context of the transition to a "new" economy.

Year	2015		2016		2017		Δ2017-2015	
	Thd people	%	Thd people	%	Thd people	%	Thd people	%
Compo- nents								
Humanreso urces, including:	146267,3	100	146544,7	100	146804,4	100	537,1	
Inactivehu mancapital	70065,28	47,9	70342,7	48	71165,67	48,48	1100,39	0,58
Activehum ancapital, including:	76202,01	52,1	76202,01	52	75638,7	51,52	-563,31	-0,58
Humanpot ential, including:	4264	2,92	4243	2,9	3967	2,7	-297	-0,22
Work potential	3425	2,34	3375	2,30	3148	2,14	-277	-0,20
Intellectual potential	839	0,57	868	0,59	819	0,56	-20	-0,02
Labour resources, including:	72324	49,45	72393	49,4	72142	49,14	-182	-0,31
Workforce	48477	33,14	48177	32,88	47444	32,32	-1033	-0,82
Labourpote ntial	23847	16,3	24216	16,52	24698	16,82	851	0,52
Human capital cor- responding to require- ments of the "new" economy	24686	16,87	25084	17	25517	17	831	0,50

The results suggest that the active part of the national human capital is has a depressive character. During the study period there was a slight decrease (- 0.58%) and then a similar increase (0.58%) in the national economy of its passive part. This trend contradicts the strategic course of the country to

join the information society on a par with the developed economies, having innovative breakthrough in the "new" economy. [4,5]

A more detailed study of the qualitative characteristics of national human capital indicates a serious lag behind other countries in terms of the most significant criteria for its assessment. This situation requires considerable efforts by the Government, both to increase investment in human capital and to improve the mechanism of human capital management. Observing the dynamics of the use of human capital with the help of the proposed method, it can be judged not only on the extent of its use, but also on the effectiveness of state regulation of the economy.

6. Results

The study allows us to draw the following conclusions:

- the concept of human capital is mostly in line with the "new" economy;
- the parameters of the "new" economy make possible to define the role of human capital as basic;
- the diverse approaches available to determine the essence and structure of human capital do not cover the fullness and depth of this unique phenomenon, which needs further study;
- the methodology for assessing the use of human capital includes several approaches that are based on the authors' understanding of the nature of the categories that characterize human capital, its structure and level of functioning;
- the choice of assessment methodology depends on the goals and needs of the owner and user of human capital, as well as on the actions of an interconnected group of factors of the internal and external environment;
- the system of assessing human capital needs to be periodically adjusted, refined and supplemented, in particular, in response to the challenges of the "new" economy;
- results of the evaluation reflect not only the effectiveness of human capital, but also the effectiveness of its management.

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