

Czerewacz-Filipowicz K.¹, Kogut O.Yu.²

¹PhD, DSc, Bialystok University of Technology,
Poland, Bialystok, e-mail: czerewacz.k@gmail.com

²doctoral student, senior teacher, Al-Farabi Kazakh National University,
Kazakhstan, Almaty, e-mail: kogut.1108@gmail.com

**COMPREHENSIVE METHODOLOGY
FOR ASSESSING HUMAN CAPITAL AND PROBLEMS
OF ITS ASSESSMENT**

The article discusses ways to assess human capital. In recent decades, the urgency of the problems associated with the assessment of human capital and its components has not only faded away, but also increased as the number of companies grew. The interest of economics in human creative abilities, in the ways of their formation and development has sharply increased. Issues of human capital valuation are of interest due to the complexity and versatility of this category, as well as its importance for the effective functioning of the economy. Given the intangible nature of human capital, manifested in the form of knowledge, skills, work and management skills, as well as its continuous accumulation and communication with specific employees, it should be noted that a specific set of criteria is less important than the process of measuring and using the information collected. The systems for evaluating human capital based on certain quantitative criteria are based on value and natural approaches to its definition. Methodological approaches to the economic definition of human capital, based on different models, develop ideas that provide new, more realistic options for evaluating human capital. The formation and development of human capital takes place with the direct participation of the family, the state, enterprises and various public funds. At present, when an employee of an organization must be constantly active in improving his abilities, it is necessary to take into account the fact that learning takes place throughout his life.

Key words: human capital, human capital assessment, methods of human capital assessment, accounting for human capital, employee's personal capital.

Черевач-Филипович К.¹, Когут О.Ю.²

¹ PhD докторы, профессор, Белосток технологиялық университеті,
Польша, Белосток қ., e-mail: czerewacz.k@gmail.com

² докторант, аға оқытушы, әл-Фараби атындағы Қазақ ұлттық университеті,
Қазақстан, Алматы қ., e-mail: kogut.1108@gmail.com

**Адами капиталды бағалаудың
кешенді әдістемесі және оны бағалау мәселелері**

Мақалада адами капиталды бағалау әдістері қарастырылған. Соңғы он жылдықта адами капиталды және оның құрамдас бөліктерін бағалау мәселелері компаниялар санының өсуіне байланысты өзектілігі артып отыр. Экономикалық ғылымның адамның шығармашылық қабілеттеріне, оның пайда болуы мен даму жолдарына деген қызығушылығы жедел артуда. Адами капиталды бағалау мәселелері бұл категорияның күрделілігімен көп қырлылығына байланысты, сонымен қатар экономиканың қызметінің тиімділігін қамтамасыз ету үшін қызықты. Адами капиталдың материалдық еместігін, білімін, қабілетін, жұмыс және басқарушылық қасиеттерін және де оның үздіксіз қалыптасуы мен нақты жұмысшылармен байланысын ескере отырып, жиналған ақпаратты өлшеумен пайдалану үрдісінің нақты критерийлер жиынтығына қарағанда құнды екендігін атап өту қажет. Белгілі бір сандық критерийлер бойынша адами капиталды бағалау жүйесі оны анықтаудағы құндық және натуралдық тәсілдерге негізделеді. Адами

капиталды экономикалық анықтаудағы әр түрлі модельдерге негізделген әдістемелік тәсілдер адами капиталды бағалаудағы жаңа шынайы нұсқаларды дамытатын идеяларды жетілдіруге мүмкіндіктер береді. Адами капиталды қалыптастыру мен дамыту жанұяның, мемлекеттің, кәсіпорынның және әр түрлі қоғамдық қорлардың тікелей қатысуымен жүзеге асырылады. Қазіргі кезде, ұйым қызметкері өз қабілеттерін дамытуда әрдайым белсенділік танытуы тиіс және ол оны өмір бойы жетілдіретіндігін ескеру керек.

Түйін сөздер: адами капитал, адами капиталды бағалау, адами капиталды бағалау әдістері, адами капитал есебі, жұмысшының жеке капиталы.

Черевач-Филипович К.¹, Когут О.Ю.²

¹доктор PhD, ассоциированный профессор, Белостокский Технологический Университет, Польша, г. Белосток, e-mail: czerewacz.k@gmail.com

²докторант, старший преподаватель, Казахский национальный университет имени аль-Фараби, Казахстан, г. Алматы, e-mail: kogut.1108@gmail.com

Комплексная методология оценки человеческого капитала и проблемы его оценки

В статье рассматриваются способы оценки человеческого капитала. В последние десятилетия актуальность проблем, связанных с оценкой человеческого капитала и его составляющих, не только не угасла, но и возросла по мере роста количества компаний. Резко возрос интерес экономической науки к человеческим созидательным способностям, к путям их становления и развития. Вопросы оценки человеческого капитала вызывают интерес ввиду сложности и многогранности данной категории, а также её значения для обеспечения эффективности функционирования экономики. Учитывая нематериальную сущность человеческого капитала, проявляющегося в форме знаний, способностей, рабочих и управленческих навыков, а также его непрерывное накопление и связь с конкретными работниками, следует отметить, что конкретный набор критериев менее важен, чем процесс измерения и использование собранной информации. Системы оценки человеческого капитала по определенным количественным критериям основываются на стоимостных и натуральных подходах к его определению. Методологические подходы к экономическому определению человеческого капитала, основанные на различных моделях, развивают идеи, дающие новые, более приближенные к реальности варианты оценки человеческого капитала. Формирование и развитие человеческого капитала происходит с непосредственным участием семьи, государства, предприятий и различных общественных фондов. В настоящее время, когда работник организации должен постоянно проявлять активность в совершенствовании своих способностей, необходимо учитывать тот факт, что обучение происходит в течение всей жизни.

Ключевые слова: человеческий капитал, оценка человеческого капитала, способы оценки человеческого капитала, учет человеческого капитала, личный капитал работника.

Introduction

In modern conditions, it seems promising to implement targeted approaches to assessing human capital in enterprises.

Traditional accounting science and practice do not consider human capital as an object of accounting, so this generally accepted economic category is not subject to registration in the accounting system of accounts and disclosure in the financial statements. It is also noted by American economists L. Edvinsson and M. Malone that the basis of the so-called knowledge economy is huge investments in human capital and information technologies, but they do not find a positive reflection within the framework of traditional accounting (Edvinsson, Malone, 1997: 45).

In the era of globalization, among the socio-economic changes emphasized the strategic importance of human capital in the organization. The evo-

lution of human resources and their transformation into human capital are a natural consequence of the fact that human capital becomes the main creator of values, as well as the factor determining the competitive position of a company (Yukhnovich, 2007: 13-14).

In recent years, the issue of intra-organizational career development of employees is being updated as an alternative to using traditional strategies aimed, for the most part, mostly on recruitment and selection. In modern conditions, traditional strategies only increase the costs of enterprises, without bringing significant results due to objective factors of personnel turnover.

Companies are gradually moving to using an approach to employees based on the differentiation of employees and the diversification of their organizational development for the purpose of personnel promotion in the company of the most valuable employees. In this regard, an objective need arises

for the formation of a comprehensive system for assessing human capital and its concrete implementation.

Methods for evaluating human capital are based on qualitative and quantitative criteria. Currently, in many enterprises, there is a problem in the actual absence of a model for evaluating human capital, despite the presence of a number of internal documents affecting certain intra-organizational aspects of such an assessment.

A. Pochtovski identifies three main areas of human capital management:

- area of human capital creation,
- area of human capital use,
- the area of transformation of human capital into structural capital.

The creation of human capital takes place within the framework of the personal function of the enterprise, which includes the following steps: planning human capital, attracting personnel, evaluating, developing and remunerating personnel, communicating or creating interpersonal relations (Pochtovski, 2007: 41).

In recent decades, the urgency of the problems associated with the assessment of human capital and its components has not only faded away, but also increased as the number of companies grew. Human capital, as an integral part of the intellectual capital of an organization and investment in it, has become one of the main factors for increasing the competitiveness of an enterprise. Investments related to the modernization of the fleet of equipment, upgrading the technologies necessary for the release of new, more modern models of competitive products are inextricably linked with investments and into the human capital of the organization.

Among the methods for evaluating the human capital of an organization, the following methods are widely used in the economic literature:

- methods of qualitative assessment (performance assessment);
- methods for assessing human capital based on the calculation of the cost of human capital;
- method for determining (or analyzing) initial and restoration costs for personnel;
- method of measuring the individual cost of the employee;
- assessment of the income generated by human capital (individual);
- quantitative assessment of human acquired knowledge, skills, abilities;
- by the way of investing in human capital – health capital, education capital, culture capital;

– integrated assessment of human capital, including both in-kind and value indicators of human capital, etc. (Linev, 2015: 53-56)

The interest of economics in human creative abilities, in the ways of their formation and development has sharply increased. Most companies are beginning to attach great importance to the accumulation of human capital, as the most valuable of all types of capital. One of the ways to accumulate human capital is to invest in a person, in his health and education. Today, the study of the problems of increasing the efficiency of using the productive forces of people, who are being realized in modern conditions in the form of human capital, is not just relevant, but is put on the list of priorities in the structure of social and economic research (Dolintsa, 2010: 370-373).

Materials and Methods

Model valuation of human capital. Issues of human capital valuation are of interest due to the complexity and versatility of this category, as well as the importance of this category to ensure the efficiency of the economy.

The basic aspects of human capital valuation are due to its key role in the economic development of modern enterprises, and the ability of human capital to influence the value of the company, as a special intangible asset. In this regard, the system for assessing human capital should assume the presence of an effective approach to certain criteria, on the basis of which information is collected and analyzed, reflecting the value of the human capital of an enterprise. At the same time, it can be fairly assumed that the realization of the strategic potential of an enterprise is impossible without the development of key professional skills and knowledge of personnel.

Given the intangible nature of human capital, manifested in the form of knowledge, skills, work and management skills, as well as its continuous accumulation and communication with specific employees, it should be noted that a specific set of criteria is less important than the process of measuring and using the information collected.

An important theoretical approach to the valuation of human capital is the approach M.M. Kritskiy in accordance with which human capital is not only sold and bought, but also depreciated, advanced and reimbursed like fixed assets. Human capital is a long-term economic resource. It carries out a specific economic turn, passing the corresponding stages of its reproduction, and manifests itself in various functional forms. When

calculating total human capital by M.M. Kritskiy basic data such as population structure by age, the size of the total consumption fund, the employment structure, including the number of people employed in the production of consumer services, the number of people employed in material production and the number of people unemployed in production, as well as the average life expectancy are used.

To obtain a valuation of human capital, the assessment is carried out in two directions independently of each other:

1) the quantitative assessment of the human capital of the company, allowing to calculate the goodwill of human capital as an individual employee, and the entire staff of the company;

2) a qualitative assessment of the human capital of the company (assessment of the effectiveness of the activities of employees), using criteria that take into account the quality and volume of work performed, competence and independence, etc.

The personnel of the company are considered as the object of human capital assessment.

Qualitative criteria reflect management models and methods for evaluating human capital. Such management models, on the basis of which systems for assessing human capital are developed, are, for example, the balanced scorecard, the EFQM quality model.

The systems for evaluating human capital based on certain quantitative criteria are based on value and natural approaches to its definition. The main quantitative approach is the «educational model, which uses temporary estimates of human capital, reflected in man-years of study». According to this model, the more time spent on the education of a person, the more human capital it possesses. Such an approach is based on the premise that the time spent on education directly determines the level of education of a person, therefore, it can be used to assess the professional knowledge and skills of a person. At the same time, this approach allows one to take into account both the unequal duration of the school year or period, and the different value of one year of study depending on the level of education. In accordance with this, it is possible to fairly objectively evaluate human capital, taking into account secondary education at school, higher education at university, vocational education in various courses and additional programs, taking into account their differentiation and the impact on the value of human capital. Different models using this approach can be applied both at the enterprise level and as an individual worker, and for integrative assessment, reduction and multiplication factors can

be used for different types of education (Ivanova, 2011: 112).

An alternative to the educational model is an analytical model for assessing human capital.

The analytical model for evaluating human capital allows for an approximate calculation of the value of the human capital of an enterprise based on an individual assessment of the personal capital of the workers.

The analytical model of human capital assessment operates on three criteria:

– human capital of an enterprise (Che) – total cost of personal potentials of all employees;

– employee's personal capital (Cep) – a set of qualities and capabilities of an individual employee;

– hierarchical potential (Hp) – the coefficient corresponding to the place of the individual employee in the structure of the enterprise, which depends, first of all, on the position held and, accordingly, on the salary due to the employee, but, most importantly, on the long-term expectations of returns from his contribution to the enterprise's activities.

The personal capital of an employee is determined by the product of wages in homogeneous positions and hierarchical potential:

$$Cep = Wage * Hp \quad (1)$$

At the same time, wages can be understood as both paid and planned wages of an employee. The hierarchical potential corresponds to the job duties and the average market assessment of the work of workers in such positions. An approximate calculation of the human capital of an enterprise can be made by adding together the personal capital of the employees of this enterprise, which, in fact, reflects the monetary value of the intangible asset as a whole.

$$Che = \sum Cep \quad (2)$$

The key feature of this approach is that the system of hierarchical potentials for employees holding certain positions is formed by each enterprise independently, depending on the value of work in a particular position. Criteria and guidelines may differ even in relatively homogeneous enterprises, if the value estimates of work in a particular position do not match. Consequently, the personal capital of an employee is an indicator-benchmark, allowing to evaluate the contribution of his work to the results of economic activity of the enterprise, and on the other hand its value for the enterprise.

An example of an assessment of the human capital of an enterprise according to an analytical model is given in Table 1.

According to this model, it is possible to determine the personal capital of an employee as a separate individual in the organizational and managerial aspect. The sum of the personal capital

of individuals represents the human capital of the enterprise, which can be used by the management of the organization as a guideline. At the same time, this approach makes it possible to estimate the integrated estimated costs per employee, including medical insurance, bonuses, direct wages, transportation costs paid and other types of expenses.

Table 1 – Analytical model for assessing the human capital of an enterprise

Position	Salary at the enterprise, tenge	Average salary in the region, tenge	Hierarchical potential in the enterprise	Cep, tenge
CEO	200000	140000	2	280000
Chief Accountant	180000	130000	1,9	247000
Commercial Director	170000	130000	1,9	247000
Executive Director	150000	110000	1,8	198000
Sales Manager	130000	90000	1,6	144000
Head of marketing department	100000	60000	1,4	84000
Total				1200000

Note compiled from source (Borisenko, 2014: 33-38)

The application of this approach in a particular company allows the management of the organization to rely on a certain desire of employees to intensify their work, to offer innovative ideas, while the employees themselves can receive adequate remuneration in accordance with the results of the company.

Applied aspects of human capital assessment are related to its quantitative expression for the development and adoption of certain management decisions based on the results obtained.

The widest range of applied tasks allows solving the systems for evaluating human capital based on quantitative criteria and various approaches of an analytical model for evaluating human capital, which is an alternative to an educational model.

Competencies determine the skills necessary to perform work effectively, while human capital addresses a global problem. That is, competences relate to the decomposition, disintegration and sale of human capital. Thus, human capital is considered as a whole, or rational, with the value and uniqueness of knowledge. Taking into account the relationship between competencies and human capital, the following question arises: what do we consider, what competencies determine human capital in a company? Is it enough to say that it is valuable or unique? Or: is it possible to determine the conditions of competence and determine the

value and uniqueness of human capital? The value and uniqueness of human capital are two concepts that differ in content, and in this regard they are related to the company's strategy, which clearly indicates the definition of these two values (Díaz-Fernández, López-Cabrales, Valle-Cabrera, 2014: 205-222).

Thus, approaches to the assessment of human capital are largely determined by the capabilities of the enterprise producing such an assessment, a criterial list of factors that allow determining human capital, and the formalization of the assessment procedure. It should be noted that the most effective is the combination of management models, value and natural approaches to the assessment of human capital.

In accordance with the organizational and managerial approach, the assessment of the use of human capital is carried out in the following areas: analysis of labor indicators and structure of labor resources; analysis of the efficiency of working time; analysis of the efficiency of use of labor resources. Such a system for assessing human capital does not include quantitative assessment methods, limited to only qualitative indicators and formalized methods of analysis. It should be noted that this characterizes the system of human capital assessment existing at the enterprise from the negative side.

Organizational learning is becoming increasingly important for the strategic renewal of organizations in the digital and high-tech economy. Organizations with enormous diversity are particularly successful in the current environment, when firms must be efficient and quickly adapt to change. The research results show the differences in training between marketing and production units, as well as various methods of personnel management and types of human capital. Human capital mediates between the practice of HRM and learning (Díaz-Fernández, Pasamar-Reyes, Valle-Cabrera, 2017: 63-77).

Intellectual resources of the company are the main value generators in the knowledge economy (Wang, Chang, 2005: 222-236). In this regard, such a knowledge management initiative, such as creating intellectual capital for management purposes, can help expand the list of opportunities for assessing human capital at the organizational level. This initiative, linking the analysis and evaluation of human capital, will structure the priorities and goals of the organization, which in the conditions of the knowledge economy becomes a top priority.

According to current practice, the assessment of the professional qualities of staff affects the performance of their labor input and reflects the degree of its compliance with staff activities. In accordance with the adopted provisions, the assessment of human capital is made in relation to qualification requirements and necessary knowledge, as well as professional skills.

In this case, the following are the objectives of human capital assessment:

- improving the selection, training and placement of personnel;
- stimulating the growth of employees' qualifications and increasing responsibility for the results of decisions made;
- development of initiative and creative activity of managers, specialists and employees;
- creation of a reserve.

Accordingly, the objectives of assessing human capital are:

- determination of official correspondence of managers, specialists and employees of the position held;
- identifying prospects for the use of potential abilities and capabilities of the employee;
- stimulation of the growth of professional competence of the employee;
- determination of areas of professional development, professional training or retraining of the employee;

– the submission of proposals on the movement of personnel, the dismissal of an employee, and the transfer to more or less qualified work.

Literature review

One of the first formulations of human capital is found in «Political Arithmetic» by W. Petty, who substantiated the category as «living acting human forces» and proposed to consider them as an integral part of national wealth. At the scientific level, the first study of the problems of human capital belongs to A. Smith. In his well-known work, *A Study on the Nature and Causes of the Wealth of Nations*, he proved that the differences between the possibilities of people with different levels of education and training reflect the differences in their income necessary to pay to acquire these skills. Therefore, income from investments in professional knowledge can be compared with income from investments in tangible assets. This comparison, however, has its limitations. Firms own material resources, but not their employees, unless, of course, talking about slaveholding system (Smith, 1962: 176).

The theory of human capital was created by Nobel Prize winners in economics T. Schultz (1979) and G. Becker (1992). By calculation, they showed for the first time the advantages of people with special education over people with general secondary education in terms of income and raised the cost of education to the level of productive investment, and education to the level of the most important development factor (Korchagin, 2012:14).

In the economic literature one can find many definitions of the concept «human capital». The most common definitions are: G. Becker «Human capital is a combination of innate abilities and acquired knowledge, skills and motivations, the effective use of which contributes to an increase in income and other benefits» (Korchagin, 2012: 4); A. Dobrynin, S. Dyatlov, E. Tsyrenova «Human capital is a stock of health, knowledge and skills that contribute to productivity growth and affect income growth» (Dobrynin, 2002: 309); V. Maksimovich «Human capital is a combination of the existing, accumulated and developed abilities and qualities of a person, which are used in the production and consumption of economic goods, bring profit to its owner, as well as effect at the place of use and contribute to the growth of the state» (Maksimovich, 2011: 204-211).

Thus, human capital appears as any other factor of production that requires systematic investment, but unlike other resources, it is capable of creating added value even more. At the same time, in the

above definitions, human capital acts as both the goal of economic development, and as the main productive resource, without which any expedient activity in general is impossible.

The discussion that human capital should be evaluated and displayed in the accounting system has been going on for a long time. Increasingly, in foreign and Russian economic science they justify the need for its accounting reflection.

Questions related to the study of the problems of formation and use of accounting information in the human resource management system have always caused scientific interest among specialists. Studies aimed at the development of the concept of human resources accounting are the works of foreign economists: E. Flamholz, J. Fitz-Önz, M. Armstrong, R. Likert, etc.

E. Flamholz, the founder of the concept of accounting for human resources, believed that human capital is the organization's most valuable resource, and therefore it must be taken into account as an asset of the organization. Human resource accounting information is essential in making strategic decisions. He outlined three main criteria for recognizing human capital as an asset: potential future economic benefit, existence of ownership rights or control by an economic entity, measurability in monetary terms (Flamholtz, 2012: 390).

G. Becker determined the value of human capital on investments for special training. This is the time spent and the efforts of the student himself, the teaching activities carried out by others, and the equipment and materials used. G. Becker also included the investment in human capital as payment for the services of employment agencies, the cost of finding a new job, the time spent on interviewing, testing, inquiring and clerical work, investments in health, ensuring increased productivity (Becker, 1993: 109-119.).

In recent years, interest in the accounting interpretation of human capital as an accounting category has only increased. This is evidenced by appearing in 2010 – 2016 scientific studies of a number of authors, including L.A. Chaykovskaya, Yu.O. Bystrov, S.A. Nikolaeva, S.V. Shebek, N. Bontis, O.A. Ageeva, M.I. Cooter, N.S. Tonkokurov.

N. Bontis outlined the main reasons why accountants and financial analysts rejected the idea of accounting for human capital. The reason for such a skepticism about the scientific concept is that all models for evaluating human capital, to one degree or another, are subjective and uncertain, which does not provide confidence in the accuracy of measurement. In addition, the moral side of the

issue plays an important role (Goshunova, 2014: 240).

At present, there are several approaches, among which human capital is proposed to be recognized as an expense of the current period, an obligation, an asset, a separate type of intangible assets, considered as an integral part of the company's business reputation. Proposals are made on accounting for human capital as one of the types of long-term assets of the company. At the same time, researchers propose spending on the formation and development of human capital to depreciate and include in the cost of the created product, and to display the expenses on the development of human capital in the context of the following stages: vocational guidance, search, hiring, personnel adaptation, accumulation of growth potential, achievement of professionalism, study and advanced training, capitalization of knowledge as a result of advanced training, reduction and «moral aging» of professionalism. However, this method of calculation is rather laborious and cannot be used in all firms without exception.

In order to create effective accounting and management reporting in an organization, elements of human capital should be classified and accounted for as separate and independent human capital assets. Moreover, the classification of human capital is to some extent feasible: the number of new products, the assessment of customer loyalty, the percentage of employees with a degree – these quantitative indicators are almost identical to the assets of human capital (human, structural and relational capital). However, human capital assets are often interdependent, which excludes the possibility of separation from each other and subsequent independent classification. It is because of the complex nature of human capital that the approach to the inclusion of all human capital assets in one asset, goodwill, has spread (Tseng, Goo, 2005: 187-201).

Human capital in auditing is fundamental to the audit industry. Does human capital in auditing activities (on education, on the level of customers of auditors) affect the probability of financial distortion? Is there a connection between professional experience, level of education and financial distortion? However, the question remains whether human capital in auditing affects the quality of the audit. Human capital can be formed through education and professional experience gained in the workplace, training, consumption and in-depth knowledge of the economic system. Among these factors, education and professional experience are considered as the two most important aspects of human capital. Education, an important component

of human capital, can help people improve their cognitive abilities and solve ethical problems of human capital in auditing. (Xingqiang, Jingwei, Fei, 2018: 38).

However, human capital in terms of the development of innovations, becoming, undoubtedly, the main economic resource, should be provided with accounting methods and methods of its accounting, methods of transforming accounting results in financial statements. The complexity of updating the theory of accounting for human capital is enhanced by the fact that not only is the way to form human capital as a carrier of knowledge, but also the process of its transformation into technological innovations, is lengthy. It is human potential that, unlike other forms of assets, is distinguished by the fact that its creation takes a long time and is based on human mental activity, which personifies the time and resources spent, but which is difficult to account for and evaluate in the subject's information system (Kaplan, 2003: 320).

Results and discussion

Problems of valuing the human capital of the company. In modern economics, the concept of «human capital» is used to describe the abilities and skills of individuals that affect the efficiency of their work. Therefore, it can be said that productive and inseparable abilities from the individual are treated as capital. The use of this concept provides new opportunities for studying such major problems as economic growth, improving living standards, the place and role of education and health care in social reproduction, the content of the labor process. However, at present, among the numerous variations of the human capital assessment, there is no one that would correspond to its real volume. The reason for this is, firstly, the imperfection of measurement technologies, mathematical models, the difficulty of statistical accounting. Secondly, for a reliable assessment of human capital, it is necessary to take into account a number of existing factors that cannot be assessed in principle. Along with this, it is difficult to foresee the consequences of the development of events caused by a combination of these factors. Thus, the purpose of this work is to analyze the reliability of human capital estimates and the sufficiency of the data for the construction of these estimates.

It is worth noting that the assessment of human capital components occurs at different economic levels: micro-level – human capital at the individual level and human capital of enterprises and firms;

meso-level – human capital of large corporations and regions; macro-level – the total human capital in the scale of the national economy (society); mega-level – the combined human capital on a global, global scale.

With all the variety of methods, several basic approaches to the assessment of human capital are distinguished, based on: investment in human capital development; capitalization of returns; natural indicators (skills, competencies and literacy of the population).

It should be noted that in each approach there are a number of difficulties and contradictions. Thus, when assessing human capital on the basis of investments, many scientists are of the opinion that the formation of human capital requires all costs that are aimed at maintaining human life. A supporter of this method was Ernst Engel, he believed the costs of raising children could be estimated and taken as a measure of the monetary value of children for society.

The point of view of others is that the costs of producing human capital are equated only with costs that increase people's productive capacities, for example, investments in formal education. Formal education is the education system. However, although this type of cost is relatively easy to determine, it is only a fraction of the total human capital accumulated.

The cost approach to the valuation of human capital, proposed by K.N. Chigoryev (micro- and meso-level). According to this method, all costs associated with human capital are divided into three main groups: payroll (all payments to employees, including wages, taxes, bonuses, incentive allowances, etc.); intellectual capital costs (costs of training, retraining, advanced training of employees, participation in conferences; research costs, etc.); and the cost of «health capital». By «health capital» is meant an investment in a person, carried out with the aim of forming, maintaining and improving his health and efficiency, for example, the costs associated with health protection (conducting preventive examinations of employees, additional health insurance and other measures to prevent and prevent disease).

Despite the fact that the method proposed by K.N. Chigoriaev, does not include the inflation component, in contrast to most other methods, his relative simplicity of calculation and accounting for not only the educational component, but also the wage fund and the health component deserve attention. It is known that health and education are the main factors involved in the formation of

national human capital. The results of recent studies indicate that the level of human health is only 8-10% dependent on health, 20% on environmental conditions, 20% determined by genetic factors and 50% depends on the lifestyle of the person. It should be noted that in terms of human well-being, his health, according to WHO, is 10%, respectively, and the same contribution can be indicated in human capital. Based on the foregoing, it follows that

the components of health and education not only belong to the aggregate of human capital, but are its formative factors (Borodin, 2013: 103).

In modern conditions, human capital in Kazakhstan is the main factor of intensive economic growth. However, the need to assess human capital is an indisputable fact. However, in this area there are a number of problems of an objective and subjective nature.

Table 2 – Key problems in assessing human capital

№	Problem	Description
1	Narrow approach to human capital valuation	Most of the subjects use either purely managerial models for estimating human capital, or using economic or financial indicators in evaluating human capital, and the use of such models in itself is rather fragmented.
2	Lack of experience in assessing human capital in the enterprise	Many enterprises simply lack such experience. This is aggravated by the fact that in order to form a model for evaluating human capital in modern conditions, it is necessary to apply a scientific-economic and / or social approach to human activity and its potential, as well as the goals of economic activity and the ways of achieving them.
3	Ignoring the aspects of technical progress and innovation	In this context, even if the enterprise has any system for assessing human capital, it ignores quantitative criteria, which makes it difficult to determine the human capital of workers. At the same time, the quantitative and qualitative improvement of the social product for a certain period of time requires a quantitative assessment. Consequently, the enterprise does not include in the results of the human capital assessment the results of the impact of technical progress and innovations, which are just the key factors of long-term economic development with which the future development of the Russian economy is connected. As a result, the increasing role of human capital as the main factor of economic growth is ignored.
4	Neglecting the value of human capital for an organization	Human capital is of particular importance as a special asset that allows you to implement and implement various projects. In fact, without human capital, innovation is not possible either in production or in commerce or in management. Innovative activities of an organizational and economic nature are based on the results of using human capital. Human capital is an asset of fundamental importance, ensuring the innovative development of enterprises. Therefore, an assessment of human capital is needed to increase the effectiveness of the innovation activities of enterprises.
5	Insufficient use of human capital	Enterprises use the available human capital for the direct implementation of innovation, regardless of the form of use. The key goal of using human capital is the creation of organizational and economic advantages that can be used in current and future activities. Human capital is an asset of strategic importance, since the development and implementation of innovations in modern socio-economic conditions relies primarily on human resources. In this regard, it is necessary to quantify it in order to improve the efficiency of innovation.

Note compiled from source (Krakovskaya, 2008: 41-50)

The solution of these problems, among other things, is in the development of methodological approaches to the assessment of human capital.

Methodological approaches to the economic definition of human capital, based on different models, develop ideas that provide new, more realistic options for evaluating human capital. Depending on the quantitative model of human capital assessment, its value is reduced to any set of criteria. Criterion models allow objectively and reliably assess human capital.

At enterprises, however, a formalized organizational and managerial approach to the assessment of human capital is often used. At the same time, the enterprises pursue the goal of ensuring a high level of personnel training and its effective use. However, there is often no methodology for estimating human capital regulated in internal documents, as the management of the organization adheres to the traditional management model for the assessment of human capital. As a result, the main instrument for assessing the human capital of such

organizations remains certification, the regulation of which is fixed in the relevant position, and the emphasis is placed on the qualitative characteristics of human capital.

Enterprises are often limited to assessing human capital in three basic areas: analysis of labor indicators and the structure of labor resources, analysis of the effectiveness of the use of working time, as well as analysis of the effectiveness of the use of labor resources.

In modern statistics, a system of indicators has not yet been created that could assess the quality of human capital, therefore the development of an aggregate indicator of human capital is a priority for improving both modern statistics and the economy.

This implies not only the formation of a system of indicators characterizing the creation of this form of capital, but also a revision of the existing accounting concepts for a set of basic problems of the statistical assessment of human capital:

- development of the classification of the elements forming human capital;
- the coverage of all institutional units involved in its creation;
- development of human capital efficiency indicators.

The formation and development of human capital takes place with the direct participation of the family, the state, enterprises and various public funds. At present, when an employee of an organization must be constantly active in improving his abilities, it is necessary to take into account the fact that learning takes place throughout his life. Therefore, families, for example, take only partial participation in the process of continuous learning, while the organization itself, which is directly interested in the performance of its employees, increasing its productivity in the context of continuous improvement of the technologies used, takes an active part in stimulating and financing this process.

Measurements of human capital are usually inaccurate, but the measurement process itself is extremely important. Organizations are gradually becoming aware of the important link between human capital and the company's financial results – a link that traditional accounting methods cannot take into account.

Companies understand that communication may or may not manifest itself in specific indicators or figures expressing the value of human capital. But, trying to quantify it, they can understand what the contribution of each of the employees to

the company's work is, how committed they are to their work, what they think about the company and what the likelihood is that they will quit. Often, in the process of evaluating human capital, companies gain useful insights into their organizations and acquire information that is important for their work.

There are two generally accepted approaches to assessing human capital: cost and income (rent). The cost approach is based on summing up the total expenditures on education, professional training and other costs of society, usually attributed to investments in human capital (health maintenance, job search and relevant earnings information, migration). The cost of human capital is determined by the accumulation of net investments in human development as a future employee at all stages of his life cycle.

The income principle implies an assessment of the income earned by employees, which reflects the return on funds invested in the appropriate educational and qualification level. The application of the income approach to the assessment of human capital involves, above all, the use of capitalization of income derived from the use of this type of capital. It is in this case that the accumulation of human capital by the current generation and the potential of its use in economic activity during the functioning of an employee are reflected.

Both methods are incorrect, since they do not take into account the quality of human capital at all, but are reduced only to what kind of income the employee brings to the company or how much the company spends on it.

The cost measurement of human capital in the two methods described above is based on the system of market prices and wages, which allows all humanity to be reproduced. This information, from the standpoint of statistics, is fairly objective and reflects trends in regional and global labor markets, but it still cannot fully reveal the qualitative characteristics of human capital.

Conclusion

It is advisable to carry out an assessment of the value of human capital used on the basis of an analysis of the results of economic activity. Information base are: at the micro- level – data of annual reports of enterprises; at the meso- and macro- levels – information from the statistics authorities on turnover, profit gained and costs incurred in the context of economic activities. Analysis of the results of the use of human capital in interaction

with entrepreneurial capital is not only private, but also of national economic importance.

The use in organizations of the proposed quantitative approach to the assessment of human capital will make it possible to comply with the management concept, according to which an enterprise will be able to use value indicators in assessing the results of its economic activity and comparing them with market success. Thus, it is possible to achieve an objective combination of quantitative criteria and qualitative, the latter being the correspondence of the level of qualification and the assessment of professional qualities. It does not need to change the essence of the organizational and managerial approach, on the contrary, it will be improved.

An objective assessment of human capital affects:

- to determine the adequacy of the human capital of an enterprise to market requirements;
- justification of investments in a business, the nature of which requires significant costs for the formation of human capital (services);
- consideration of human capital as one of the main factors of business profitability, forecasting the income of an enterprise;
- determining the cost of development or the creation of human capital in an enterprise similar to the object of valuation;
- investment attractiveness of the enterprise;
- forecast of market prices for shares of the company;
- justification of the weights of the various business valuation methods in determining the final market value (with a high level of human capital, an income approach is considered a priority, with a low level, a cost approach).

Thus, all methods for assessing «human capital» grow out of a single need for measurement and control. The complexity of creating such methods lies, of course, in the complexity of the object of measurement.

Human capital is a probability value. Each of the components of human capital is also probabilistic in nature, and, as was shown above, depends on many factors. Some components of human capital can be considered as independent values, and some as conditionally dependent. For example, the presence of good or bad natural abilities does not change the likelihood of the existence of good or bad health, the presence of certain knowledge, good or bad motivation to continuous development or productive work. The presence of professional knowledge may increase the likelihood of high motivation to work, but (in the absence of a high general culture) may not have any effect on it.

Thus, the human development index takes into account most of the human capital components and adequately describes the amount of human capital accumulated by a certain state. Evaluation of human productive abilities, as well as the cost-effectiveness of developing these abilities and increasing labor productivity, has been and remains one of the key problems of economic theory and management. Scientists and practitioners offered a variety of methods and tools for carrying out such calculations, taking into account the quantitative and qualitative characteristics of human abilities and skills, suggesting the expression of the value of human capital accumulated by individuals, companies and society as a whole, the volume of investments in human capital from various sources, competitive benefits derived from human capital accumulation.

References

- Bekker G. Human capital. Impact on earnings of investments in human capital // SShA: EPI. – 1993. – №11, pp. 109-119.
- Борисенко О.Е., Иванова Т.А. Стоимостная оценка человеческого капитала России. Подход М.М. Критского // Приложение математики в экономических и технических исследованиях. – 2014. – № 4 (4), С. 33-38.
- Бородин А.И., Сорочайкин А.Н., Шаш Н.Н. Человеческий капитал компании: проблемы идентификации // Основы экономики, управления и права. – 2013. – № 4 (10), С. 103-108.
- Díaz-Fernández M., López-Cabrales A., Valle-Cabrera R. A contingent approach to the role of human capital and competencies on firm's strategy // Business Research Quarterly. – 2014. – vol. 17, pp. 205-222
- Díaz-Fernández M., Pasamar-Reyes S., Valle-Cabrera R. Human capital and human resource management to achieve ambidextrous learning: A structural perspective // Business Research Quarterly. – 2017. – vol. 20, pp. 63-77
- Edvinsson L., Malone M.S. Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower. – N.Y. – 1997, p.45
- Гошунова А.В. Учет инвестиций в человеческий капитал в профессиональных спортивных организациях: Диссер. на соис. уч. ст. канд. экон. наук. – Нижний Новгород, 2014. – 240 с.

Добрынин А.И., Дятлов С.А., Цыренова Е.Д. Человеческий капитал в транзитивной экономике. – М.: Наука, 2002. – 309 с.

Долинца Д.М. Инвестиции в человеческий капитал // В сборнике «Проблемы развития инновационно-креативной экономики». – 2010, С. 370-373, URL: <http://bgscience.ru/lib/10703>

Иванова И.А. Управление человеческим капиталом. – М.: изд-во МГСУ, 2011. – С. 112.

Каплан Р.С., Нортон Д.П. Сбалансированная система показателей. От стратегии к действию. Пер. с англ. – М.: ЗАО «Олимп-Бизнес», 2003. – 320 с.

Корчагин Ю.А. Перспективы развития России. Человеческий капитал и инновационная экономика. – 2012, <http://www.lerc.ru/?part=articles&art=25&page=14>

Краковская И.Н. Измерение и оценка человеческого капитала организации: подходы и проблемы // Экономический анализ: теория и практика. – 2008. – № 19. – С. 41-50

Линев А.И. Понятие человеческого капитала и существующие методы его стоимости // Евразийский союз ученых. – 2015. – № 4-2 (12). – С. 53-56.

Максимович В.І. Роль інвестицій в людський капітал у економічному розвитку держави // Вісник КЕФ КНЕУ імені В. Гетьмана. – 2011. – №2. – С. 204 – 211.

Pochtovski A. Human Resource Management. Strategies – Processes – Methods. – PWE, Warsaw. – 2007. – P. 41

Smith A. An Inquiry into the Nature and Causes of the Wealth of Nations. – London: Methuen. – 1962. – P.176

Tseng C., Goo Y.J. Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers // R&D Management. – 2005. – vol. 35, issue 2, pp. 187-201.

Flamholtz Eric G. Human Resource Accounting: Advances in Concepts, Methods, and Applications // The Jossey-Bass management series, Springer Science. – 2012, 390 p.

Wang W.Y., Chang C. Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan // Journal of Intellectual Capital. – 2005. – vol. 6, issue 2, pp. 222-236.

Yukhnovich M. Flexible Human Capital Management in Knowledge Organization. – DIFIN, Warsaw. – 2007, pp. 13-14.

Xingqiang D., Jingwei Y., Fei H. Auditor human capital and financial misstatement: Evidence from China // China Journal of Accounting Research. – 2018 (Accepted 4 June 2018).

References

Bekker G. (1993) Human capital. Impact on earnings of investments in human capital. SShA: EPI, №11, pp. 109-119.

Borisenko O.E., Ivanova T.A. (2014) Stoimostnaya otsenka chelovecheskogo kapitala Rossii [Valuation of human capital in Russia]. Podkhod M.M. Kritskogo. Prilozheniye matematiki v ekonomicheskikh i tekhnicheskikh issledovaniyakh, № 4 (4), pp. 33-38.

Borodin A.I., Sorochaykin A.N., Shash N.N. (2013) Chelovecheskiy kapital kompanii: problemy identifikatsii [Human capital of the company: identification problems]. Osnovy ekonomiki. upravleniya i prava, № 4 (10), pp. 103-108.

Díaz-Fernández M., López-Cabrales A., Valle-Cabrera R. (2014) A contingent approach to the role of human capital and competencies on firm's strategy. Business Research Quarterly, vol. 17, pp. 205-222

Díaz-Fernández M., Pasamar-Reyes S., Valle-Cabrera R. (2017) Human capital and human resource management to achieve ambidextrous learning: A structural perspective. Business Research Quarterly, vol. 20, pp. 63-77

Dobrynin A.I., Dyatlov S.A., Tsyrenova E.D. (2002) Chelovecheskiy kapital v tranzitivnoy ekonomike [Human capital in a transitive economy]. M.: Nauka, p. 309.

Dolintsa D.M. (2010) Investitsii v chelovecheskiy kapital. V sbornike «Problemy razvitiya innovatsionno-kreativnoy ekonomiki», pp. 370-373, <http://bgscience.ru/lib/10703>

Edvinsson L., Malone M.S. (1997) Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower. N.Y., p.45

Flamholtz Eric G. (2012) Human Resource Accounting: Advances in Concepts. Methods and Applications. The Jossey-Bass management series, Springer Science, p. 390.

Goshunova A.V. (2014) Uchet investitsiy v chelovecheskiy kapital v professionalnykh sportivnykh organizatsiyakh [Accounting for investment in human capital in professional sports organizations]. Dissert. na sois. uch. st. kand. ekon. Nauk, Nizhniy Novgorod, p. 240.

Ivanova I.A. (2011) Upravleniye chelovecheskim kapitalom. M.: izd-vo MGSU, p.112.

Kaplan R.S., Norton D.P. (2003) Sbalansirovannaya sistema pokazateley. Ot strategii k deystviyu [Balanced scorecard. From strategy to action]. Per. s angl. M.: ZAO «Olimp-Biznes», p. 320.

Korchagin Yu.A. (2012) Perspektivy razvitiya Rossiii. Chelovecheskiy kapital i innovatsionnaya ekonomika [Prospects for the development of Russia. Human capital and innovative economy], <http://www.lerc.ru/?part=articles&art=25&page=14>

Krakovskaya I.N. (2008) Izmereniye i otsenka chelovecheskogo kapitala organizatsii: podkhody i problem [Measuring and evaluating the human capital of an organization: approaches and problems]. *Ekonomicheskiy analiz: teoriya i praktika*, vol. 19, pp. 41-50

Linev A.I. (2015) Ponyatiye chelovecheskogo kapitala i sushchestvuyushchiye metody yego stoimosti. *Yevraziyskiy soyuz uchenykh*, vol. 4-2 (12), pp. 53-56.

Maksimovich V.I. (2011) Rol investitsiy v lyudskiy kapital u ekonomichnomu rozvitku derzhavi [Role of investment in human capital and economic development of the state]. *Visnik KEF KNEU imeni V. Getmana*, №2, pp. 204-211.

Pochtovski A. (2007) *Human Resource Management. Strategies – Processes – Methods*. PWE, Warsaw, p. 41.

Smith A. (1962) *An Inquiry into the Nature and Causes of the Wealth of Nations*. London: Methuen, p.176.

Tseng C., Goo Y.J. (2005) Intellectual capital and corporate value in an emerging economy: empirical study of Taiwanese manufacturers. *R&D Management*, vol. 35, issue 2, pp. 187-201.

Wang W.Y., Chang C. (2005) Intellectual capital and performance in causal models: Evidence from the information technology industry in Taiwan. *Journal of Intellectual Capital*, vol. 6, issue 2, pp. 222-236.

Xingqiang D., Jingwei Y., Fei H. (2018) Auditor human capital and financial misstatement: Evidence from China. *China Journal of Accounting Research* (Accepted 4 June 2018).

Yukhnovich M. (2007) *Flexible Human Capital Management in Knowledge Organization*. DIFIN, Warsaw, pp. 13-14.