

## Scientific Approaches to the Understanding of Human Capital Concept

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### **ABSTRACT**

The article systematizes scientific approaches to understanding the nature of the category “human capital”. The historical periodization of the concept development is offered. A review of classical and modern approaches to the interpretation of the essence, forms of manifestation, and derivatives of human capital. The study forms the methodological basis for the study of human capital in modern conditions of economic development, taking into account modern concepts and paradoxes of economic development.

**KEYWORDS:** Human Capital, Economic Theory, Capitalism.

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**1 Introduction.** The development of social relations in recent decades is characterized by changes in basic concepts and rethinking the place and role of man in them. Qualitative changes in the economy, as a form of organization of social relations in the field of production and distribution of material goods, bring to key positions human capital as a key factor of production. New economic systems, which on the one hand are based on the results of the scientific and technical process, define the human resource as the main quality unit capable of ensuring their effective functioning and sustainable development. Anthropocentrism is a cross-cutting concept of human development that means a revision of approaches and understandings to the positions of the category of "man" in the economic space. Strategic guidelines for sustainable, intelligent, and inclusive human development form the basis for a qualitative rethinking of the content and prospects of human capital development. Accordingly, there is a need to expand the boundaries of scientific knowledge of this category through the prism of transformational trends.

**2 Literature Review.** The study of the nature and economic content of the category "human capital" is reflected in the works of such classics of economic theory as A. Smith, D. Ricardo, W. Petty, K. Marx, T. Schultz, G. Becker. The current stage of development of economic theory has introduced new interpretations and approaches to understanding the concept of "human capital", which is reflected in the works of I. Pominova, O. Hrishnova, O. Brintseva, O. Bendasyuk, O. Nosyk. On the one hand, the presence of a large number of scientific literature sources forms a broad methodological basis for the study of human capital and forms of its manifestation. However, there is a need to systematize and distinguish evolutionary approaches, key interpretations, derivatives, and manifestations of this category, which creates the basis for a deeper understanding of the nature of human capital and the formation of a methodological basis for studying this category in the context of modern economic processes and phenomena.

**3 Methodology.** In the process of research, the methods generally accepted in economics were used, in particular: monographic – for the selection of interpretations of the category "human capital"; theoretical and comparative analysis – to identify key differences and approaches to the interpretation of the category of "human capital", its types and derivative forms; historical and logical – to identify the key stages of development of the category of "human capital"; analysis and synthesis, system-structural, abstract-logical – to systematize the key components of the category "human capital".

**4 Results. Conceptual approaches division into periods.** Theoretical approaches to defining the essence of human capital have been formed over a considerable period of time. According to the change of approaches, concepts, formation of new scientific schools, this category was interpreted by scientists in different ways.

Thus, the development of the concept of "human capital" should be considered in view of the three key stages of its formation, namely:

Stage I. XVII century – the middle of the XX century. Formation of theoretical and methodological principles and scientific basis.

Stage II. The 60s-80s of the twentieth century. Consolidation of the concept of “human capital” in the general economic theory.

Stage III. 80's of the twentieth century – our time. The development and pluralism of approaches, and consolidation of synergistic content of the concept.

The first stage is characterized exclusively by the formation of theoretical and methodological foundations for the development of this concept. During this period, there were no clear views and approaches to the definition of human capital. However, most scholars believe that Adam Smith's views on the definition of labour as a basic factor of production and unit of value forms the basis for the separation of human capital [1]. However, the formulation of the classic economic theory did not contain clear signs of the transfer of the functions of capital to human labour, and in fact, was limited to the identification of manual labour as a factor of production.

Developing the theoretical approaches of A. Smith, David Ricardo empirically proves the fact that there is a significant correlation between the cost of human education and the level of wages. At the same time, D. Ricardo draws attention to the importance of the level of development of education for the economic progress of the country [2]. Accordingly, the views of the scientist emphasize the role and importance of qualifications, skills, and abilities for both the individual and for social development as a whole. Conceptually important are the views of the scientist on the value expression of labour as a factor of production, in particular, in terms of emphasizing the benefits that should be received by the individual. Thus, D. Ricardo draws attention to the existence of natural and market value of labour. The difference in the quantitative expression of the potential and actual income level of the individual is explained in terms of the level of supply and demand. At the same time, by the natural value, he actually meant the minimum or critical level of value needed to meet basic needs. However, from the point of view of the modern concept of sustainable development, it is interesting to say about the increase in the natural cost of labour, which is due to social progress – that is, raising social standards is based on economic growth [3].

A fundamental contribution to the formation of the concept of human capital was made by William Petty, who was the first to attempt to quantify human labour. Thus, the scientist believed that human capital forms the real physical ability of the individual, which should also be attributed to the structure of national wealth. The cost of the bulk of people, according to the concept of W. Petty, was equal to twenty times the equal income that can bring [4].

The approach proposed by Karl Marx is based on the development of human qualities through the prism of fixed capital production, thus substantiating the theory of labour costs. In particular, the scientist considered the process of saving working time in terms of production as the formation of fixed capital, which is actually a person. In addition, he drew attention to the importance of improving the skills and abilities of the individual, believing that their impact is straightforward in relation to increasing productivity [5].

The American economist John Bates Clark in his works also identified capital with the man himself. According to this approach, education, improvement of skills and abilities are considered as an accumulation of capital [6].

In their research, the American economist Irving Fischer and the French researcher Leon Walras considered wages as a percentage of the value of human labour that can accumulate as physical capital [7].

The approach of M. Tuhan-Baranovskyi is interesting, who in his research considered work as a commodity, paying attention to its specific features. Thus, the scientist argued that, unlike goods that are products of industrial production, labour is identified by him with man, and therefore is considered not as an object but as a business entity [8].

At the same time, the founder of the Cambridge School of Economics, Alfred Marshall, in his works defined the role of assessing the capital value of man in terms of labour research. In particular, he has the basic concepts of justifying the importance of investing in human capital. Thus, the scientist believed that the cost of education can produce added value for both the micro-level and contribute to the creation of conceptual innovations capable of systemic change and intensification of development [9].

Thus, at the first stage of the formation of the concept of human capital, no definition was proposed that could be considered as a basic definition of the category. However, the fundamental foundations for the theoretical and methodological substantiation of the role and place of man in economic discourse were laid.

The second stage is fundamental in terms of a clear separation of the concept of human capital in the structure of the economic theory. Thus, the founding parents of this area are representatives of the Chicago School of Economics.

The author of the concept of "human capital" T. Schultz understands human capital as a stock of acquired knowledge, skills, experience, health, abilities, motivations, and energy that can be used for a certain period of time to produce goods and services, at the same time capital is an integral part of man and that is why it is the future source of his income. "It is a form of capital because it is a source of future earnings or future pleasures or both. He is human because he is an integral part of man".

The key contribution to the formulation of the concept was made by Theodor Schultz, substantiating the position that human abilities and qualities are a form of capital [10]. Importantly, the scientist expanded the understanding of the category of "labour" as a factor of production, aptly noting that expanding the understanding of this category to the object of investment creates opportunities for innovative development of the entire economic and social system [11].

In a narrow sense, the scientist considered human capital as a set of knowledge, a set of knowledge, skills, and abilities used to meet the comprehensive needs of man and society [10]. In fact, this very definition has become fundamental and system-forming for the whole concept.

Substantiating the need to invest in human capital to obtain added value in the future, T. Schultz focuses on five main areas that should also be attributed to human capital:

1) medical institutions and services, including all costs that affect life expectancy, endurance, strength, and viability of people; 2) training at the place of work; 3) formal education at primary,

secondary, and higher levels; 4) training programs, in particular, in agriculture; 5) migration of people and families to adapt to changing jobs [12].

According to the scientist, human resources are like, on the one hand, natural resources, and on the other – material capital. After birth, man, like natural resources, has no effect. Only after proper “processing”, a person acquires the quality of capital. That is, with increasing costs to improve the quality of the labour force, labour as a factor is gradually transformed into primary human capital. Scientists argued that human capital is a form of capital because it serves as a source of future earnings or future pleasures. And it becomes human because it is an integral part of man.

T. Schultz used the concept of human capital to analyze and substantiate the growth prospects of countries. He was one of the first to calculate the amount of human capital for the United States in 1961. According to him, the main results of investing in people – are the accumulation of people's ability to work, their effective creative activity in society, maintaining health, and more. He saw that human capital has the necessary characteristics of a productive nature that is able to accumulate and reproduce.

The second key figure in the development of “human capital” was the American economist Gary Becker, who considered the essence of the category, focusing on value and production aspects. Thus, according to the scientist, human capital is formed by the production knowledge, skills and training that a person has, and in particular the value formed as a result of the cost of training, education, health [13].

G. Becker, creating a general theory of human capital formation, simultaneously analyzed the economic efficiency of education. According to his conclusions, the human capital of the enterprise is a set of skills, knowledge, and abilities of a person, the cost of which through education, internal corporate training can eventually bring significant profits to both the employee and his employer. [14].

G. Becker in his work “Human Behaviour: An Economic Approach” believes that “human capital is a stock of knowledge, skills, motivations that everyone has, and its main feature – in inseparability from the personality of its carrier; it is formed through investments in education, accumulation of work experience, health care, geographical mobility, information retrieval” [13]. Knowledge and competence in the concept of human capital were identified as fundamentally important sources of economic growth, and, accordingly, the economic role of education, science, health care, which were previously treated separately as industries that consume rather than produce.

G. Becker considered education, gaining professional experience, healthcare, geographical mobility, and information retrieval to be investments in human capital. These investments improve skills, knowledge, or health and therefore increase cash or in-kind income. In addition, the scientist formulated a universal model of distribution of personal income, which is based on the distribution of supply and demand of investment depending on family income and the natural abilities of schoolchildren. From this Becker concludes that families who leave a legacy deduct investment in human capital in the optimal amount, against those families who do not leave a legacy, often under invest in their education [13].

However, during this period, there were some other approaches to the definition of human capital. Thus, S. Fischer considers human capital first of all innate abilities and talents of the person, and only then its achievements owing to education and qualification [15].

At the same time, E. Dolan and D. Lindsay define human capital as the capital of mental abilities acquired as a result of “formal learning, education or practical experience” [16].

Representatives of filter theory also consider education to be the main mechanism that selects and ranks people according to their ability levels, although productivity is more influenced not by education but by the personal capabilities of the employee. The left-wing current in relation to human capital has argued that its main component is education, which promotes the development of human capital and ensures the competitiveness of the economy. The orthodox current claims that human capital consists of the properties and abilities of the people involved in its formation and creates a dynamic model of investment in human capital. In the scientific works of J. Mincer, in particular, in the work “Schooling, experience and earnings” the results of scientific research on the formation of investment in human capital are presented. That is, his approach is based on the assessment of the parameters of the so-called production function of earnings. According to research, the level of income is 60% influenced by education, work experience, number of hours worked, with education having the greatest impact, 25%. Among the investments in human capital that develop a person's mental abilities, the scientist includes education, training, medical services, the cost of optimizing migration, and others [17].

The representative of the neo-institutional direction of economic thought S. Rosen supplemented the theory of human capital by analyzing the main components of investment in brand-specific human capital, including the cost of adaptation of workers to the firm and the formation of workers' teams [18].

Nobel laureate Simon Kuznets considered the accumulated national human capital as the most important factor of economic development. In *Capital and the American Economy* (1961), he emphasized that the country's greatest asset is its people with their skills, experience, and motivation for useful economic activity [19]. S. Kuznets pointed out the connection between the level of accumulation of human capital of the country and its technological development, the formation of new technological systems.

Thus, at the second stage of development of the concept of human capital is its separation into a separate scientific field of research within economics. However, the research conducted within this period forms the basis for considering the category through the prism of interdisciplinary and synergetic. It is important to form a theoretical and methodological basis for studying the impact of human skills on the level of development of the economic system in general, and the formation of specific sectors in particular. These basements have given impetus to the development of the concept in the future, which continues today.

The third period of development of the concept of human capital is characterized by the expansion of the range and tools of its knowledge. During this period there is a formalization of the system of derived forms and specific formations on the basis of human capital. Also important is the

approach to the consideration of human capital at different levels of functioning and deepening research on the relationship between the categories of “human capital” – “economic development”.

In order to systematize the modern discourse of human capital research, let us pay attention to the opinion of John Kenneth Galbraith, who draws attention to the fact that human capital as an economic category cannot exist only in a market economy, in market conditions, like other forms of capital to work is a commodity that brings not only value but also added value. The market pays for what has value. It is in a market society that people's inequality in their intellectual abilities is most striking. The gap between what a person really is and his or her current successes, on the one hand, and what he or she thinks about his or her capabilities and achievements, on the other, is ruthlessly exposed. J. Galbraith noted: “The dollar invested in human intelligence often brings a greater increase in national income than the dollar invested in railways, dams, machinery, and other capital goods. Education is becoming a highly productive form of capital investment” [20].

Currently, there are many approaches to defining the category of “human capital”, which in essence form a general concept, but have distinctive features. The analysis of theoretical research made it possible to identify the most significant and conceptual definitions and systematize them in terms of three approaches:

1. Functional approach, which consists in introducing into the understanding of the essence of human capital functional characteristics that reflect the ability to reflect.
2. The resource approach reflects the understanding of human capital as a system of accumulation of qualities, skills, and characteristics capable of creating added value.
3. The production approach gives an understanding of human capital as a direct means of production.

At the same time, due to the synergetic nature and multidisciplinary of scientific approaches to the study of the concept of human capital, there are some difficulties in defining its essence. Thus, I. Kalenyuk proposes to study the nature of human capital from the standpoint of economics and sociology. In particular, she believes that from the point of view of economic research, when assessing human value, people themselves cannot be assessed, so the category of “employee” does not belong to the economic, but only the stock of knowledge, skills, abilities and professional abilities cannot be called human capital, so this category is considered by the researcher as a system of economic relations. At the same time, if a certain set of abilities and acquired knowledge of a person is integrated into this system, they can be interpreted as capital [21].

## **5 The dual nature of human capital**

An equally important aspect of the study of scientific knowledge of the concept of “human capital” is its dual nature. Accordingly, the definition of the key characteristics and features of this concept also requires consideration of the category of “capital” and characteristics that move from one category to another.

As G. Bashnyanin et al. note, capital is traditionally understood as one of the factors of production or everything that is used for production, but is not directly consumed in it, except for slow depreciation. [22].

V. Pozhuiev et al. consider capital as a factor of production in the form of value that can bring profit. However, the scholar notes that capital and any means of labour, which is often seen as physical capital, should not be equated. A tool can become capital only when its owners enter into certain relationships with the owners of other factors of production [23].

Capital is not a thing, not property, but economic relations about a thing, about a change in value, its capitalization [22].

It is worth paying attention to the opinion of H. Rozhkov, who draws attention to the fact that human capital is intangible, and therefore has a non-material or intangible nature, respectively, can be described as "invisible assets" [24].

Summarizing the results of theoretical research and based on the priorities and objectives of human capital in the development of knowledge economy, in our opinion, it should be characterized by such basic parameters that do not contradict but only generalize all the above points of view. According to the current interpretation, the key component is the knowledge that affects others, and in modern conditions of knowledge, economy determines the process of human capital development. At the same time, the process of knowledge formation is related to the availability and possibility of obtaining information [25].

O. Bendasiuk notes that the introduction of the category of human capital has significantly expanded the theoretical and analytical apparatus of economic analysis. It also allowed taking into account the life cycle of the employee's reproduction, investment aspects of human behaviour in the labour market, to include human lifetime to key economic resources [26].

From the point of view of comparing the main characteristics of the categories "capital" and "human capital", it is important to determine those specific features of the latter that substantially distinguish it from the former. In particular, various scientists offer the following approaches:

O. Nosyk draws attention to the intangible nature, which is reflected in man and causes his inalienability from the owner (illiquidity), in addition to the intellectual property rights of the individual, and the possibility of use by others. The scientist also draws attention to the significant role of non-economic (irrational) motivation to invest, when, for example, the cost of educating a child is borne by the family not only to earn high income in the future but also to change its social circle, increase social status and more. At the same time, there is a dependence of the amount of human capital on human lifetime, first of all, the duration of the period of its productive activity. Also important is the significant role of consumption factors in the formation of human capital. In addition, the ability of human capital to self-invest when the available stock of human capital is an investment in its further accumulation, and the ability to provide the owner and user of human capital not only various forms of tangible or monetary income but also intangible benefits (e.g. human capital is a factor) intangible benefits of its owner, such as reputation and competitiveness in the labor market) [27].

A. Dobrynin draws attention to such a feature of human capital as exhaustion. Thus, the depreciation of human capital is determined by the degree of natural wear (aging) of the human body and its inherent physiological functions, as well as the degree of moral (economic) wear due to deactivation of knowledge or change in the value of education [28].

A. Rassadyna emphasizes that human capital is a long-term economic resource, the reproductive turnover of which is 5-6 times higher than the duration of the average turnover of fixed capital; its "depreciation" has a reverse sign: the productive value of the worker increases over time [29].

B. Pasckhaver identifies the possibility of using not only cost but also non-cost indicators to assess human capital, which can be monetary and non-monetary, as one of the features of human capital. The basis of monetary valuation of human capital is the method of capitalization or the effect of its use, or consumer spending. Unlike human capital, as the scientist points out, the assessment of reproducible capital does not require a discount calculation: tangible goods have a real market price, which should be reflected in accounting through current and periodic revaluations of balance sheet items. B. Pasckhaver identifies the possibility of using not only cost but also non-cost indicators to assess human capital, which can be monetary and non-monetary, as one of the features of human capital. The basis of monetary valuation of human capital is the method of capitalization or the effect of its use, or consumer spending. Unlike human capital, as the scientist points out, the assessment of reproducible capital does not require a discount calculation: tangible goods have a real market price, which should be reflected in accounting through current and periodic revaluations of balance sheet item [30].

A comprehensive definition of the essence of human capital requires consideration of all its components, in particular, those inherent in the capital as such, and specific qualities that characterize the intellectual and creative activity of man.

## **6 Levels of knowledge and functioning of the category "human capital"**

Thus, the consideration of human capital levels is substantiated. In particular, the following levels of human capital functioning should be distinguished: personal; organizational; macro level; mega level.

The study of human capital at the global level is an objective requirement of the modern economy, in which any capital is either initially global in nature or becomes so in the process of accumulation. New economic forms are built around global network structures of capital, management, and information, and access to technical skills and knowledge through such networks is now the basis of productivity and competitiveness [31].

By nature, human capital is more international than physical capital. Effective development of scientific knowledge and inventive activity in the modern world is impossible within purely national boundaries, and the generation of the bulk of the latest technological ideas is concentrated in a limited number of the most developed countries; formation of a system of trademarks for goods and services in the world's leading economies is designed in advance for international use (world-famous trademarks, which are associated with consumers around the world with the highest quality standards); The functioning of a key component of the system of human capital formation - higher education - can be effective only in the conditions of the widest possible use in the educational process of the latest achievements of science and wide exchange of international teaching experience by teachers and students [32].

Global human capital is a set of knowledge, experience, skills, creativity, intellectual products, and relationships accumulated in the process of intellectual activity and historical development of mankind, involved in the system of world social production for the economic development of mankind [33].

## 7 Structure and forms of human capital

An equally important aspect of research that affects the understanding of the essence of the category of “human capital” is the question of its forms. It is the forms of human capital that can influence its development in each case because they have different opportunities to create added value.

Human capital has various forms, due to the multifaceted content of this interdisciplinary category. The form of an object or process is “the internal structure, structure, defining and determining the order of the object or the order of the process”. Forms of human capital are interconnected structural elements (components), the separation of which is based on the definition and application of certain criteria for structuring its content. The most common approaches to defining the forms of the human capital of the individual as interrelated elements of its structure are investment and resource [34].

According to O. Nosyk, the structure of human capital is not a set of its forms, but a certain ordering, interconnection, and interdependence of elements of human capital as an integrative system. Thus, among these forms should be distinguished basic, i.e. those that are the source and basis of other forms, and complex, defined by the basic forms, in some way they are generalized, integrated, and implemented in the process of human activity in various social spheres. It is on their basis that complex forms of human capital are formed – intellectual, labour, organizational and entrepreneurial, human social capital [27].

According to G. Becker, forms of human capital are determined according to the objects of investment in man. These are education, vocational training, acquisition of other types of knowledge as a result of “investing in information”, medical care and health care (investment in health), information retrieval and mobility (investment in the ability to change), family education [14].

Human capital is a measure of people's ability to earn an income based on the use of their human qualities, among which education and qualifications stand out [35]. Negative human capital is an accumulated stock of special and specific knowledge, pseudo-knowledge, skills, moral and psychological characteristics, which is purposefully used by man in social and labour relations, does not increase productivity, but at the same time affects the growth of income of its owner, reducing possible enterprise profit and national income [36; 37]. The phenomenon of formation of negative human capital is due to factors of macro-, meso- and microeconomic, as well as personal levels, which are political and socio-economic instability, distrust of government, insecurity, uncertainty in the socio-labour sphere, deepening differentiation of quality of educational and medical services, increasing the negative impact of corruption, the gradual reduction of investment in the development of the social sphere, training and rehabilitation of staff, lack of resources and opportunities for quality education [36].

L. Shevchuk considers potential and real human capital as the basic human capital and introduces the concept of “advanced human capital”. It is a monetary capital intended for preschool and school education, the functioning of the health care system, culture and housing, institutions, organizations and enterprises that provide normal living conditions, without which it is impossible to create basic human capital and ensure its reproduction [38].

Instead, the traits presented by the authors should be identified with human potential, i.e. natural, acquired at birth and physiologically developed, as well as acquired as a result of education, life, intellectual and work experience opportunities. The latter does not necessarily involve reaping the benefits.

In general, human capital includes such characteristics as intelligence, education, health, ability to work, quantitative and qualitative work, level of education, acquired qualifications, quality of life [39]. In this case, based on the analysis of foreign and domestic sources, we can identify three basic components of human capital: physiological, related to natural human health, its physical and biological essence; labour, which is manifested as a person's ability to produce work, his labour motivation, productive attitude to work, acceptance and observance of accepted rules and norms of labour culture; intellectual, including intelligence, acquired knowledge, skills, abilities, experience. From the point of view of today's level of information economy the most important factor that ensures the efficiency of innovation processes is the intellectual component of human capital [40].

I. Skoblyakova, A. Tsyrenova, G. Rozhkov in the structure of human capital allocate health capital, cultural and moral, labour, intellectual, organizational, entrepreneurial and social capital [41; 42; 24].

S. Klimov in the composition of inalienable human resources identifies the following components:

- biophysical capital as a vital resource of the individual, his physical and psychological potential, considered in the context of the ability to create value;
- intellectual capital as a set of inalienable intellectual human resources;
- social capital as social resource of the individual, the potential of social interaction, human inclusion in a particular social environment.

“All these types of resources are closely connected with the individual, constitute his physical and spiritual essence and cannot be alienated without the destruction of the individual himself” [43].

Thus, the structure of human capital, its forms of manifestation and derivatives are interpreted by different scientists in different ways, depending on the selected feature. However, it should be noted that a common feature of such classification and / or structuring is the synergistic combination of the categories “person” and “capital”.

**8 Discussion.** Thus, in our opinion, human capital is a factor of production formed on the basis of knowledge, skills, and abilities of the individual, as well as their derivatives, characterized by the ability to create added value in tangible and intangible form, have value and quality characteristics, and which require capital investment in order to ensure quality and reproduction in the form of development. The concept of human capital in modern scientific discourse has all the hallmarks of polystructural and synergy. Studies of the nature and essence of this category have long gone beyond a purely economic understanding. The cross-sectoral nature of human activity should be considered a consequence of the evolutionary progressive development of human capital, which creates the basis for the development of complex subsystems of the economy. Accordingly, the complexity of the nature of human capital shapes different approaches and methods of its study. In order to optimally define the essence and

formation of methodological foundations for understanding the nature of human capital, the process of studying its content should be carried out taking into account the historical aspect of its formation and genesis; identification of properties that are laid down through the category of "capital"; organizational levels of manifestation; logical-structural aspect and derived forms.

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