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Abstract. The article discusses the transformation of the role of the human factor in the processes of reproduction in an innovative and knowledge-based economy. An analytical comparison of the categories of human capital and human potential was conducted. A new look at the social sphere is indicated, the importance of which in the modern economy has grown and acquired new content as a conductor of investment flows that the government directs to the development of human potential. The level of the national economy receives a macroeffect from investments in human capital, despite the fact that economists tend to ignore the instrumental value of such investments, because the effect obtained by improving the quality of the population is too dispersed, manifested itself after a long time and is difficult to measure.

The production potential of new technologies depends on the quality of training systems at the level of qualification that they provide. Growth dynamics of modern innovation and information economy, both global and local, is not determined by a simple increase in production in all sectors, and that part which is generated by a variety of innovative and qualitative changes in the production process of goods and services. Further intensification of the innovative process in recent decades due to the formation of a new type of economic development based on the continuous change of the production base, and the nature of the products with the continuous creation of fundamentally new technologies as well as new types of goods and services. In fact, mastering high-quality skills and experience and improving them creatively becomes a necessary response to changes in production technology and rapidly changing requirements for quality and productivity. Education, health care, vocational training, the search for economically significant information, labor mobility, education and childcare are the main areas of “investment in human capital”.

The core of the development of modern competitive countries is the availability of innovative systems and human potential that can support and develop these systems. Despite the conceptual incompleteness of the theory of human capital, a causal relationship between the level of education, healthcare and mobility of human resources and the level of competitiveness of the national economy is scientifically substantiated and recognized by the international community. Accordingly, it remains an indisputable fact that the improvement of the country's human potential occurs in the social sphere, for the activity of which the state bears full responsibility.

Keywords. Human capital, human potential, competitiveness, investment, innovation, knowledge-based economy.

Growth dynamics of modern innovation and information economy, both global and national, is not determined by a simple increase in the volume of production in all sectors, but by that part of it which is generated by a variety of innovative and qualitative changes in the production of goods and services. Further intensification of the innovation process in recent decades due to the formation of a new type of economic development based on the continuous change of the production base and the nature of the products, the continuous creation of new technologies and new types of goods and services. In the context of globalization, that tightened competition in world markets and actualized the problem of competition novelty and quality, innovation has become the main vector of economic development. [1]

The innovative nature of development has changed the character of the production processes. The main part of innovation shifts generated in the processes of human activities outside the scope of mass production, or in the development of the idea of the goods and services, or in the sale of a product on the market. Mass production processes become more transparent, streamlined available for copying. Academics and practitioners have recognized that the role of material factors is becoming increasingly

mediated, depending on inbuilt in the national economic structure creation of new ideas of organizational, scientific, technical nature.

For the first time the idea of the new human's role in economic development was mentioned by T. Shults [2], based on research of E. Denison [3]. The latter proved on a large statistical data set that only half of gross domestic product growth, resulting in the twentieth century the United States was made at the expense of technological innovation and production equipment. Understanding the global scientific community a new role of man in the production process and theoretical generalization of this new socio-economic form of abilities of a man to labor has introduced the category of "human capital" in the world of science.

Skills and abilities acquired by a person increase their quality as productive units (as pointed out by Marx). Therefore, skills and abilities of the person are essential qualities of the employee and hardly appropriate to talk about them apart from the individual [2].

It should be noted that scientific thought in the previous era, anyway, recognized the importance of the level of training of labor for the production process.

The origins of this concept can be traced in the works of classical economics, as the idea that the labor force is one of the factors of production and the process of reproduction in the broadest aspect includes not only the reproduction of goods, but labor is revealed in the writings of Adam Smith, K. Marx G. Stuart Mill and many other theorists.

Of particular importance in the consideration of the economic category of human capital and the process of its reproduction are the views and theoretical principles of Karl Marx, who described them in many works. Considering the views of Karl Marx one cannot help noticing that he was considering the category of "labor" and not the category of "human capital", believing, as we know, this distinction is fundamental.

Moreover, he led a discussion with some representatives of the classical school, who identified labor and capital, which, in their opinion, brings the interest in the form of wages. In the third volume of "Capital", he cites two arguments in favor of his point of view:

- The worker must work hard to get their "interests", and he cannot turn capital cost of his workforce in money for transferring to another.

- The annual cost of labor is equal to its average annual wages, and by means of his work, he must reimburse the buyer for his workforce this value plus surplus-value, i.e. its growth. [4]

In fact, Marx believed that the employee has a property of his workforce, which as a commodity by buying and selling alienated from the worker, taking the form of variable capital owned by the employer. "We must carry out the following distinction: the labor force in the hands of the workers is a commodity, not capital; it is determined by income for him only because he can repeat it constantly sale; capital as it operates after the sale in the hands of the capitalist, during the production process itself. It is buying and selling of labor determines it as an element of capital, so that capital represents the creator of the goods" [4].

From this point of view the category of "human capital" has an eclectic character, based on the mechanical connection of concepts "labor" and "capital." This point of view considers the capital and wealth as a basic concept that is outside any specific social relations. In today's economic Encyclopedia published under the editorship of L.I. Abalkin, capital is called "what is able to generate income." R.M. Nureev, in his writings gives the value of capital in the broadest sense - is any resource that is created with the aim of producing a large number of economic benefits. [5]

These are the most general terms, considering capital as a technical factor in terms of its role in the production process, rather than capital, as a category of public relations.

From the perspective of the concept of "human capital" with acquiring education person becomes a holder of two factors: labor and human capital. Each of them creates marginal revenue, amounting to a total of wages. And a smaller part of it (which is unknown) is supplied to the employee for normal work, but most - to bring human capital. In other words, the modern wage worker is considered as a combination of the market price of simple labor and rental income from investment in human capital. But the mechanism of formation of rental income also remains unexplained as revenue sharing income from employee to simple labor and rental income on human capital. [6]

At the same time, it should be noted that scientific thought, agreeing with the interpretation of "human capital", focused on education and investment in education as the main factor determining the value of

human capital in the market. Classics of this tendency such as E. Denison, T. Schultz, G. Bekker, L. Turou, J. Mintzer, I. Higuchi focused in their research programs on the establishing a link between the level of education the individual employee and benefit from it to him, and society as a whole.

G. Kendrick proposed a method for estimating the accumulation of human capital at the macro level, which is based on the method of "perpetual inventory", considering the cost of the family and society in the following types: maintenance of children until they reach working age and get a specific profession; retraining; professional development; labor migration; health and others.

Along with these he considered investments in housing, household durables stocks of goods in families, as well as the costs of research and development. [7]

Education and health are considered long-acting factors, as the product of the process is the formation of a qualitatively new labor force with a high skill level, ability to the work of great difficulty and at a greater time interval.

With this interpretation we come to the concept of human development, which is the main indicator of the level of socio-economic development of society in the modern world and is recognized by all international organizations: UNDP, ILO and others.

Unconditional novelty of methodological approach of founders of the theory of human capital is the formation of a new view on economic development in the 20th century. Traditionally, the research study on the factors that shape the labor force (such as education, health, demographic trends) is not carried out within the framework of the investment approach.

Human capital theory has allocated the problem of "human capital investment" and introduced indicators covering the entire life cycle of the employee (such as lifetime earnings, the level of health, etc.). [8,9,10]

National economic level justifies the macro effect of investment in human capital. According to G. Myrdal economists have long been "tending to ignore the instrumental value of such investments, for the reason that the effect obtained by improving the quality of the population is too scattered, manifested a long time later and difficultly measured." [11]

However, in the late 20th century, the World Bank team substantiated the concept of expansion of national wealth, specifying its three main components: human capital; natural capital; reproducible capital (basic production and non-productive assets, working capital, household goods). [12]

This concept is methodologically based on the theory of human capital by T. Schultz, as the country's accumulated costs of reproduction of labor power, regardless of their source of coverage (family budgets, current production costs, government spending on social needs). The results of these investments are: accumulation of a person's ability to work, his creative activity in society, the maintenance of the life and health of people. [2]

He also justified the need for broad interpretation of a number of categories of reproduction, especially accumulation. (In the current system, most of the SNA cost of reproduction of the human factor is recognized in current consumption indicators, such as the actual final consumption, transfers to states and corporations in cash, in-kind transfers of state, etc.) T. Schultz suggested that produced from in the society of the product on the accumulation of human capital is used not $\frac{1}{4}$, according to scientists in the early 20th century, but $\frac{3}{4}$ of its total value. According to these calculations, the share of human capital in national wealth in the regions differs significantly in terms of economic development, of greater magnitude than the other two types of capital. In the most developed regions and the respective countries (North America, Western Europe, East Asia) have the highest proportion of 75-76%.

Such results of an analysis of the national wealth, based on theoretical investigations and discoveries of T. Schultz, E. Denison and others reflected the process that has existed in the economic systems since the middle of the 20th century - the emergence of a new role of human capital in the modern economy. The increasing role of human capital was a response to changes in technological processes, which were updated more than once in 35-40 years, as before, an average of 10-8 years. In the early 21st century, the average period of renewal of technologies and equipment decreased to 4-5 years, and in most developed industries to 2-3 years. This naturally affected the requirements for employees. If in the 19th and early 20th century, the vast numbers of professionals needed to learn a range of knowledge, skills and abilities and perform their duties in accordance with once and for all, in the second half of the 20th century the

requirements changed. Today an employee requires a creative approach to their professional knowledge and responsibilities, ability to learn new methods of professional activity.

In the words of K. Henning, the researcher of "new economy", in which the economic system is closely related to the information revolution, there is a sharp change in the relationship between the physical and human capital. "The decisive factor became the human capital, or rather its ability to turn information into knowledge. Physical capital has not disappeared, but has lost its dominant position." [14]

The intellectual capital of the company and the country as a whole is becoming a prerequisite for inclusion of firms and countries into the world economy with the greatest benefit for the country and the standard of living of its citizens. Among the four main determinants included in M. Porter's "national diamond" of competitiveness, human capital factor is a mandatory part of defining the country's competitiveness in the global economic system. Full and productive participation of the country in the new economy that is growing on a global scale is impossible without modern quality of human capital. Effective implementation of human capital in the context of globalization of economic life is unthinkable without the inclusion of innovation networks, which are a feature of the global division of labor. For a modern economy phenomenon is divided into four main types of work: the production of high value products related to high technology; production of mass production, competitiveness on the world market which is determined by low labor costs; production of raw materials; unclaimed in modern conditions. The rapid pace of production of high-tech goods (VTT) and the growth of employment in these sectors suggest increasing the intellectual capital in the global economy.

Productive potential of new technologies depends on the quality of training systems on the skill level that they provide. In fact, the mastery of high-quality skills and expertise and creative their improvement becomes necessary response to changes in production technology, rapidly changing requirements for quality and productivity.

At the same time the importance of the country's system of education, scientific base, networks, institutions and culture increases dramatically. M. Porter wrote about this phenomenon as follows: "Globalization leads to a paradox. It is tempting to assume that the home country no longer plays a role in ensuring the success of its international businesses. At first glance, the company became more important than the country. But in fact, the competitiveness of advanced industries is increasingly determined by the particular knowledge, skills and level of innovation that is increasingly embodied in skilled labor and organizational arrangements. Processes of preparing skilled labor, as well as some important factors influencing the pace of innovation, are determined by the local origin. Paradoxically, the more open global competition increases the importance of the local base". [15]

Self-sustaining innovation system in the modern economy is based on the expansion and strengthening of relations, not only within the cluster groups, but also other economic actors, between them and society, between society and the state.

Therefore, education, health, training, search for economically significant information, the mobility of labor, education and childcare are referred by Western economists as the main areas of "investment in human capital."

Qualitative shift in the standard of living of the population must be based on the development of human resources and the quality of modern social infrastructure. [16]

State's investment flows in human capital pass through social sphere, the value of which in this regard, firstly increased, and secondly, acquired the new content. Earlier, the social sphere was considered as the need for state paternalism socially vulnerable members of society, since all the other layers may be a private education, health, etc. At the present stage the need to provide a high level of social infrastructure for all, make it available to every member of society, to provide high quality human resources for the nation as a whole, not just its individual groups.

Summarizing all the mentioned above, the following conclusions are made. The core of the development of modern competitive countries is the availability of innovative systems and human capacity, capable of maintaining and developing these systems. Despite the conceptual incompleteness of human capital theory, the causal relationship between the level of education, health and mobility of human resources and the level of competitiveness of the national economy is scientifically substantiated and recognized by the international community. Accordingly, an immutable fact remains that the improvement of the human potential of the country takes place in the social sphere, for the operation of which the state is fully responsible.

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АДАМ КАПИТАЛЫНЫҢ ИННОВАЦИЯЛЫҚ БЕЛСЕНДІЛІГІ

Аннотация. Мақалада инновацияға және білімге негізделген экономикадағы өндіру үдерісіндегі адам факторы рөлінің өзгерісі туралы айтылады. Адами капитал мен адам әлеуеті санатын аналитикалық салыстыру жүргізілді. Әлеуметтік салаға жаңа көзқарасты білдіретін тұжырымдар берілген, оның маңыздылығы қазіргі экономикада үкімет адам әлеуетін дамытуға бағыттайтын инвестициялық ағындардың өткізушісі ретінде жаңа мазмұнға ие болды. Ұлттық экономика деңгейі адам капиталына салынған инвестициялардан макроэффект алады, бірақ экономистер мұндай инвестициялардың аспаптық құндылығын ескермеуге тырысады, өйткені халық сапасын жақсарту нәтижесінде алынған әсер тым бытырап кетеді, ұзақ уақыттан кейін көрініс табады және оны өлшеу қиынға соғады. Жаңа технологиялардың өндірістік әлеуеті оқыту жүйесінің сапасына, олар ұсынатын біліктілік деңгейіне байланысты. Жаһандық және жергілікті заманауи инновациялық және ақпараттық экономиканың өсу динамикасы барлық саладағы өндірістің дамуымен қатар, тауар мен қызметтерді өндіру үдерісінде түрлі инновациялық және сапалы өзгерістер негізінде анықталады. Соңғы онжылдықтағы инновациялық үдерістің одан әрі күшеюі өндірістік базаның ұдайы өзгерісіне негізделген экономикалық дамудың жаңа түрінің қалыптасуымен, сонымен қатар түбегейлі жаңа технологияларды, тауарлар мен қызметтердің жаңа түрлерін ұдайы қалыптастыратын өнім сипатына байланысты. Шындығында, сапалы дағдылар мен тәжірибе жинақтау және олардың шығармашылық жетілуі өндіріс технологиясының өзгеруіне және сапа мен өнімге жылдам өзгеретін талаптарға жауап береді. Білім беру, денсаулық сақтау, кәсіптік оқыту, экономикалық маңызды ақпаратты іздеу, еңбек мобильділігі, білім беру және бала күтімі «адам капиталын инвестициялаудың» негізгі бағыттары болып саналады.

Қазіргі заманғы бәсекеге қабілетті елдер дамуының өзегі – жүйені қолдауға және дамытуға болатын инновациялық жүйелер мен адами әлеуеттің болуы. Адами капитал теориясы тұжырымдамасының толық қалыптаспағандығына қарамастан, білім беру, денсаулық сақтау және адами ресурстардың ұтқырлығы мен ұлттық экономиканың бәсекеге қабілеттілік деңгейі арасындағы себептік байланыс ғылыми негізделген және халықаралық қауымдастық мойындаған. Тиісінше, елдің адами әлеуетінің жақсаруы әлеуметтік салада орын алып отырғаны сөзсіз факт болып қала береді, оның қызметіне мемлекет толық жауап береді.

Түйін сөздер: адами капитал, адами әлеует, бәсекеге қабілеттілік, инвестициялар, инновациялар, білімге негізделген экономика.

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ИННОВАЦИОННАЯ АКТИВНОСТЬ ЧЕЛОВЕЧЕСКОГО КАПИТАЛА

Аннотация. В статье рассматривается трансформация роли человеческого фактора в процессах воспроизводства в инновационной и наукоемкой экономике. Проведено аналитическое сравнение категорий человеческого капитала и человеческого потенциала. Указан новый взгляд на социальную сферу, значение которой в современной экономике возросло и приобрело новое содержание как проводника инвестиционных потоков, которые правительство направляет на развитие человеческого потенциала. Уровень национальной экономики получает макроэффект от инвестиций в человеческий капитал, несмотря на то, что экономисты, как правило, игнорируют инструментальную ценность таких инвестиций, поскольку эффект, получаемый за счет повышения качества населения, слишком рассредоточен, проявляется после длительного срока и его сложно измерить. Производственный потенциал новых технологий зависит от качества систем обучения на том уровне квалификации, который они предоставляют. Динамика роста современной инновационной и информационной экономики как глобальной, так и локальной определяется не простым увеличением производства во всех секторах, а той частью, которая порождается различными инновационными и качественными изменениями в процессе производства товаров и услуг. Дальнейшая интенсификация инновационного процесса в последние десятилетия обусловлена формированием нового типа экономического развития, основанного на постоянном изменении производственной базы, а также характера продукции с непрерывным созданием принципиально новых технологий, а также новых типов товаров и услуг. Фактически приобретение качественных навыков и опыта и творческое их совершенствование становится необходимой реакцией на изменения в технологии производства и быстро меняющиеся

требования к качеству и производительности. Образование, здравоохранение, профессиональная подготовка, поиск экономически значимой информации, мобильность рабочей силы, образование и уход за детьми являются основными направлениями «инвестиций в человеческий капитал». Основой развития современных конкурентоспособных стран является наличие инновационных систем и человеческого потенциала, которые могут поддерживать и развивать эти системы. Несмотря на концептуальную неполноту теории человеческого капитала, причинно-следственная связь между уровнем образования, здравоохранения и мобильности человеческих ресурсов и уровнем конкурентоспособности национальной экономики научно обоснована и признана международным сообществом. Соответственно, остается неоспоримым фактом, что улучшение человеческого потенциала страны происходит в социальной сфере, за деятельность которой государство несет полную ответственность.

Ключевые слова: человеческий капитал, человеческий потенциал, конкурентоспособность, инвестиции, инновации, наукоемкая экономика.

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