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Study of modern management tech enterprise intellectual capital

Abstract: Presented by the principles and approaches to the management of intellectual capital for high-tech industrial enterprise. A basic theoretical approaches to the development of theoretical and methodological base of intellectual capital management. The modern state of high-tech enterprise management, analyzed the problems to improve their performance in terms of innovation and investment development.

Keywords: innovation, intellectual capital, asset resource management, human capital.

Introduction. Formation and development categories of "intellectual capital" (IC) and "intellectual assets" (IA) in economic theory associated with attempts by scientists understanding the specific features and "intangible" assets as a factor of economic growth. As the study of nature and the impact of STP for production development economists proposed interpretation of the category IA, which correspond to different theories and concepts. Thus researchers' attention was focused on the following issues: defining the role of "intangible" assets as a factor of economic growth, determining the location of the assets in the structure of economic relations, and defining the role of such assets in the operation of high-tech enterprises.

Analysis of publication. In his studies in determining the category IA scientists operated such concepts as knowledge, human capital, innovation, information, intellectual resources, knowledge capital, "invisible" resources "intangible" resources, intelligent, IA and IC. Consider the evolution of theoretical concepts, revealing the development of ideas of scientists about the nature and essence of information and intellectual resources and products.

A number of foreign researchers can identify this problem I. Shumpetera (study of technical innovation), M. Polanyi (the concept of general knowledge, research and structuring expertise as capital), P. Romer (new growth theory, the impact of unique competitive advantages in economic growth) P. Sullivan (IA management, life cycle IA) K. Sveybi (monitoring IA), L. Edvidsona (valuation IR), P. Strassman (management of intellectual resources), L. Prusak (structuring IR) and others.

Among Russian researchers of different aspects of IA can be noted JP Aniskin (innovation management tools and methods of innovation), AV Proskuryakova (development management concept creation and development of new technology), SM Klimov (formation and strategic management of intellectual resources), EP Skornyakova (methods for assessing commercial value of inventions) and others.

Problems methodological and methodical management software company developing intellectual capital in his writings domestic scientists: V. Zakharchenko, Illyaschenko S., Fedulova L., S. Filippov, onions P. et al.

In the works of these researchers examined various aspects of IA, but so far have not formed a comprehensive picture of the nature and essence of "intangible" assets. Despite the collective recognition of information as the nature of the assets, their interpretation is still ambiguous. Each researcher is purely personal point of view on the phenomenon using different terms. The focus is on the research of information resources and information flows of the company related to the formation and use of products and intellectual activities of the business. Let us consider the chronology of the emergence of these concepts and their contribution to the study of categories IA and IC.

Results. Note that historically the first in this series was the concept of human (humanitarian) capital imposed founders of classical economics of Adam Smith and John. S. Mill as a collective term quantity and quality of human ability to work. Already in this period was contacted quantitative characteristics, human capital demographic trends, changes in the working age population.

However, most interest has always aroused the factors that determine the quality of human capital and, consequently, the possibility of growth efficiency. Among these factors were education and science, which are closely interrelated. It is in this aspect of the problem of human capital directly involved representatives of ne-

oclassical economic theory, and, above all I. Fischer, who reviewed the impact of education on human capital [7].

Further to the mid XX century economics referred to the concept of "intangible" assets in two ways. On the one hand, it recognized the important role of science and education in social development, on the other - these resources are exasperated beyond economic analysis. Marx pointed out that the development of heavy industry creating real wealth becomes less dependent on the amount of time and labor expended, but depends more on the general level of progress of science and technology (or the application of science to production) [8]. However, he considered it scientific progress as a social and public good or gratuitous factor of production, costs of use which were much lower than with traditional elements of material and labor costs.

As part of the labor theory of value, Marx linked the category of socially necessary labor as the measure of value of middle-skill workers, but considered only the development of the capitalist economy as a process of alienation "intellectual potential" production of producers.

In 1912, Austrian economist J. Schumpeter in "The Theory of Economic Development" examined the technical innovation as an economic tool that can be used by entrepreneurs to obtain higher profits. Schumpeter rejected the view of the balance as the normal state of the economy, putting at the center of its dynamics. [3] At the heart of economic development, according to the concept Schumpeter, innovation processes are, the essence of which is the implementation of new combinations of factors and conditions of business. The evolutionary nature of these processes is that they happen to existing companies and implemented by the same workers, but the use of available means something quite different.

The catalyst for economic development Schumpeter believed the diffusion of innovation, that has spread over time once mastered and used innovation in the new environment or field application [6]. In anticipation of high returns consistently effective innovation simulated groups of businesses, which Schumpeter shared the "early recipients", "early majority" and "backward". As a result, the cumulative increase in the number of imitators arose sinuous process similar "long waves" M. Kondratiev.

The first scenario developer of technical and technological changes and cyclical "long-wave" of wave-like motion through ups and downs in the economy was N. Kondratiev. He has not linked the undulating market cycles in the economy of

technological change, but suggested that in the years of prosperity unused to this invention may find useful application [1].

In his later works Schumpeter brought the theory of "long waves" of technological change by providing them the utmost importance in his development scenarios [6]. He coined the category of "technological revolution" as a traction force Kondratieff cycles, developed the theory of innovation "packages" and identified three big waves associated with the use and distribution of the steam engine, railways and electricity and car. Designed Schumpeter evolutionary approach has had a significant impact on economic opinion decades, sending it to the study of factors and tools of the innovation process, particularly information and intellectual resources.

The growth of labor efficiency in the Solow model is a constant pace and reflects the impact of technological progress, which should lead to a stable level of capital endowment that provides ongoing business performance. In this regard it should be noted that the Solow model was based on the notion of homogeneity of capital and labor and does not take into account additional factors that affect the quality of capital and labor and thus affect the economic growth.

The most important contribution of Robert Solow thought that it in 1956 demonstrated the economic impact of technological change, estimating it at 90%. In his Solow model used the classic Cobb-Douglas function: $Y = C^{\alpha}L^{1-\alpha}$, where C - capital; L - labor; 0 <a <1 - and made it by typing technology A constant: $Y = AC^{a}L^{l-\alpha}$ [4].

Later economists made repeated attempts to build a model of economic growth based on the principle of neoclassical economic balance that is equal supply and demand in all markets and will account technological progress [7; 8]. In mid-1960 - E. Denison conducted research, trying to find the causes of economic development in the progress of knowledge. Of particular importance he attached to education and other factors that affect the preparation of the workforce.

An outstanding scholar, taking into account the role of IA in economic growth, was M. Kalecki. He developed innovative-centric model, according to which the cycle can be achieved continuous growth, but the impulses that cause changes in the environment can take the economy away and result in abrupt development [3] Kalecki compared the new technical solutions with periodic shocks, stimulating producer. In the long term they reduce the duration and prolong economic downturns during economic upswings. Consequently, the impact of long-term trend depends on the former economic growth and the rate of technological progress.

Research Shmuklera confirmed the fact that the economic variables affecting technological change. With the centenary retrospective Shmukler investigated the effect of changes in consumer prices for various products and services. As a result, he found that profit in the period considered it emerged not by raising prices, but due to cost reduction through the use of new scientific and technical solutions.

Economics information formed simultaneously with the development of theoretical concepts of economic growth. In 1948, American mathematician N. Wiener developed cybernetic theory and substantiated information according to which the information is a set of information not only different, but also communications that deliver, exchange and transformation of this information. Wiener studied approaches to quantify the information. When the amount of information he knew the number, the opposite of entropy [5].

The mathematician Shannon in "Mathematical Theory and Communications" presented information as a quantitative measure of communication exchanges. In contrast Shannon Wiener argued that the amount of information is entropy.

Currently, information theory actively developing since the idea of using information to reduce uncertainty and increase the degree of reasonableness of administrative decisions does not lose relevance.

The theory of human capital emerged in the 1960s. And associated with the names of G. Becker, T. Schultz, J. Mintser [2]. They drew attention to the role that knowledge and skills of workers play in the production process, and developed a methodology for evaluating the effectiveness of investments in education and enterprise training.

Kovtunenko K., combining structured and efficient approach defines intellectual capital as a concept that describes the acquisition and / or own assets established enterprises which are the result of mental activity - an essential carrier of immense knowledge in the form and knowledge embodied in materialized forms whose interaction in the innovation of other factors of production the company provides added value [9].

Human capital is seen as a set of human abilities, which allows the carrier to earn income. The ability to generate income puts the human capital on the same level with other forms of capital, functioning in social production. Human capital is based on innate qualities of man through targeted investments in its development. Depend-

ing on the volume and consistency of these investments increases the impact of this factor of production, appearing both at the individual and at the community level.

Conclusions. Expressed in production efficiency and economic growth. Investment in human capital determine the susceptibility of society to new knowledge and technology, creating incentives for the development of high-tech enterprises.

New growth theory largely owe their existence and concept of human capital related primarily to the names Uzavy, Barry, Arrow, P. Romer [4]. These theories STP begins to be seen as an internal factor of economic growth. The model takes into account Uzavy material production and education. Statistical models change GDP based intellectual level obtained in the theory of Barro where human capital is measured by the ratio of students to total population. The model introduces Arrow indicator of scale, which shows that the higher the concentration of production volumes, the greater the efficiency index of high-tech enterprises.

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