

SCTCMG 2019
**International Scientific Conference «Social and Cultural
Transformations in the Context of Modern Globalism»**

**HUMAN CAPITAL IN POST-INDUSTRIAL ECONOMY AS A
MAJOR DEVELOPMENT FACTOR**

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Abstract

A man in the post-industrial economy is more often presented as a creator, but being ruled by the total market and capital, thus acting as a "human capital". Human capital is becoming a key development factor in the modern economy. Requirements to the quality and role of the employee in the production process change significantly, the importance of creative activities and the demand for highly qualified labor force increases, which requires considerable expenditures on education, health care, etc. Referring to the experience of developed European countries over the past few decades, one can claim a multiple return on investment in the creation of human capital, in addition to achieving social peace in society, ensuring comfort, etc. The development of new industries increases the demand for well-trained workers, which also requires an increase in the level of income. Developed countries with advanced technologies can provide themselves with high levels of production performance and the resulting economic, military and political superiority, which ultimately leads to the redistribution of riches and income to countries with higher levels of development. Nowadays in Russia, which is not keeping up with the quality of human capital, there is a technological and general economic lag, and all this has a negative impact on the standard life of citizens, and with each stage of scientific and technical progress these problems are becoming more and more acute. Therefore, the most important issues for the country are the development of the new economy by addressing social issues.

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Keywords: Human capital, post-industrial society, income, social sphere, investments, quality and standard of living.



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1. Introduction

The emergence of the "human capital" concept in contemporary economic science, along with such traditional concepts as "labor" or "labor force", based on Marxist terminology, is not accidental and is associated with the emergence and development of the post-industrial development era. The last third of the twentieth century is the time of the formation of an information-industrial society, which has replaced the industrial society. The basis for this phenomenon was knowledge accumulation, development and widespread use of new technologies. The new society depends on the development of science and effective technologies, human capital of new quality, changes in the social structure of the society, higher level of management, more national use of resources, emergence of new opportunities in production, consumption and reduction of unit costs in production.

2. Problem Statement

To examine the role and importance of human capital in the modern post-industrial economy.

3. Research Questions

The article investigates the peculiarities of formation and development of human capital, determines its importance for the modern economy, considers the conditions and problems of its development in Russia.

4. Purpose of the Study

The objective of the research is to determine the role and place of human capital in the modern post-industrial economy, to identify the conditions and factors affecting the processes of its formation and development.

5. Research Methods

The study uses statistical analysis, comparative analysis, functional analysis, positive and normative analysis as methods of research. The work was carried out in accordance with the problem chronological principle, the principles of consistency and scientific objectivity.

6. Findings

The World Bank's broad concept of defining national wealth considers wealth as a set of reproductive natural and human capital. The GDP of the countries applies for current consumption and accumulation, while a significant part of consumer spending (on food, clothing, housing, health care, education, culture, leisure, etc.), by both families and the state, is aimed at the reproduction of human capital. In other words, at accumulation of physical and spiritual wealth of the state. In accordance with the concept of national wealth and the expanded concept of accumulation, a significant part of consumer spending is spent on the formation of human capital. These expenditures account for 65 to 70 per cent of

total GDP in most countries (Ozov, 2010). Whereas global GDP was estimated at \$25 trillion to \$30 trillion per year in the 1990s and annual human investment at approximately \$20 trillion, the full cost of human capital worldwide could have reached about \$500 trillion in a quarter of a century. In 2010, the world's human capital was estimated to be worth about \$500 trillion (Ozov, 2010).

Nowadays, the main factor of reproduction in the world is not the accumulation of material goods and services, but the accumulation of experience, knowledge, skills, health, level of physical development and other components of life of the population, which confirms the data of Table 1.

Table 01. Assessment of national wealth in a number of countries at the end of XX century (Ozov, 2010)

| Countries | Total volume, trillion U.S. dollar | Per capita, thousand U.S. dollar | Wealth elements, % of total volume | | |
|-----------------|------------------------------------|----------------------------------|------------------------------------|--------|--------------|
| | | | Human | Nature | Reproducible |
| Worldwide total | 550 | 90 | | | |
| USA | 124 | 460 | 77 | 4 | 19 |
| Russia | 59 | 400 | 50 | 40 | 10 |
| Japan | 54 | 420 | 68 | 1 | 31 |
| China | 35 | 28 | 77 | 7 | 16 |
| Germany | 31 | 375 | 75 | 1 | 23 |
| Great Britain | 21 | 353 | 79 | 2 | 19 |
| France | 21 | 360 | 74 | 3 | 23 |
| Italy | 17 | 295 | 73 | 12 | 13 |
| India | 12 | 20 | 58 | 20 | 22 |
| Australia | 6 | 320 | 66 | 12 | 23 |
| Saudi Arabia | 3.5 | 170 | 40 | 42 | 18 |
| Venezuela | 2.6 | 110 | 49 | 7 | 44 |
| Chile | 2.3 | 150 | 79 | 10 | 12 |
| Finland | 1.6 | 320 | 56 | 7 | 37 |
| Norway | 1.3 | 300 | 57 | 10 | 33 |
| New Zealand | 1.0 | 280 | 59 | 18 | 23 |

It is worth noting that, based on the set economic objectives, during the XX century in the triad of production resources "labor-material-financial" we observed a change in the strategic position and assessment of each of them. The use of the concept of "labour resources", which was of an economic nature only, remained in place until the early 1960s as a statistical category in the implementation of economic planning and population assessment, to a greater extent from a demographic point of view (Doctorovich, 2006). Since the second half of the 1970s, the category of "labour resources" has been greatly enriched by the introduction of the term "social potential", which focused on the reproductive processes of labour and human potential, thereby emphasizing the value of the individual in the modern economy.

The term "human capital" got its name because of the similarity in form of reproduction to "ordinary" capital. Both in the first and second case it is a question of long-term expenditure of funds (investment) for the creation of some factors that in the long run can bring return on the spent funds. The use of the terms "intellectual" or "cultural" can also be used, as well as the use of real capital, to produce an effect that exceeds the amount of money spent on its creation (Busgalin & Kolganov, 2006). The experience of economically developed western countries over the past few decades confirms the repeated investment

return in human capital formation, not to mention the cumulative effect in the form of social peace and comfort, life expectancy, increased external and internal security, etc. (Olsevich & Mazarchuk, 2005).

The economic success of countries such as China and India is not determined by mineral reserves, which are modest in per capita terms, but by long-term investments in human resources. At the same time, most of the funds are allocated to the development of the higher education system. As a result, China's top-ranked universities train 0.5 million scientists and engineers annually, and for the United States the number is 60,000. India has 2.4 million young financiers and professional accountants, while the United States has 1.8 million. In China, the number of young engineers reaches 1.7 million, while in the United States it reaches 700,000. The result is that these two countries have the highest growth rates of the middle class in the world, which has led to an increase in living standards for a significant number of the population. The proportion of the population living on less than \$1 a day decreased from 2/3 in China and more than 1/2 in India to 17 and 35 per cent, respectively, between 1980 and 2001 (Suetin, 2006).

The main factors of human capital productivity growth can be considered as wage growth, improvement of education quality, application of new technologies, etc. Labor productivity is directly dependent on the cost of human capital, which in turn consists of savings of family income, wages, government spending on social services, etc. In case of reduction of state social expenditures, the main source of professional development funding is wages (Nesterov & Ashirova, 2003).

The agrarian and industrial epoch of development in Europe dates back to the 12th-17th centuries, with the leading position of such countries as Holland and England. In the future, this process will start to involve other European countries, the United States, and Russia as well. This phenomenon featured a sharp increase in economic growth rates, an increase in the standard of living of the population, and urbanization. Since about the last quarter of the 19th century, these processes in all developed countries began to occur along with the rapid growth of the economy with increasing government expenditures. Such an increase in public expenditures becomes a burden for the budget and does not contribute to the economic development of the state. For instance, in 1994, the results of a study conducted in 1965-1982 and 1970-1987 on 14 OECD countries (Yasin, 2006) showed the dependence of productivity growth on the state's impact on the economy. According to these studies, the growth of public expenditures (without education costs) by 1982 did not lead to an increase in total factor productivity, but on the other hand, an increase of 10 p.p. in public expenditure on education contributed to an annual increase of 2.78% in total factor productivity (Yasin, 2006). Therefore, in the global economy, higher education is the "right" asset for individuals. Worldwide, especially since the early 1990s, its impact has been increasing, with a rapid increase in graduates' bonus payments (Busgalin & Kolganov, 2006).

The global labour market shows opposite, but not contradictory, processes of reducing labour demand. At the same time there is an increasing competition for versatile highly skilled professionals (Sadovaya, 2018). Nowadays, specialists with a specific knowledge about modern technologies are very much in demand and are highly paid. More than 90% of people with ICT education in the EU in 2016 worked free from employment problems (Eurostat, 2018).

Some developing countries' governments have been promoting free higher education by inviting professors from developed countries, etc. However, the structure of jobs in the national economies led to

the fact that citizens who received higher education from the state budget, could not find adequate jobs in their own country and had to move to developed countries (Auzan & Tambovtsev, 2005).

Developed countries develop and implement long-term strategic programs that set themselves the task of radical renewal of all spheres of life, formation and development of post-industrial society. The purpose of such development is, first of all, to create a new, innovative model of economic growth, in which the developed human capital is the main production factor.

The condition for the transition to the innovative way of development is the appropriate infrastructure, the modernization and formation of which determines not only the socio-economic development of the state and its regions, but also their national competitiveness. According to World Bank estimates, investments in infrastructure development will reach \$50 trillion by 2020. In such countries as the United States, China, India, Brazil, South Korea and others, the program of formation of post-industrial infrastructure is seen as a foundation of economic strategy. One can claim, citing widely accepted estimates by Mark Zandi, Chief Economist at Moody's Economy, that public infrastructure investment has a stimulating effect on private investment: every dollar spent on infrastructure projects has a multiplier effect of \$1.59 (as cited in Kelbach, 2015). According to foreign investors, infrastructure investments stimulate economic growth. These processes can be observed in two developed countries such as China and the United States, which, in order to overcome the global economic crisis of 2008-2009, implemented large-scale infrastructure projects aimed at creating or retaining millions of jobs (Ivanov, 2018).

For example, the Ontario development plan consists of a number of components. The main of them is a continuous improvement of the social sphere from childhood to retirement age to enable people to realize their full potential. According to this plan, it is planned to invest in the development of talents and skills of people, in the construction of public infrastructure, in the formation of innovative and dynamic business environment. The priority for such development was the development of a new pension plan, which laid a solid foundation for the income of the population of Ontario after they received the status of pensioner. In Ontario, a major infrastructure investment programme was completed in 2014, resulting in a 2.1% increase in economic output. There has been an increase in the average annual income of the population by more than \$1,000 [4]. The program has had a great positive impact on the quality of life and the economy of Ontario. The annual growth of regional GDP, during the investment period of 11.3 billion USD per year, was a direct and indirect effect of the investments made (Ivanov, 2018).

Nowadays in Russia, which is not keeping up with the quality of human capital, there is a technological and general economic lag, and all this has a negative impact on the standard life of citizens, and with each stage of scientific and technical progress these problems are becoming more and more acute. In his speech on January 16, 2018 at the plenary session of the Gaidar Forum, Prime Minister of the Russian Federation Dmitry Medvedev noted that the era is changing – from high-tech to high-hume and the new technological mode leads to a multiple increase in the price and value of intellectual capital (Medvedev, 2018).

For Russia, the problems of socio-economic development are primarily related to the need to develop the manufacturing industry as a whole. It is impossible to focus on the development of the oil and gas sector alone, as this will not solve all the relevant social problems related to employment and equalization of income per capita. For example, citing World Bank data, only four countries – Botswana,

Indonesia, Malaysia and Thailand – out of 65 resource-rich countries were able to achieve real per capita income growth (Arystanbekov, 2006). At the same time, according to estimates by British Petroleum experts, Russia may have less than 25 years of oil reserves and less than 75 years of natural gas reserves – (Liuhto, 2005).

It is also worth noting that in the nearest future digital technologies will become very important for the maintenance of national interests, information and technological sovereignty of the country. Therefore, in order to implement the Strategy for the Development of the Information Society in the Russian Federation for 2017-2030, which was approved by the Decree of the President of the Russian Federation of May 9, 2017 № 203, the Government of the Russian Federation adopted the program "Digital Economy of the Russian Federation". The program includes the conditions for the development of the knowledge society in Russia, the growth of welfare and quality of life of the country's population by ensuring the digital transformation of the Russian economy to the specific conditions of the country's subjects (Russian Government, 2017).

Within the framework of the digital economy, the requirements for human capital are changing dramatically, and the employed in the economy are divided into three groups: the first group - "Knowledge", provides a high level of qualification, solving cognitive complex problems; "Rule" - the second group (the average level of qualification, solving cognitive routine problems); the third group - "Skills", which assumes a basic level of education and solving mechanical problems. For advanced digital economies, the critical indicator is the share of workers in the knowledge category, which accounts for more than 25%, including the US, Japan, Germany, UK, Singapore. A survey conducted in October 2017 by BCG showed that only 17% of employees in Russia were in the first group (scientists, IT engineers, executives, doctors, and teachers), 48% of employees in the second group (lawyers, accountants, and office administrators), and 35% of employees in the third group (salespeople, security guards, drivers, cleaners, and so on), so Russia could not be in the advanced digital economy (Tsakayev & Saidov, 2018).

7. Conclusion

In an open letter to his constituents V.V. Putin noted that in the new century, the main feature will be not a battle of ideologies, but an acute competition for the quality of life, national wealth and progress. The basis of the future for both individual states and the entire world community is not natural wealth, but the development of human resources, intelligence and information.

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