

ISSUES OF ESTABLISHING A SCIENTIFIC-PRODUCTION -EDUCATION CLUSTER IN THE PERIOD OF INNOVATIVE DEVELOPMENT

Mirzakarimova Muyassar Muminovna

Fergana State University "Economics and Service" department Associate Professor,
doctor of science, "Economics" direction

Mirzagaliyev Shukurjan Shokirovich 1st year magistrate

Mahamatova Nargiza Shuhrat qizi 2nd year student

Abstract The article examines the cluster approach to human capital management. This approach involves the management of “knowledge” and the goal is to build innovative human capital that stimulates the development of innovation. In order to increase the competitiveness and economic security of the national economy, the main task of human capital management is to maintain and develop human potential, which is its strategic resource. The study suggests the use of innovative research-production-education cluster as a tool for human capital management. The main goal of the innovation cluster is to increase the level of innovation activity of the regional economic system and accelerate the innovative development of economic systems based on the use of innovative opportunities of human capital, expressed in the continuous process of innovation renewal. Closing the gap between science, manufacturing and education is a feature of the innovation cluster.

Keywords: human capital, innovative development, cluster, cluster policy, innovation potential, human capital management.

Introduction

According to The Decree of the President of the Republic of Uzbekistan PF-60 dated January 28, 2022 "On the development strategy of the new Uzbekistan for 2022-2026", it is stated: "Improving the position of the Republic of Uzbekistan in the Global Innovation Index and enter the top 50 countries in the ranking by 2030"¹ is considered as one of the main goals of this decree. While the main goal of the new development strategy of Uzbekistan is to build a people's state by enhancing human dignity and further development of a free civil society, the State Program for the Promotion of Human Dignity and Implementation of the Year of Active Neighborhood also sets a number of human capital development tasks. In particular, the task is to improve national surveys on employment and employment of women with higher education in science-based areas in cooperation with the International Labor Organization. Development of technologies for the production of innovative products in the districts that are being transformed into innovative zones, which are up to 50% cheaper than existing analogues and create quality, value added 2-3 times higher than the cost of raw materials, with a total cost of 165.9 billion soums. It is planned to organize the production of innovative products and services in the regions on the basis of a total of 195 scientific, commercialization and startup projects, creating 1,920 new jobs.

The establishment of a research-production-education cluster in the reproduction of the innovative potential of human capital will play an important role in the

successful implementation of these tasks set by the government. The purpose of the study is to substantiate and suggest the need for improvement of public policies and tools aimed at the reproduction of human potential in terms of innovative orientation of current socio-economic development. Achieving the goal of the research requires solving problem-solving tasks such as structural imagery of the system of human capital characteristics that affect the level of innovative activity of economic entities.

Analysis of the relevant literature

The current cyclical development of the economy based on international integration N.D. Kondratev, S. Many researchers, such as Kuznets and Y. Shumpeter, have noted that it is characterized by modernized innovations that are marked by different types of innovations. The competitive advantages of such an economy, the ability to constantly modernize it in an innovative direction, directly depend on the ability to innovate, create new knowledge, make a variety of unconventional decisions, implement new ways to manage socio-economic processes that ensure sustainability, combining intellectual and social resources².

The problem of sustainability of innovation-oriented economy in cyclical development is an important issue today, which is one of the main tasks to increase the pace of development of individual national economies and the world economy as a whole. In the study of innovation-oriented development of the national economy, the stability of nonlinear, cyclical principles, it is clear that the ratios of savings - the economic trajectory of consumption of quality human potential is a specific indicator of these integral characteristics. The important system-forming function of human potential determines its important place in the system of reproduction of an innovative type³.

Research in the field of determining the content of human capital, its role and importance for the sustainable development of economic systems allows us to conclude that it is an important element of human capital management activities. Human capital is an asset that combines a form of manifestation of intellectual abilities and intellectual skills. It should be viewed in terms of the concept of human capital sustainability as a concept that reflects the essential characteristics inherent in the modern economic system and its sustainability⁴.

Man besides emerging as a strategic resource of economic development, also stands as an organizer of own vital activities, as a person who carries and moves information, intellect, knowledge, skills, abilities, creates wealth for society, shapes its systemic properties and attributes. These capabilities of human capital are manifested at all levels of the country's economic system⁵.

In contrast to the focus on supporting single-component enterprises in the era of globalization, the main strategic goal of the state in the era of high industrialization was to increase the international competitiveness of countries and regions through the development of clusters. "The cluster structure of the economy shifts the conditions and factors of innovation-oriented economic dynamics to the regional level, increasing their role in solving development problems,"⁶ says AV Babkina. E.I.

Lazareva shows that the role of the agglomeration factor, which is studied as an area of accumulation of "critical mass" of human and social capital, research, production and innovation potential, this factor which ensures the stability, systemic emergence and competitiveness of clusters⁷, is significantly increasing day by day.

At the end of the XX-beginning of the XXI century, in the conditions of active search for sources of sustainable innovation evolution, various theories in the field of innovative economy, innovation management were formed. Among these studies, the news theory associated with the names of Y.Shumpeter, E.Hansen is more popular⁸. The search for new (additional) factors of value added has led to the activation of theoretical research in the field of resource approach to the analysis of sustainable innovation-oriented development of the economy, which facilitates the gradual entry of human capital into the management system of sustainable, innovative dynamics. From the point of view of human capital, scientific approaches give priority to separate, separated sources of development, such as engineering, technology, innovation management. In addition, the problems of innovation orientation of economic development are studied mainly within a specific reproduction cycle, without focusing on the future and showing what will happen in the long run⁹.

In the research of B.Z.Milner, B.N.Kuzik, Yu.V.Yakovets there is a tendency of the expanded interpretation of human capital leading to gradual transfer of not only its economic, individual, but also non-economic, social indicators to strategic management system¹⁰. In the current situation, in the system of strategic decision-making in the transition to an innovation-oriented economy, there are completely different views on the mechanism of transfer of new, modernized structures and functions of human potential. The author's approach is determined by the need to transfer the means of reproduction of human capital in the system of strategic management decisions. The analysis of the set of functional properties and the interdependence of the components of human capital with the process of innovative development of the economy leads to a four-sectoral system, the elements of which represent the quality of individual human capital, welfare and social and environmental spheres. It is precisely the four elements of human potential that define the main directions of cluster policy. It is they that provide the appropriate tools for the analytical assessment of the strategy of reproduction of human potential in the system of management of innovative sustainable development of the economy.

All of the above considerations are aimed at institutionalizing an integrated environment that ensures the reproduction of human resources, demonstrating a change in the management style of innovative sustainable development of the economy. The cluster feature of public policy is one of its manifestations. Without creating a strategy for the reproduction of human potential that determines the competitiveness of a multi-tiered economic system, it is impossible to increase its efficiency by developing a cluster policy.

Research methodology

The methodological basis of the research is the basic rules and principles of dialectics. In studying the processes of development of human capital through innovative clustering, companies relied on the method of qualitative study and analysis of labor potential. Logical analysis, synthesis, generalization, induction and deduction, systematic approach to economic events and processes were used to draw conclusions from the data.

Analysis and results

The transition of the world economy to a new technological system, first of all, has led to a radical change in attitudes to the strategy of state regulation of human resources in the process of innovative economic development, inseparable from the systematic organization of reproduction of regional resources. The high value of human resources is determined, first of all, by the fact that their institutional conversion into competitive factors of production of competitive, "intellectual capacity" goods and services is carried out in globally competitive markets, generating income in the form of innovative rents. Capitalization of innovative rent makes it a source of innovation-oriented modernization of the process of reproduction (Figure 1).

The resource approach to the analysis of national well-being, its resource-reproduction and rent-generating functions allowed to determine the place of national welfare in the system of reproduction of an innovative type (reproduction cycle) and the economic form of realization of the functional interdependence of "accumulated national wealth - innovation-oriented development of the economy."

In determining the process of conversion of elements of national welfare into productive resources, such as the initial and defining stages of modern extended reproduction of the innovative economy, it is shown that this process is formed on the basis of interdependent expansion of accumulation rates: new knowledge, the level and quality of education of the population, the promotion of innovative and active farming (development of a system of dynamic and creative structures, optimization of the "qualification portfolio", etc.); population health and the national gene pool (through the development of the health system and the increase of housing comfort / convenience, the quality of the environment); social capital (establishment of institutional arrangements to ensure the effective use of existing and new knowledge, innovative activity of the subjects of the reproduction process (stimulation of human capital flows to other branches of science and knowledge; appropriate state support of small and medium innovative business); stimulating a significantly increasing resource base of innovation-oriented economic dynamics.

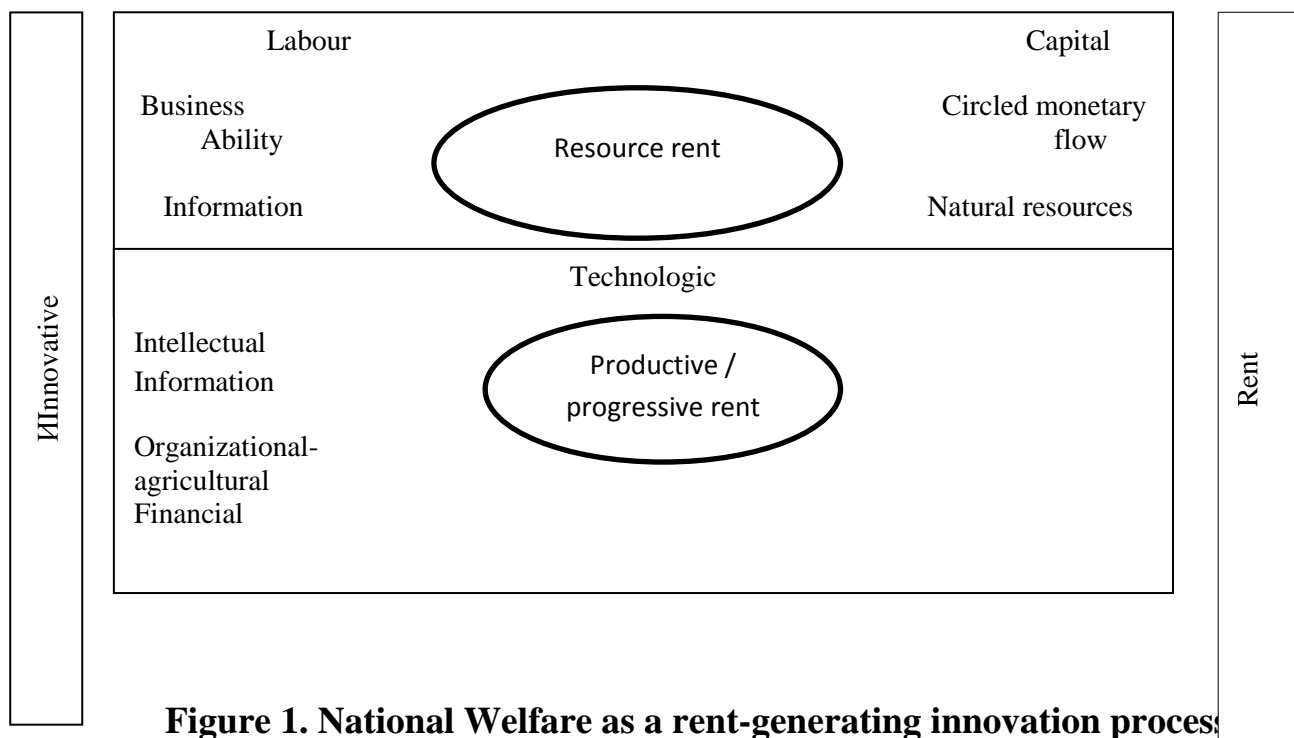
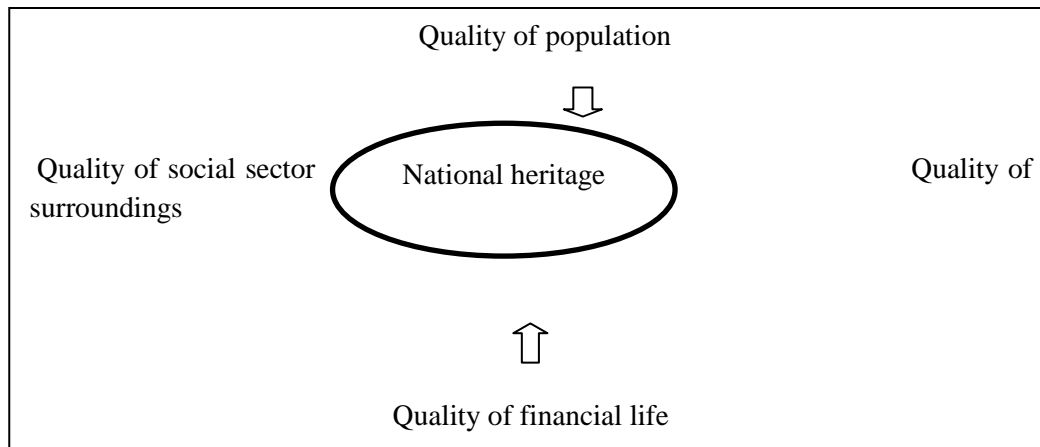


Figure 1. National Welfare as a rent-generating innovation process

The study of the factors and conditions of formation of a new model of subject-object relations in the system of reproduction of national welfare and the conversion of its elements into innovative growth resources shows that the “sectorial reality” highlights the need to develop a collective strategy for the development of national welfare potential, in which the state of “cooperation” takes precedence over the state of “competition”. The classical model of civil society, based on the legal definitions of liberalism and market regulation of the economy, is replaced by the corporate community model.

In 2017-2020, the number of employees engaged in research and development in Uzbekistan is growing (Table 1). The table shows that the number of research professionals is growing and by 2020 will reach 14,055.

Table 1

Number of employees engaged in research and development in Uzbekistan (person)¹¹

	2017	2018	2019	2020
Overall	13897	13566	13288	14055
Namely:				
Research experts	8972	8553	8443	9323
Technicians	1460	1561	1511	1551
Support staff	2086	1883	1687	1809
Others	1379	1569	1647	1372

The state of innovative development of the Uzbek economy can also be analyzed through indicators that reflect its level of technological development (Table 2).

Table 2

Indicators assessing the level of technological development of the Uzbek economy¹²

	2017	2018	2019	2020
The share of high-tech (including medium-tech (high-level)) and science-intensive sectors of GDP in GDP, as a percentage	21,4	23,0	24,6	26,1
The share of high-tech and science-intensive sectors of the economy in GDP, in percent	18,8	19,3	21,1	22,8
The share of high-tech manufacturing in the value added of manufacturing industry, in percent	2,2	1,6	1,9	2,2

The data show that the share of high-tech, including medium-tech and science-intensive industries in GDP increased from 21.4% in 2017 to 26.1% in 2020. The share of high-tech industries in the value added of manufacturing industry is 2.2%. As a result, the share of high-tech products in exports in 2017-2020 increased from 1.7% to 2%, while the share of medium-tech products decreased, respectively, from 6.4% to 4.7%.

The number of technological innovations introduced into the economy increased from 1,946 units to 4,011 units in 2017-2020 (Figure 2). These, of course, serve to increase profitability at the level of the national economy, which is reflected in the growth of the average wage of employees in enterprises, the net profit of entrepreneurs.

Ensuring the balance of innovative interests of the subjects of development in the reproduction of national welfare as a social good based on mutual benefit, trust

and public-private partnership and coordination is one of the important methodological principles in the formation of corporate strategy that leads to increased efficiency in the use of national welfare and optimization of management for the purpose of innovative economic growth.

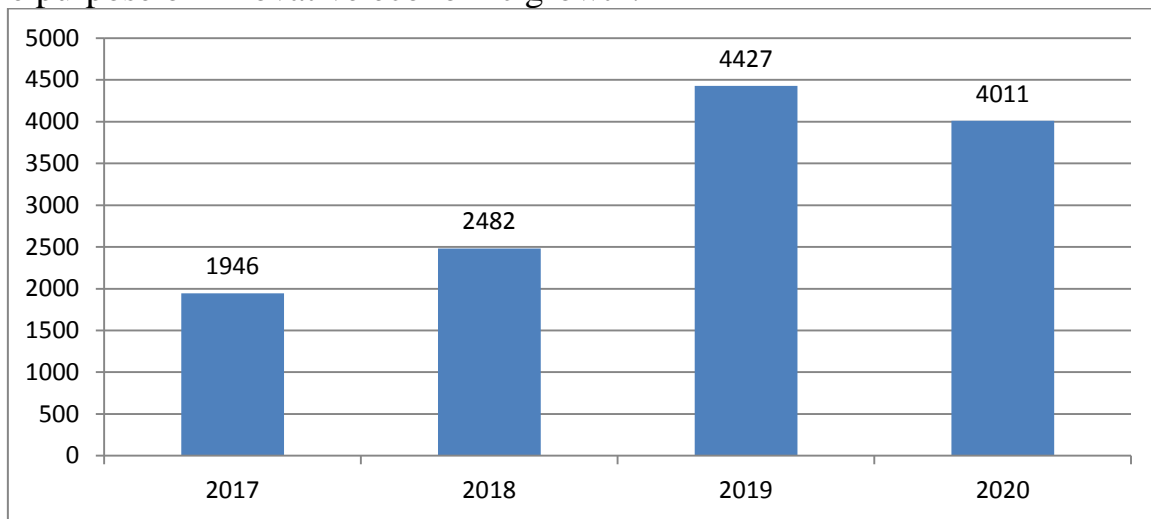


Figure 2. Number of technological innovations introduced into production units¹³

One of the alternatives to the implementation of the coordinated methodological principle is to identify and promote an ideal “hierarchical chain” of interests of economic entities and to focus on it a flexible policy. Investing in human capital (education, health, and population policy) can directly improve quality of life. They can also provide greater interest in investing. This is because healthy and well-educated workers increase capital productivity. Thus, it will be necessary to reconsider the priorities in favor of human capital in order to maintain growth in the long run.

Investing in conservation measures and improving the quality of the environment is one of the important conditions for improving the quality of human life, in particular, health, and is a necessary condition for sustainable economic growth. To assess the effectiveness of these investments, it is important to know how changes in the quality of the environment will lead to changes in the health of the population, ie the expected benefits or harms¹⁴.

The concept of managing the strategic development of human capital can be interpreted as a social organizational-managerial innovation. Modern enterprises are increasing their innovation potential due to increasing competition, innovative trends in the development of economic systems and the development of both technological innovations and organizational and managerial innovations under pressure from the authorities¹⁵.

In the practice of management at different levels of economic systems, there is a further spread of management relations. Currently, the gap between the existing fields of science, industry and education in the regions leads to low efficiency in the use of all human capital and a decrease in the sustainability of the regional system. Research shows that the cluster approach allows the effective use of the developed innovative potential, as business (in the form of large, medium and small enterprises),

educational structures (universities, secondary special schools, colleges, training centers, commercial training centers), scientific organizations (Academy of Sciences), research institutions, higher education institutions) will form a radically new relationship that will allow them to coordinate their innovative activities.

It should be noted that the integration of business structures, educational structures and scientific organizations on the basis of their clustering programs will not only achieve economic efficiency, but also increase the innovation sustainability of the region due to the synergistic effect of the interaction of these cluster elements. Such an organizational structure provides permanent management of human capital at all stages of its formation and development.

The global trend is that there is an interdependence and interdependence between clustering, increasing competitiveness, the development of innovative activities and the sustainability of the national economy. This argument can be seen as a new way for regions to resist stiff competition, a way to increase their competitiveness, and an opportunity to adapt economic systems to the requirements of innovative sustainable development¹⁶.

It should be noted that the development and widespread use of the cluster approach influences changes in the content of cluster associations, their composition, the form of these associations, and the target devices. This ultimately enriches and complements the new content of the cluster approach. It is proposed as a tool for using the national innovative research-production-education cluster for human capital management (Figure 3).

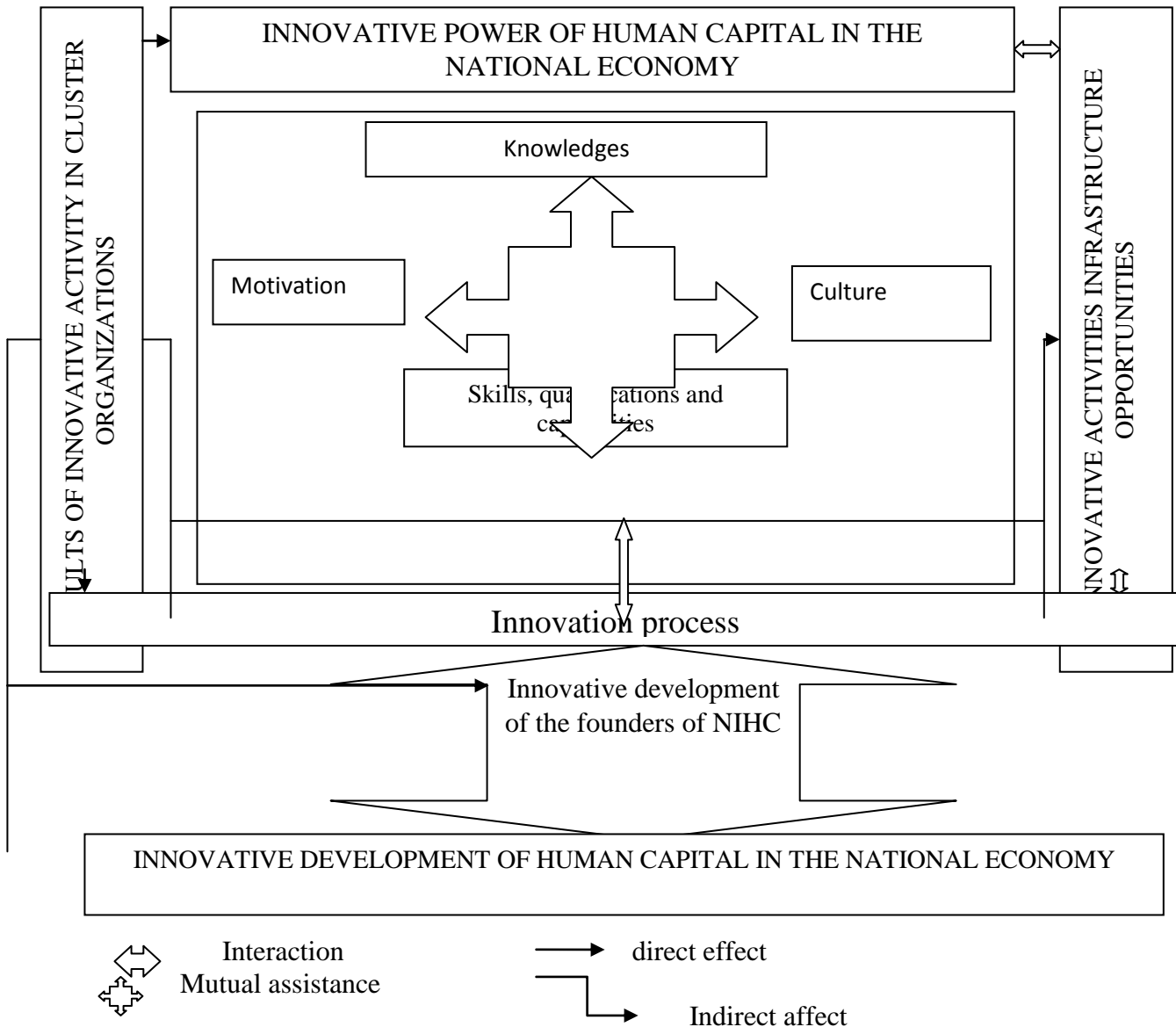


Figure 3. Mechanism of human capital management on the basis of innovative scientific-production-educational cluster

Single cluster management allows for the coordination of business needs, science and education opportunities. The advantages of an innovative research, production and education cluster for the national economy or its individual regions are:

- Forms the organizational basis for the sustainable development of the innovative economy, the members of the cluster are the same regional carriers of ideas;
- Combines the supply and demand for elements of human capital, allows to calculate the structure of supply and demand for elements of human capital, implements a strategy for training specific personnel for priority production, innovative projects;

- Innovative projects lead to the formation of skills, facilitate the process of forecasting the preparation and demand for a certain quality of human capital, ensure its mobility and competitiveness;

- Strengthens the economic ties between science, industry and education, harmonizes the interests of science and business, eliminates barriers to the commercialization of innovations, forming their mobility;

- Creates opportunities for effective use of investments in human capital;

- Supports the geographical concentration of educational, scientific and industrial organizations, increases the efficiency of the use of new ideas, knowledge, technology, product distribution system;

- Reduces the costs of cluster participants due to the scale effect on the basis of cooperation, reduces transaction costs, eliminates the uncertainties and risks of development of economic systems, and serves to implement the doctrine of sustainable innovative development of the region.

The concept of establishing an innovative scientific-production-education cluster (SPEC) includes five stages, which include: The first stage - the creation of priorities in science, production and education, the selection of goals and objectives. The second stage is to assess the factors of the presence of stakeholders in the organization of SPEC and the development of a single strategy of innovative development, which will allow carrying out future interactions and coordination.

The third stage is to determine the institutional basis for the development of SPEC. The fourth stage is the formation of a management system of its innovative development based on the organizational structure and management of human capital SPEC. The fifth stage is the decisive stage of signing the regulatory documents on the creation of the cluster.

The algorithm for the formation of an innovative scientific-production-education cluster can be imagined as follows:

- Assessment of human capital of innovative research, production and education cluster;

- Defining the goals and objectives of the innovative research, production and education cluster;

- Formation of initiative groups;

- Analysis of the level of innovative development of human capital;

- creating conditions for the involvement of enterprises in the necessary innovative research, production and education cluster;

- Determination of the principles of operation of the innovative scientific-production-educational cluster;

- Feasibility study of the organizational project of the innovative scientific-production-educational cluster (financial plans and business plans of the investment project);

- Establishment of the Coordinating Council of Innovative Research, Production and Education Cluster;

- Development of innovative scientific-production-educational cluster management system;

- Formation of a plan for the implementation of innovative educational-industrial-educational cluster educational project.

The main difference of this cluster from other generally accepted forms of integration, such as territorial-industrial complexes (TICs), holdings, financial-industrial groups (FIGs), is that it creates a sufficiently serious competitive position in terms of internal competition environment and relations with non-cluster competitors.

The basis of SPEC should be universities, as they form the basis for the reproduction and operation of human capital. In addition, other organizations participating in the cluster carry out the interaction of structures on the basis of horizontal connections. In addition, it is necessary to create support organizations that provide technology transfer, knowledge, information, and infrastructure. SPEC's strategy is based on optimizing the innovation chain between science, industry and education. It forms a positive effect due to the full use of human capital in all three areas.

In the process of studying this problem, the basic principles of IITK were formed:

- 1) Territorial localization of the cluster, ie compulsory connection to the economic system or region;
- 2) The presence of direct contacts and connections between cluster participants;
- 3) The formation of relations on the basis of cooperation and internal competition, the absence of signs of accession;
- 4) The main task of goal setting is to reflect the formation of human capital and innovative improvement for the sustainable development of the region;

The main goal of the innovative research-production-education cluster is to accelerate the innovative development of the economic system based on the use of the innovative potential of human capital, which is expressed in the process of continuous renewal of innovations.

The criterion for the effectiveness of the innovative research-production-education cluster is to increase the level of innovative activity of the economic system.

Conclusions and suggestions

The cluster approach to human capital development is primarily a theoretical and methodological justification of the heuristic necessity of integrating human potential reproduction into an innovative model of strategic management, which allows taking into account the effects of systemic regulation of social and economic trends in management decision-making. An important methodological aspect of the dynamic systematic analysis of the effectiveness of the new cluster policy is the gradual transition to management of functional-spatial development of the economic system, where the formation of innovative clusters and rules of conduct (economic, social, environmental, etc.)

The results of the study allow suggesting criteria for the degree of harmonization of social and economic strategies of innovation-oriented economic dynamics, including:

- the production of a large volume of gross domestic product per capita, the achievement of a high level of welfare, the development of social institutions;
- The role of social policy among development priorities, the importance of state redistribution tasks, which will eliminate the high income stratification in society and close the gap between poverty and wealth.

Thus, the results of the project on the establishment of SPEC in Uzbekistan can be as follows:

Development of a methodology for the formation of SPEC in Uzbekistan; Formation of information base of SPEC in Uzbekistan; compiling a register of small innovative enterprises; list of financial structures; basis of research laboratories; list of educational institutions and programs aimed at training specialists in the field of human capital management, production needs; List of SPEC infrastructure organizations; assessment of human capital needs and opportunities within the cluster; recommendations on the formation of the interaction of cluster participants, the Ministry of Small Business Development and Support, regional authorities.

Development prospects:

- Establishment of a consulting and coordination center of SPEC on the basis of universities;
- Introduction and adaptation of the model of SPEC in the territory of the republic.

Required resources: human capital (creative labor resources, computers, office equipment, stationery, telephone, Internet and information resources, national and foreign literature (including articles), published experience and theoretical aspects of the formation and development of SPEC.

The importance of SPEC can be defined as an appropriate and effective form of organizing all technological chains from the birth of ideas, the commercialization of innovations and their introduction into production and delivery to the consumer. The proposed approach is to establish interactions and interdependence between all cluster participants, especially through stable horizontal links between production and education that optimize the cost of knowledge, scientific discoveries and inventions, increase the level of innovation of the cluster economic system and the whole economic system. Takes advantage of the firm hierarchy and market mechanism.

References:

¹ Decree of the President of the Republic of Uzbekistan No. PF-60 of January 28, 2022 "On the Development Strategy of the New Uzbekistan for 2022-2026".

[/www.president.uz](http://www.president.uz)

² Kondratev N.D. Problems of economic dynamics // Kondratev N.D. Izbr. soch., 2nd ed. - M., 1993, p. 24-83 .; Kuznets S.S. Economic Growth of Nations: Total Output and Production Structure. - Cambridge, Mass., 1971; Shumpeter Y. Theory of economic development. - M.: Progress, 1982.

³ Lazareva E.I. Natsionalnoe blagosostoyanie kak integrirovannyi resurs innovatsionno-orientirovannogo razvitiya ekonomiki: teoriya, metodologiya i instrumentariy issledovaniya. Author's abstract of the dissertation for the degree of Doctor of Economic Sciences. - Rostov n / D, 2010

⁴ Gilyazutdinova I.V., Djumaeva R.A. Strategicheskoe razvitie sovokupnogo chelovecheskogo kapitala v usloviyax povysheniya innovatsionnoy aktivnosti promyshlennyykh predpriyatiy. // Vestnik Kazanskogo tehnologicheskogo universiteta. 2014. №17. –P.257-261

⁵ Leonteva A.N. Chelovecheskiy kapital v ustoychivom razvitiy ekonomiki regiona. // Problems of modern ekonomiki. 2012. №3. –P.247-251

⁶ Cluster economy and promising policy: theory and instrumentation / ed. d-ra econ. science, prof. A.V. Babkina. - SPb.: Izd-vo Politexn. un-ta, 2015.

⁷ Lazareva E.I. Strategy for the development of human capital in the system of innovation-regional clusters // Problems of modern economics. 2008. № 1. p. 200-204. ; Lazareva E.I. Innovatsionno-orientirovannaya model klasternoy politiki prirashcheniya kapitala blagosostoyaniya yuno-rossiyskix regionov // TERRA ECONOMICUS. - 2013. - T. 11. - № 4. - Ch. 2. P. 194-199.

⁸ Hansen E. Ekonomicheskie tsikly i natsionalnyy doxod / Klassiki keynsianstva: v 2 t. T. 1. - M.: Economics, 1997.

⁹ Aghion P., Bolton P. Theory of Trickle-Down Growth and Development // Review of Economic Studies. 1997. V. 64. P. 87-110 .; Lucas R. On the mechanism of economic development // Journal of Monetary Economics. 1988. V. 22. P. 116-125 .; Romer P.M. Endogenous Technical Change // Journal of Political Economy. 1990. V. 98. №5. P. 21-37.

¹⁰ Innovative development: economics, intellectual resources, knowledge management / ed. B.Z. Milner. - M.: INFRA-M, 2009 .; Kuzyk B.N., Yakovets Yu.V. Russia-2050: Innovative Breakthrough Strategy. – M.: Economics. 2005.

¹¹ Science and innovation in Uzbekistan. –T.: 2021. - P.46

¹² Science and innovation in Uzbekistan. –T.: 2021. - P.13

¹³ Science and innovation in Uzbekistan. –T.: 2021. - P.65

¹⁴ Environmental Performance Index (EPI). - Yale Centre for Environmental Law & Policy, Yale University; CIESIN, Columbia University; Joint Research Centre of the European Commission, Ispra, Italy // <http://epi.yale.edu>

¹⁵ Ustaev R.M. To the question of the formation of the innovative component of human capital in the region.//Bulletin of the North Caucasian Federal University. 2016. No. 2. - P. 95-98.

¹⁶ Gilyazutdinova I.V., Khramov Yu.V. Analysis and assessment of streams of knowledge and information in innovative systems.// Bulletin of the Kazan Technological University. 2011.№20.-P.237-245

Decree of the President of the Republic of Uzbekistan No. PF-60 of January 28, 2022 "On the Development Strategy of the New Uzbekistan for 2022-2026". /www.president.uz

Aghion P., Bolton P. Theory of Trickle-Down Growth and Development // Review of Economic Studies. 1997. V. 64. P. 87-110.

Gilyazutdinova I.V., Dzhumaeva R.A. Strategic development of total human capital in terms of increasing the innovative activity of industrial enterprises.// Bulletin of the Kazan Technological University. 2014. No.17. –S.257-261.

Gilyazutdinova I.V., Khramov Yu.V. Analysis and evaluation of knowledge and information flows in innovative systems.// Bulletin of the Kazan Technological University. 2011.№20.-p.237-245

Dzhumaeva R.A. Human Capital as a Competitive Factor in the Development of the Innovative Economy of the Region: Proceedings of the International Correspondence Scientific Conference "Economic Science and Practice". Chita, 2012.-S.161-163.

Innovative development: economics, intellectual resources, knowledge management / ed. B.Z. Milner. – M.: INFRA-M, 2009.

Kuzyk B.N., Yakovets Yu.V. Russia-2050: Innovative Breakthrough Strategy. – M.: Economics. 2005.

Cluster economics and industrial policy: theory and tools / ed. Dr. Econ. sciences, prof. A.V. Babkin. - St. Petersburg: Publishing House of the Polytechnic. un-ta, 2015. Kondratiev N.D. Problems of economic dynamics // Kondratiev N.D. Fav. cit., 2nd ed. - M., 1993, p. 24-83.

Kuznets S.S. Economic Growth of Nations: Total Output and Production Structure. – Cambridge, Mass., 1971.

Leontieva A.N. Human capital in the sustainable development of the region's economy.//Problems of the modern economy. 2012.№3. –S.247-251.

Lazareva E.I. Strategy for the development of human capital in the system of innovation-regional clusters // Problems of modern economics. 2008. No. 1. p. 200-204.

Lazareva E.I. Features of modeling the trajectories of the increment of the capital of national welfare in the perspective of sustainable innovation-oriented development // Partnership of Civilizations. 2013. No. 4. S. 234-244.

Lazareva E.I. National Welfare as an Integrated Resource for Innovation-Oriented Development of the Economy: Theory, Methodology and Research Tools. Abstract of the dissertation for the degree of Doctor of Economics. - Rostov n / a, 2010.

Lazareva E.I. An innovation-oriented model of the cluster policy for increasing the capital of the welfare of the South Russian regions // *TERRA ECONOMICUS*. - 2013. - T. 11. - No. 4. - Part 2. P. 194-199.

Lazareva E.I. Ecological parametrization of the trajectories of the integration-cluster regional policy of innovative growth // *Economics of Nature Management*. 2008. No. 3.

Lucas R. On the mechanism of economic development // *Journal of Monetary Economics*. 1988. V. 22. P. 116-125.

Pastukhov A.L. Knowledge management in the system of human capital formation.//*Technical and technological problems of service*. 2016. No. 1. - P. 62-66.

Romer P.M. Endogenous Technical Change // *Journal of Political Economy*. 1990. V. 98. No. 5. P. 21-37.

Ustaev R.M. To the question of the formation of the innovative component of human capital in the region.//*Bulletin of the North Caucasian Federal University*. 2016. No. 2. - P. 95-98.

Hansen E. Economic cycles and national income / *Classics of Keynesianism: in 2 vols*. T. 1. - M.: Economics, 1997.

Schumpeter J. *Theory of economic development*. – M.: Progress, 1982.

World Development Indicators / World Bank, 2014. – Washington, D.C.

Environmental Performance Index (EPI). - Yale Centre for Environmental Law & Policy, Yale University; CIESIN, Columbia University; Joint Research Centre of the European Commission, Ispra, Italy // <http://epi.yale.edu>