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Forming an Approach to Effective Integration of Higher Education Institutions into the National Innovative System

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ABSTRACT

The article considers subjects of the national innovation system of higher education institutions: on the basis of the study of the content, directions and subject of cooperation relations with the state, technology parks, business incubators, commercial enterprises, small innovative enterprises and other subjects, higher education institutions were evaluated instead, to act as the system's primary kernel.

KEYWORDS: scientific educational institutions, national innovation system, state, integration, educational centers, techno–parks, advisory services, knowledge transfer, business incubators, commercial enterprises, small innovative enterprises, charitable foundation.

INTRODUCTION

In economic science, economists conduct constant research to determine the structure of the national innovation system (NIS) and its improvement, create conditions for the most effective performance of functions, as well as economic relations between its subjects. Throughout the research period, the focus of scientific research on NIS development was on organizations in the field of science and education, supplying new ideas and, above all, specialists capable of introducing innovations and high–tech projects.

With standard and specific functions, science and education are integrated into NIS. This is considered to be an important but insufficiently researched field of research.

Despite extensive research related to the development and development of NIS in the digital economy era, Comprehensive research on the integration of science and education into national innovations to increase the stability of the system and its adaptability to conditions has not been carried out to date, and this is of great interest.

On the basis of the Decree of the President of the Republic of Uzbekistan dated 8 October 2019, No PD–5847 "On approval of the concept of development of the higher education system of the Republic of Uzbekistan until 2030" [1] the concept of development of the higher education system of the Republic of Uzbekistan was adopted. The concept is aimed at improving the quality of education, competitive training of personnel, effective organization of scientific and innovative activity on the basis of ensuring a solid integration of science, education and production, based on the needs of higher education in the social and economic sectors.

The President of the Republic of Uzbekistan Sh.M. Mirziyoyev also spoke about this and made the following points: 65 academic lyceums are transferred to higher education institutions in order to strengthen the continuity between universities and lower levels of the education system. 187 technical schools will also be affiliated with related universities and network enterprises in their direction [2]. The distinctive feature of this strategy is the development of public–private partnership in higher education, the organization of the activities of branches of State and non–State universities, including prestigious foreign universities, on the basis of which the level of enrolment in higher education will be above 50 per cent, and a competitive environment will be created on the ground.

Scientific research works of foreign scientists B.A. Lundvall, R. Nelson, G.B. Klyder, K. Freeman and others can be cited as the scientific–theoretical bases of the formation and development of the national innovation system and management of the integration of science and education into the national innovation system.

Russian scientists Yu.P. Anisimov, S.Yu. Glazev, O.G. Golichenko, A.A. Dynkin, Yu.V. Erygin, B.N. Kuzyk, N.I. Ivanov, V.M. Polterovich, I.V. Shevchenko, Yu.V. Yakovets and others conducted scientific-research works on this topic.

In the center of scientific research on the problems of the development of MIT in the Republic of Uzbekistan, the scientific and theoretical aspects of the integration of new

ideas, most importantly, experts capable of implementing innovations and high–tech projects into organizations in the field of science and education, to distinguish the scientific research works of Kh.P. Abulkosimov, M.A. Mamatov, A.Kh. Eshboev, A.O. Ochilov, B.Sh. Usmonov, U.U. Shukurullaev, D.Kh. Khudainazarova, A.S. Khojaev, U.I. Djumaniyazov, D.A. Nabiev, A.V. Vakhobov and others from the scientists of our Republic in this field possible.

"Institutions for the development of the national innovation system are the beginning of integration, the process and the result of innovation of national firms" [3], – assesses B.A. Lundvall. On the other hand, Nelson argues that "the national innovation system is the real element and involvement in the production process of products, expressing the dissemination and use of economically useful knowledge" [4].

Russian scientist A.G. Golichenko "included in the members of the National Innovation System firms, state research organizations, financial systems, government institutions, educational systems, etc." [5]. N.V. Beketov, having assessed that educational and scientific organizations are very well described and provide important information, noted that since the 1940s the "leading countries of the world pursue geoeconomic and geopolitical goals within the framework of the foreign policy of the education system" [6].

From Uzbek economists, M.A. Mamatov evaluates the direction of influence of the national innovation system on the system elements of the institutional environment and the national innovation system as an economic entity, which simultaneously implements the client, financial, innovation activities and insurers in the system. A.S. Khojaev emphasizes the role of techno–parks in the sphere of educational services, one of the subjects of the national innovation system, noting that "The Techno–park is considered primarily a priority of universities in the technical field, while, among other things, universities of humanities, social and economic sciences will be able to take their place in the market of services by attracting consulting services" [8].

RESEARCH METHODOLOGY

The article used dialectical, systematic, integral and synergetic approaches, economic, logical, scientific abstraction, analysis and synthesis, modeling of economic processes and systems, induction and deduction, comparison, generalization, grouping and graphic methods.

ANALYSIS AND DISCUSSION OF RESULTS

Decree of the President of the Republic of Uzbekistan No PD–5047 dated April 1, 2021 "On measures to further improve state policy in the field of science and innovation development" was adopted in order to increase the efficiency of cooperation between the scientific environment and state agencies, as well as business entities. According to the decree, the establishment of the national office for the introduction of innovations and technology transfer, its main tasks and areas of activity were determined [9]. In the Republic of Uzbekistan, there is a wide range of innovative infrastructure, which includes various stages of the creation and implementation of innovative ideas: offices for the commercialization of innovative projects and developments, centers for supporting technologies and innovations, centers for the collective use of scientific equipment, industrial development funds, innovation centers, scientific and educational centers. Innovative business–incubators, technology parks, industrial parks, technological platform, product certification bodies and test–experimental laboratories, technology transfer centers will be formed. However, it is not used as needed due to the poorly established relations between these entities, as well as the lack of sufficient cooperative activities and low motivation [10].

In addition, there are gaps between higher education–science–production in our country, integration is not provided, scientific research institutes are not involved in the process of training personnel in higher education to the necessary extent, scientific research is carried out in them without taking into account the real needs of the economic sectors, highly qualified scientific and lack of systematic training of scientific–pedagogical personnel leads to a decrease in the scientific potential of higher education institutions. [11].

Today, many educational institutions are offering mobile learning, and many people are accepting this offer. Revenues from mobile e–learning will reach 38 billion by the end of 2020. It is expected to exceed the US dollar [12]. Therefore, close cooperation with the state authorities allows educational and scientific organizations to expand the opportunities for the development of scientific and research work and to attract additional funds. The proposed model of interaction of HEIs with other elements of the National Innovation System is presented in Figure 1.

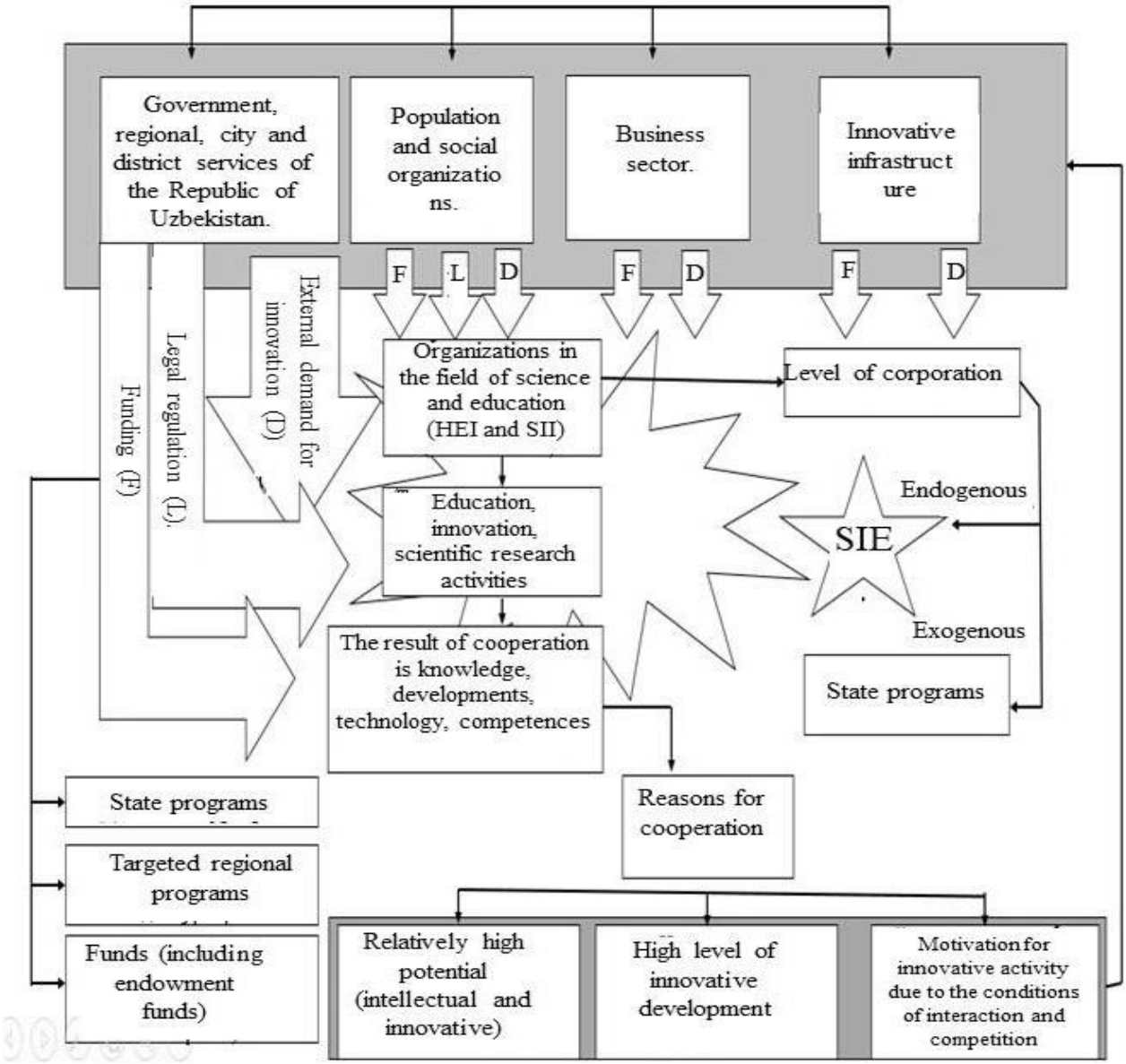

Figure 1. A model of cooperation between HEIs and subjects of the national innovation system [16]
F – Financing; D – Demand for innovation; L – Legal normative document

Figure 1 shows that higher education is at the center of the model of interaction of mass masses with subjects of the national innovation system, organizations of science and education. They cooperate with the State, the people, the business sector and innovation infrastructure. This cooperation is regulated and financed by the state. Higher education is financed by State programmes and various funds in the national innovation system of scientific and educational organizations. The figure shows the reasons and levels of cooperation of the organizations of science, education.

The main task of public administration is to create an enabling environment to support research from the beginning and commercialization of innovation. Instruments to encourage such interaction include, first and foremost, the establishment of relations through State structures, programmes, subsidies, etc.

The pace of innovative development in the Republic of Uzbekistan reflects the problem of insufficient cooperation between the business community and scientific and educational institutions. The goal of interaction and integration of science, education and business community is creation of favorable conditions for creation of knowledge and their further generation. It is desirable that each higher education institution has its own techno–park, because here with the state, network and regional support of ideas become a business [13].

It is known that about 13% of techno–parks are created on the model of higher education institution – as structural subdivisions of universities. Techno–parks occupy a special place in the implementation of entrepreneurial activity in higher education institutions. Because their products can be cooked as scientific and innovative results. Creating a technology park does not have sufficient potential for every university. If the Techno–park becomes mainly a priority of universities in the technical sphere, then, among other things, humanitarian, social and economic universities will be able to

take their place in the market of services, engaged in consulting services.

An institution of higher learning and a techno–park or business incubator is one way to cooperate with a business environment in the field of technology development. The aim of their cooperation is the transfer of knowledge, diffusion and commercialization of innovation. In this regard, we consider it necessary to expand the use of technology parks and business incubators of higher education institutions, as well as their cooperation with industrial enterprises.

SIE (small innovative enterprises) established on the basis of higher education institutions play a link between basic science and production. Higher education institutions should take into account the demand for innovative products in the market when forming a set of projects. It is used by manufacturing enterprises in the process of creating an investment product, thereby transforming knowledge into a product that has been tested in the market. In its implementation of traditional and innovative functions, the institution of higher education should create an enabling environment for the effective development of enterprises in the country.

In addition, Uzbekistan has a weak charity fund and philanthropic culture. World experience shows that most of the funds created to support research and development are not tied to a single university, but finance research conducted by scientists regardless of the place of work. The amount of funding directly determines the effectiveness and scale of research and development. There is a positive correlation between the amount of donations to a higher education institution and its role in the world ranking.

In international practice, such funds usually invest in order to generate income, which, with the exception of fund management costs, is fully allocated to the purposes envisaged by the founder [14]. In order to broaden the scope and increase the effectiveness of the interaction between these actors of the national innovation system, the following measures are needed:

Implementation of the "Three Corners of Knowledge" concept, based on the three elements of the NIS, triangle – cooperation between higher education institutions, business and government in three areas – innovation, research and education [15];

– networking with higher education institutions, venture partners in the industrial sector;

– cooperation with enterprises through innovative infrastructure;

– development of entrepreneurial culture in higher education institutions;

– network management of higher education institutions.

National and international scientific conferences are a prerequisite for the development of "science openness", allowing scientific communities to achieve research objectives in cooperation. If higher education institutions are engaged in innovative activity in NIS, this is reflected in the element "innovation and investment enterprise" in this scheme as a form of activity of innovation and investment enterprise. This does not mean changing the organizational and legal form of an educational institution, but, on the contrary, shows what function an educational institution performs in an innovative system.

CONCLUSIONS AND PROPOSALS

The national innovation system represents a holistic functional system as a subject that expresses the directions and functions of the interaction of the institutional environment on the system elements.

In the Republic of Uzbekistan, a wide–ranging innovation infrastructure has been formed, which includes various stages of creation and implementation of innovative ideas, but it is not used to the required extent due to poorly established relations between its subjects, as well as the lack of sufficient cooperation and low motivation.

The main task of the state authorities is to support scientific research from the initial stage and create favorable conditions for the commercialization of innovations.

The goal of interaction and integration of science, education and business community is creation of favorable conditions for creation of knowledge and their further generation.

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