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ОРГАНІЗАЦІЯ ВІДКРИТИХ ІННОВАЦІЙНИХ СТРУКТУР В ЗАКЛАДАХ ВИЩОЇ ОСВІТИ

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ORGANIZATION OF OPEN INNOVATIVE STRUCTURES IN HIGHER EDUCATION INSTITUTIONS

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Анотація. Із процесами економічної інтеграції та появою нових інформаційно-комунікативних можливостей закриті інноваційні процеси в середині постійних наукових структур в кінці минулого століття довели свою неефективність, що призвело до появи та поширення відкритих інноваційних моделей (бізнес-інкубаторів для стартапів, технопарків та наукових парків). До макроекономічних проблем розвитку стартап-руху в Україні слід віднести нестабільний стан економіки, обмежений ринок інвестицій, який характеризується низьким рівнем сприйняття інновацій та платоспроможністю, а також недостатнім досвідом стартаперів. Інноваційний потенціал вітчизняних стартапів можна визначити як відносно незначний. Серед пріоритетних сфер реалізації успішних українських стартапів на міжнародному ринку слід відзначити: енергозбереження, охорону здоров'я, «розумний будинок», ІТ галузь. Складність взаємозв'язків та відносин між учасниками та організаторами наукових парків створює проблеми в організації їх роботи та потребує розробки заходів щодо удосконалення організаційної структури наукових парків, визначення пріоритетних заходів з розвитку та поширення відкритих інноваційних структур в діяльності ЗВО. Узагальнення досвіду створення організаційних структур наукових парків на базі ЗВО та розроблення загальної схеми взаємозв'язків між учасниками такої структури. Порівняльний аналіз принципових схем взаємовідносин між учасниками наукових парків на базі ЗВО та їх організаційних структур показав специфіку функціонування таких структур, що заснована на тимчасовій кооперації, розширення можливості удосконалення освітньої та наукової діяльності ЗВО, нарощування їх ділових зв'язків з місцевою науковою елітою та фінансовими колами разом із збільшенням своєї ділової академічної репутації, підвищення рівня інноваційного розвитку регіону. За результатами

проведеного аналізу організаційних структур наукових парків різних ЗВО України було розроблено загальну схему організації таких інноваційних структур. Серед заходів з удосконалення організації їх роботи можна виокремити: запровадження системи моніторингу та оцінювання результатів діяльності наукових парків, заохочування представників бізнесу до створення спільно із державою цільових фондів для стимулювання діяльності наукових парків, зокрема популяризація ендавменту, забезпечення публічного висвітлення інформації щодо діяльності наукових парків.

Ключові слова: відкриті інноваційні структури, ВНЗ, інноваційна діяльність, стартап, наукові парки, організаційна структура, венчурний бізнес, бізнес-інкубатор.

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Anotation. With the processes of economic integration and the emergence of new information and communication opportunities, the closed innovation processes in the middle of permanent scientific structures at the end of the last century have proved ineffective, which has led to the emergence and spread of open innovation models (business incubators for startups, technology parks and science parks). The macroeconomic problems of the development of the startup movement in Ukraine should include the unstable state of the economy, the limited investment market, characterized by a low level of perception of innovation or solvency, as well as insufficient experience of start-ups. Innovative potential of native start-ups can be defined as relatively insignificant. Among the priority areas of successful Ukrainian start-ups on the international market should be noted: energy saving, health care, «smart home», IT industry. The complexity of relationships and interconnection between participants and organizers of science parks creates problems in organizing their work and requires the development of measures to improve the organizational structure of scientific parks, identification of priority measures for the development and dissemination of open innovation structures in the activities of the HEI. Summarizing the experience of creating organizational structures of scientific parks on the basis of HEI and developing a general scheme of interconnections between participants of such a structure. The comparative analysis of the principal schemes of relations between the participants of scientific parks on the basis of HEI and their organizational structures showed the specific functioning of such structures, based on the temporary cooperation, the expansion of the possibility of improving the educational and scientific activities of the HEI, increasing their business ties with the local scientific elite and financial circles together with an increase in its business academic reputation, an increase in the level of innovative development of the region. According to the results of the analysis of organizational structures scientific parks of various ZOOs of Ukraine developed a general scheme of organization of such innovative structures. Among the measures to improve the organization of their work, one can distinguish: introduction of a system for monitoring and evaluating the results of activity of scientific parks, encouraging business representatives to create together with the state targeted funds to stimulate the activity of scientific parks, in particular popularization of the entanglement, providing public coverage of information on the activities of scientific parks.

Key words: open innovation structures, universities, innovative activity, startup, scientific parks, organizational structure, venture business, business incubator.

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Formulation of the problem. The concentration of human capital as an active part of intellectual capital in scientific and production associations in all its organizational forms in different countries always provided the implementation of scientific and technological innovations. In the last century, dominated the traditional vertical integration model based on large research structures, in particular, in the Soviet the economy within the framework of scientific and industrial associations, associations of enterprises of various industries, laboratories and design bureaus of large industrial associations (enterprises).

However, with the processes of economic integration and the emergence of new information and communication opportunities, increased mobility of workers scientists and the emergence of affordable

venture capital, closed innovation processes in the middle of permanent organizational structures in scientific activities have become ineffective, which led to the emergence of open innovation models and structures.

Analysis of recent research and publications. The theory of open innovation determines the process of scientific research and scientific and technical development as an open system, that is, the subjects of scientific activity can attract new knowledge and ideas, and also engage in the development of new products and technologies not only solely through their own internal research, but also in cooperation with other organizations and individuals [1]. Such an approach based on temporary cooperation eliminates the high cost of maintaining large research structures, eliminates the duplication of innovation by different actors, opens opportunities for

improving the activities of the latter, which in general raises the level of performance of intellectual activity.

Setting objectives. Research organization of open innovative structures in higher education institutions.

Research results. At the same time, the development of the attracted intellectual capital of relations becomes important, and the center of knowledge innovation shifts from centralized and vertical structures to horizontal in the form of startup companies, small innovative firms using the material base of intermediaries, which can serve as HEI, as well as other public and private organizations by creating - business incubators, technology parks and science parks - innovative enterprises and their associations that develop, produce and sell innovative products and (or) production or service, the amount of which in monetary terms exceeds 70% of its total volume of production and (or) services. [2]. The Law of the State Property Fund shall be the founders or co-founders of other legal entities, create educational, educational and scientific-scientific-production complexes, scientific parks, as well as to form part of a consortium, form the foundations of academic entrepreneurship in educational institutions [3].

The essence of the activity of the incubator, both commercial and non-profit, is to create conditions for the successful operation of venture capital firms (start-ups) and the implementation of their original scientific and technical ideas. Organizationally it looks like providing these firms (teams or individual developers) with material, informational, consulting and other services. Typically, commercial incubators make insignificant investments in promising projects, so-called sown investments. Recovery of incubator costs is ensured by participation in future profits of venture firms (startups). To this end, the incubator conducts an examination of projects for novelty and reliability, environmental and commerciality; searches for investors; can act as a guarantor in lending and investment relations.

Non-profit incubators do not have the purpose of making a profit, their task is to find among the projects a solution that has a social significance for a community or local

community that can fund its implementation. The nonprofit directions of the activity of incubators, created on the initiative of HEI, can be attributed to the process of acquiring entrepreneurial skills and knowledge among students and young people.

The history of startup is related to the notion of venture capital. For decades, venture capital was exclusively an American phenomenon - as early as the mid-1990s, almost 95% of all financial investments were owned by American companies globally. Today, their share is only 50%. After 2010, many countries came out of the global crisis, accompanied by an increase in technological innovation and volumes of investment in venture capital from \$ 52 billion to \$ 171 billion, and the number of transactions of about 8.5 thousand to 15.0 thousand, which concentrated in 20 cities of the world. By the growth rates of venture investments, the following cities and countries are distinguished: Bangkok (Thailand), Hangzhou (China), Jakarta (Indonesia), Sofia (Bulgaria), Dubai (OAE) [4].

By volume of venture capital investment per inhabitant for the period from 2015-2017, the following are distinguished: New York (USA), Beijing (China), Boston (USA). However, leading positions are replaced by San Francisco (USA) and San Jose (USA) more than 10 thousand dollars. per person [4].

Innovative potential of domestic start-ups can be defined as relatively insignificant. Thus, an analysis of the number of successful startups showed that in 2016 Ukraine had registered 144 startups, in 2017 it had 173 startups and ranked 37th among 137 countries, and in 2018, 230 startups and 43 places out of 197 countries. In the ranking of countries by the number of startups in the first place are the United States (in 2018 - 45751 startups, in 2017 - 32413 startups), in the second - in India (in 2018 - 5698 startups, in 2017 - 3788 startups) and the third position passed from Indonesia (2018 - 1920 startups, in 2017 - 1520 startups) to the United Kingdom (2018 - 1258 startups, in 2018 - 4812 startups). More than one thousand startups are registered in countries such as Canada, Germany, France, Australia, Spain, Brazil. Significant rates of increase in the

coordination and control of the process development and implementation of scientific park projects «The founder of the scientific park has the right to receive part of the profit from his activities in accordance with the statutory documents. The HEI and / or the scientific institution are involved in the formation of the authorized capital of the scientific park by introducing into it intangible assets (property rights to intellectual property objects), money, securities and other alienated rights that have a monetary valuation. Scientific, laboratory and research equipment, as well as components and materials imported into the territory of Ukraine for the implementation of scientific park projects, are exempted from payment of import duties in accordance with the procedure established by the Customs Code of Ukraine. Founders and partners of scientific parks, whose economic management or management is state property, can lease it for the implementation of projects of scientific parks [8].

The MES site has registered 24 scientific parks [9]. The first of them in 2006 became the science park «Kyiv Polytechnic» on the basis of KNTU «Kiev Polytechnic Institute named after Igor Sikorsky», which shows an example of a successful technology transfer through open innovation in Ukraine. An analysis of the content of his intellectual products clearly confirms the dependence of the development of intellectual capital of the HEI on the volumes and rates of innovation development of industrial production as a customer and investor. In this case, the transfer was mainly carried out with products of nanotechnologies and satellite technologies, and the volume of revenues reached 10 million hryvnas [10].

The science park «Taras Shevchenko University of Kyiv» was created in the form of a corporation by the Taras Shevchenko University of Kyiv, the National University of Food Technologies and three institutes of the National Academy of Sciences of Ukraine: the Institute of Organic Chemistry, the Institute of Biochemistry them. O.V. Palladin and the Institute of Materials Science them IM Frantsevich Its structure, in addition to

management, includes four centers: marketing research development, support for innovation entrepreneurship, intercultural professional communication and harmonization of terminology, professional audit of educational and research activities [11].

A clear scheme of interaction between the participants is observed in the scientific park «The use of natural resources and quality of life» [12]. The stages of the development of the scientific park are definitely determined by its leadership. However, the road map of the DonNU Podillya Scientific Park: distinguished by the specificity and interconnection of its work plans by 2030: since 2020 - convergent management, training in innovative management; starting from 2025 - start-up movement, support for the development of the region, campus construction, scaling up of intellectual property, adapting specialties to the needs of the practice, creating spin-off enterprises, quality certification, re-engineering; by 2030 - construction of RD network, development of R&D activities, clusterization, product diversification, IRO, growth of the share [13].

Successful researches and projects in various fields of science confirm that the State Pedagogical University «Precarpathian National University named after Vasyl Stefanyk» is a university of the European standard. The academic parked university works in the direction of commercialization of scientific developments, technological management, information and communication and technical support, accounting, financial and legal Accompanying the participants of the business incubator.

The scientists of Uzhgorod National University have developed the Innovative Program of the Scientific Park of this institution aimed at ensuring sustainable socio-economic development of the Transcarpathian region by introducing new forms of innovation and investment cooperation of the scientific and technical elite, business and financial circles, regional authorities and local communities and using their own energy, nature-raw materials, technological, logistical and human resources.

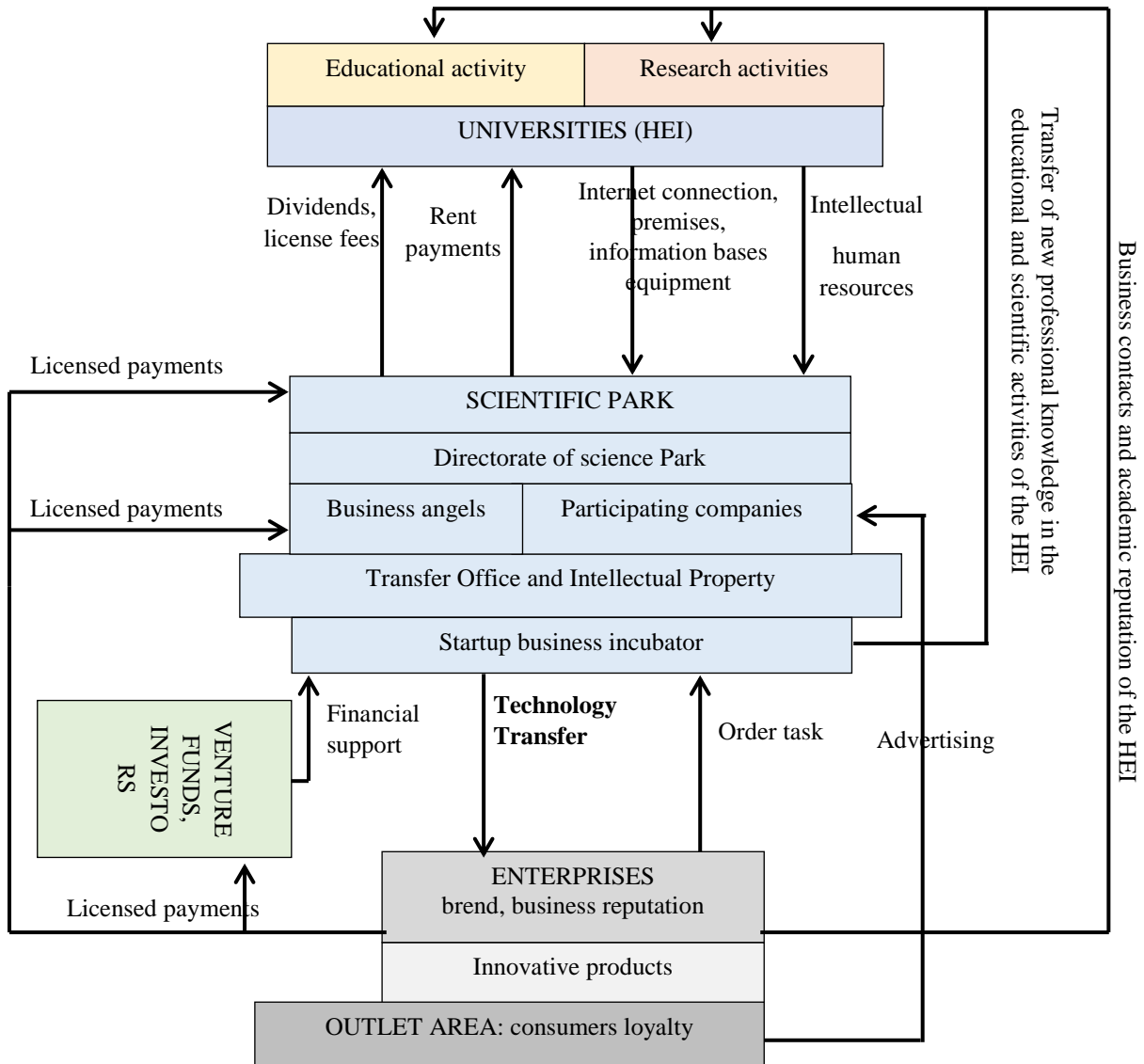


Figure 2. The general organizational structure and the nature of the interconnection between its participants in the secondary vocational area park (developed by the author)

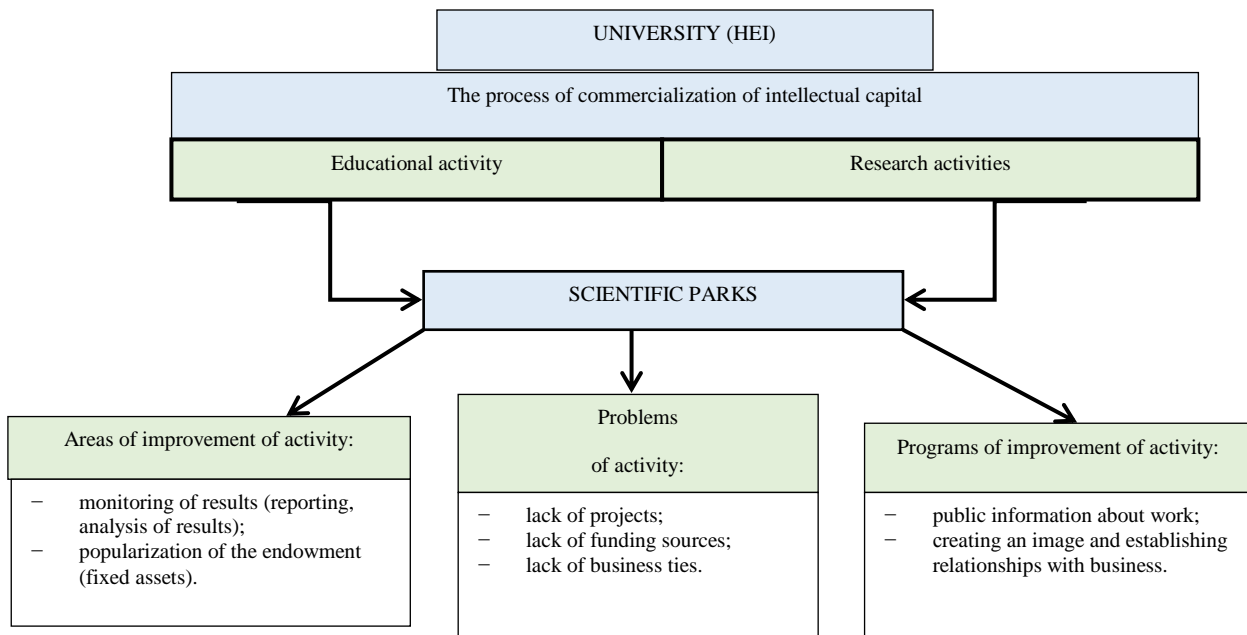
According to the results of the research of the organizational structures of scientific parks of various ZAs of Ukraine, a general scheme for the organization of such innovative structures are shown at Pic. 2.

The directions of development and organization of such innovative structures are related to the increase in the number of projects that need production, the expansion of sources of funding, and the establishment of close cooperation between science parks and enterprises are shown at Pic. 3.

Taking into account the aforementioned, among the measures aimed at improving the organization of open innovation structures on the basis of HEI Ukraine, one can distinguish: introduction of monitoring system, evaluation of the results of scientific parks activities,

and, accordingly, development of a system of reporting and indicators of the effectiveness of scientific parks; encouraging business representatives to create trust funds with the state in order to stimulate the activity of scientific parks, in particular popularization of the endowment; conducting joint activities for HEI groups in order to public awareness about the positive effects of the functioning of scientific parks;

Conclusions. The results of the leading OSEs of the economically developed countries of the world point to the importance of introducing innovative entrepreneurship in their activities, one of the prerequisites of which is the use of intellectual capital commercialization structures – science parks [14].



Picture 3. Problems of development of scientific parks of institutions of higher education and directions of improvement of organization of their activities (developed by the authors using [15])

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