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STRATEGIC APPROACHES TO ACTIVATING ACADEMIC ENTREPRENEURSHIP IN MODERN MEGA-UNIVERSITIES: PROSPECTS FOR UKRAINE

Introduction. *Currently, R&D activity is the main in all the top universities in the world because it is focused on the acquisition of new knowledge, while educational is only on the use of acquired knowledge. However, in Ukraine, the trend of academic entrepreneurship development has not yet taken on proper significance.*

Problem Statement. *The implementation of the idea of intensifying the innovation-investment movement in Ukrainian universities involves upgrading the existing innovation-oriented infrastructure and developing an effective plan of action for those universities in which material and technical and intellectual foundation till have a well-preserved.*

Purpose. *formulate strategic approaches to the commercialization of research products in modern mega-universities, which generally involves the intensification of research activities in the context of international academic entrepreneurship education as an imperative for the development of a high-tech, export-oriented and socially responsible model of economy.*

Materials and Methods. *The methods of economic (in particular PEST- and SWOT-analyzes) and logic-structural analysis, methods of comparison, synthesis, forecasting, theoretical generalization, as well as economic-statistical methods of analysis of actual data are used.*

Results. *A result of this initiative is to formulate recommendations and steps to increase the non-budgetary sources of funding for university research and innovation activities in Ukraine, in particular by raising the profitability of intellectual property and the creation of small innovative enterprises.*

Conclusions. *The results obtained will allow us to formulate strategic principles in the development of a new methodological paradigm for the commercialization of the results of intellectual work in universities, taking into account the development trends of the world and the features of national science.*

Keywords: strategy, academic entrepreneurship, universities, intellectual property, technology transfer, EEN, small innovative enterprises.

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One of the key missions of the modern known universities of the world against the background of organizational, technical, and cultural elevation of their integral evolutionary direction of conducting of research activities is the commercialization of the development of science in the context of the continuous need of use of promising research achievements for the benefit of society. Currently, the world's most economically and technologically effective are recognized as mega-universities [1]. In order to achieve powerful commercially attractive analytical and experimental results in such universities are happening: periodic re-evaluation of their own scientific and technical capabilities; monitoring public requests for far-reaching innovations; transformation of the culture of behavior of scientists and top executives; optimization of management and operational processes; diversification of sources of profit, etc. By implementing a well-considered organizational, infrastructure and marketing plan, the modern research-entrepreneurial universities and the state able to receive real economic returns that will substantially exceed costs, and university science reach a new level of development.

The implementation of the idea of intensifying the innovation-investment movement in Ukrainian universities involves upgrading the existing innovation-oriented infrastructure and developing an effective plan of action for those universities that have a well-preserved material and technical and intellectual foundation. Unfortunately, not all Ukrainian universities have adequate capacities, so leading universities (in which the annual set of students exceeds 8 thousand, there is a sufficient number of postgraduate and doctoral students), such as Taras Shevchenko National University of Kyiv, can act as focal points that will become unique commercial and infrastructure marketing offices for other universities working on the creation of know-how and plan to start a small innovative enterprise.

[1] Mega-universities are universities in which annual set of students more than 20,000. The first idea of a mega-university was proclaimed by John Daniels in 1996.

The purpose of the article is to formulate ideas, steps and decisions for developing an effective plan for commercialization of commercially attractive results of intellectual work at the leading Ukrainian universities in the context of enlightening of international academic entrepreneurship as an imperative for the development of the high-tech, export-oriented and socially responsible model of economy.

The problem of strategic management of innovation research in higher education institutions has long attracted the attention of domestic and foreign researchers. A powerful theoretical basis for this research direction is the works of O. Zhilinsky [1], E. Ozturk [2], L. Nazarenko [3], V. Pirus [4], M. Sitnitsky [5] and others. Organizational and operational issues of optimization of transfer of university knowledge and technologies of business, as well as establishment of mutual productive interaction with the state were elaborated in scientific works of such well-known scientists-economists as: S. Bradley [6], V. Geyets [7], G. Itzkowitz [8], G. Kalkadzhini [9], O.O. Karpenko [10], B. Clark [11], A. Link [6], K. Yashina [10], I. Favaretto [9], K. Haiter [6], I. Tatomir [12] and others. Current trends in technology transfer management are reflected in the studies of G. Androschuk [13], Y. Kapitsa [14], L. Kin [15], K. Retzler [16], P. Tsibulev [17] and others. Scientists such as L. Dorothy [18], W. Schuarpe [18], G. Barton [18], F. Kotler [19], T. Peters [20], R. Waterman [20], G. Hooley [21], D. Saunders [21], N. Pierce [21], and others paid considerable attention to marketing technologies for promoting the results of intellectual labor in the market. These works emphasize the importance of willingness to act, break patterns, work closely with a potential customer, stimulate people's productivity, and more.

Despite many developments in this field, there is still no clear picture of effective planning at Ukrainian universities of the strategic process of commercial promotion of the results of Ukrainian scholarly research into the domestic and international markets.

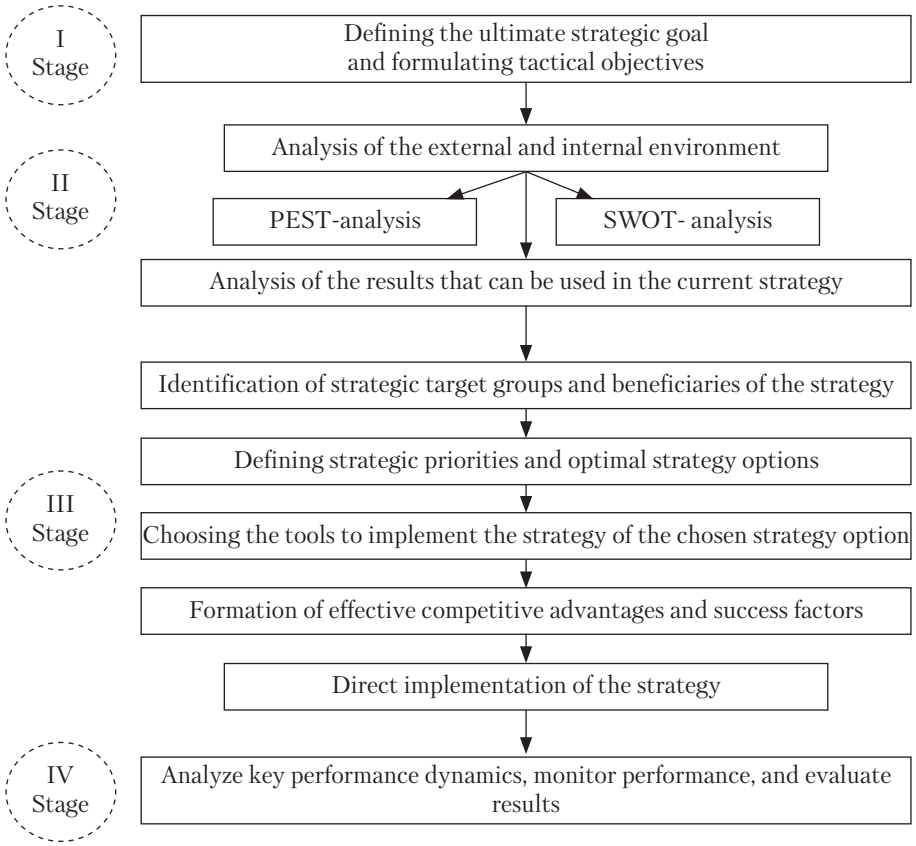

Fig. 1. Model of choice and implementation of commercial technology transfer strategy
Source: compiled by the authors on the basis of [22, 23, 24].

The theoretical and methodological basis of the research are the provisions of modern economic theory and innovation management, which are presented in the works of Ukrainian and foreign authors, which are devoted to problems of innovative economy, managerial aspects of innovation policy, technology transfer and commercialization of results of intellectual work and as well as contain the analysis of global and Ukrainian strategic positions and landmarks in the field of innovation. The methods of economic (in particular PEST- and SWOT-analyzes) and logic-structural analysis, methods of comparison, synthesis, forecasting, theoretical generalization, as well as economic-statistical methods of analysis of actual data were used.

Discussions about choosing an effective approach for the successful implementing of academic results in Ukrainian society have been taking place since independence, but still now the universities, scientists, the state and citizens who pay taxes at the expense of which Ukrainian science can be existed, just continue to lose. Currently, many forms and models of commercialization of results of innovation activity are presented in the theory of innovation management [2, 6, 8, 10, 21, 24, etc.]. It is clear that the vast majority of such models had been developed by theorists of countries that have already gone some way towards creating the conditions for commercial technology transfer and had achieved some positive results. However, taking them as a basis can and shall try to create your own algorithm for achieving the goal. The optimal model for selecting and implementing the strategy of commercial technology transfer is presented in Fig. 1.

It shall be noted here that in our opinion, the effect of the implementation of such as any other

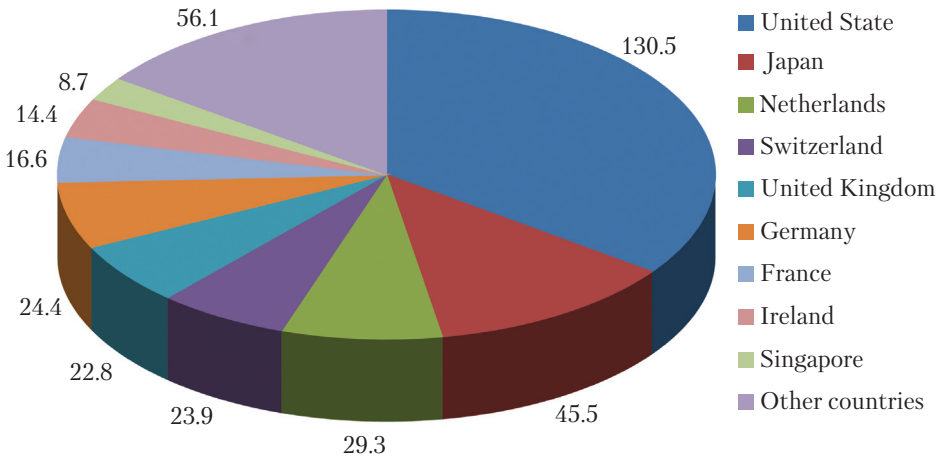

Fig. 2. Global revenue from the commercial use of intellectual property (IP) in 2018
Source: compiled by the authors on the basis of [25].

project depends largely on the level of professionalism and personal motivation of the manager and team. After all, technology transfer is a complex and painstaking process that requires not only collective efforts but also in-depth knowledge that covers not only the theory of transfer but also enables us to consider the potential of a particular technology.

I. *Global trends and challenges*

The trend of multiplication and acceleration of investments in the research direction of the leading universities has transformed them into effective innovation incubators, which has significantly contributed to strengthening their leading role in the fast-changing world. Extremely economically successful experience of launching from the womb of universities such influential technology companies as Google, Yahoo!, Cisco Systems (Stanford University), Microsoft, Facebook (Harvard University) and many others, who continue to embody the foundations of the own corporate culture in their ways and methods of management, has formed an effective tool of social modeling of intercultural interaction in university activities, which has turned them into one of the innovative platforms for adaptation to globalization.

The successful commercial endeavors of universities in the scientific and technological field have become a decisive driving factor for substantially increasing of fruitful research results. University revenue from fees for the use of their intellectual property has also increased significantly. Thus, according to World Bank statistics, in 1962, the world monetary revenues from licenses, etc. amounted to only USD 2.8 billion, while in 2018, the world revenues from knowledge commercialization reached USD 372.2 billion. Moreover, the largest funds from the commercial use of intellectual labor products were received by the United States (USD 130.5 billion or 35.1% of world total), followed by Japan (USD 45.5 billion or 12.2%), followed by the Netherlands (USD 29.3 billion or 7.9%), then Germany (USD 24.4 billion or 6.6%), Switzerland (USD 23.9 billion or 6.4%), United Kingdom (USD 22.8 billion or 6.1%), etc. (Fig. 2) [25].

A patent is one of the most important indicator of a scientist's performance. Patent law protects inventions, which are the most valuable form of modern developments. The patent system is a reliable mechanism for the protection of intellectual property rights (IPR), as it provides a balance of interests — the state, business, universities and creators (inventors). By granting legal

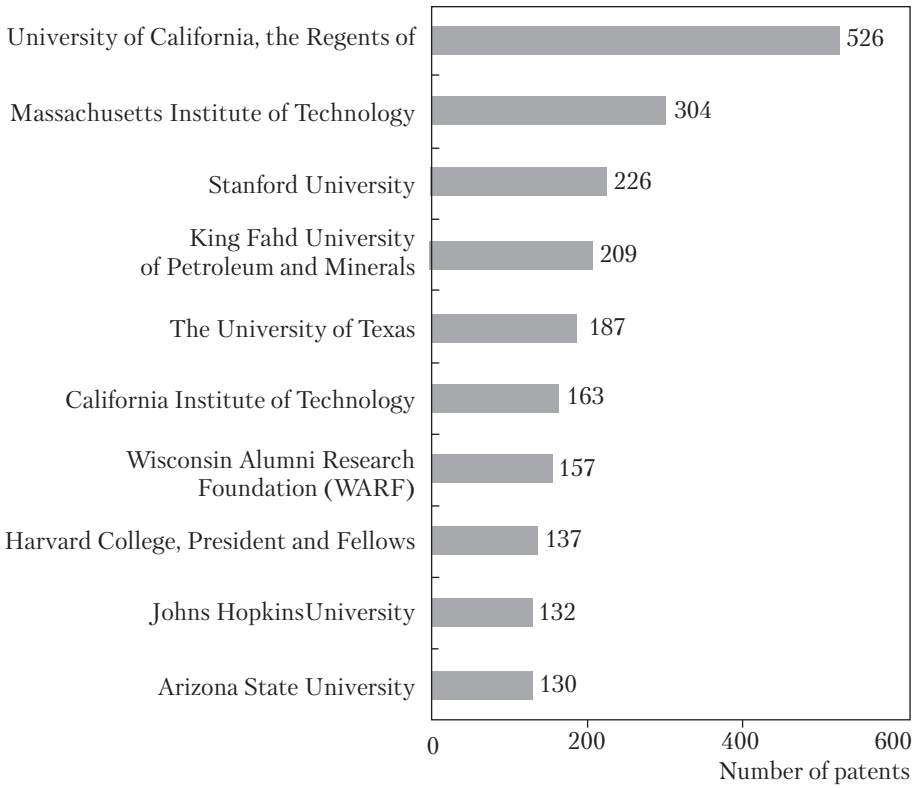

Fig. 3. Top 10 Universities in the world in terms of patents obtained in 2018
Source: compiled by the authors on the basis of [27].

protection to the owner for a fixed term, patents form specific market rules for the respective intellectual property. And here it becomes apparent that the commercial management of the invention can only begin after the establishment of intellectual property rights.

National Academy of Inventors (NAI) together with the Association of Intellectual Property Owners (IPO) annually since 2013 publish the National Patent Productivity Report by the in order to focus of public attention on the important role which patents play in universities' research and innovation activities. The Report and relevant university ranking are based on data received from the United States Patent and Trademark Office (USPTO). In 2018, the top ten world-class innovation-active universities, the most then of which were American, included: University of California, Massachusetts Institute of Technology, Stanford University, King Fahd University of Petroleum and Minerals, Texas University of Technology, Wisconsin Alumni Research Foundation (WARF), Harvard University, Johns Hopkins University and Arizona State University (Fig. 3).

In Ukraine, in spite of relatively not the worst logistical and intellectual base, the cash flows from the commercialization of IP are very low and reach USD 92 million, in 2018 (USD 167 million, in 2013 was the highest score for independence time) [25]. According to international experience, the concentration of creative thinking and the formation of creative ability to intellectual activity are occurred in universities. However, in Ukraine the level of production of creative ideas, and consequently the volume of involvement of extra-budgetary financing for research projects, is not high. Thus, at the Taras Shevchenko National

Table 1. **PEST Analysis of the Factors Affecting the Commercialization Prospects of Ukrainian University Technologies**

PEST-factors	What gives the opportunities?	What gives the threats?
Policy	1. A clear unchanged policy course for the internationalization of Ukrainian innovations. 2. Qualified upgrade of the legislation in force in Ukraine in the field of innovations, taking into account the interests of Ukraine and the specifics of international regulatory practice. 3. Reduction of the tax burden, simplification of the customs clearance of special equipment for scientific research. 4. Provision of effective preferences to investment funds ready to invest in research projects of Ukrainian universities	1. Growth of tensions between neighboring partner countries. 2. Political instability and uncertainty. 3. Neglect of the scientific sphere of university activity by politicians. 4. Constant too fast in time and dramatic changes in the field of innovation policy and principles of conducting research at universities. 5. High prejudice of activity in this field, entanglement in legislative norms.
Economy	1. Provision of more financial independence controlled by public and relevant bodies to universities. 2. Reduction of inflation to 4—5% per year, stability of the national currency. 3. Establishment of high salaries for scientists in accordance with international practice. 4. Analysis of trends in demand for certain technological solutions.	1. Unbearable tax burden. 2. Hyperinflation, a sharp depreciation of the national currency. 3. Low wages, not a full working week (rate), too short a period of work contact. 4. Reducing the number of researchers. 5. Aging of scientists.
Socium	1. Changing the public attitude to the scientist and to the importance of the results of his work for society, attracting young professionals. 2. Formation of a positive attitude to the implementation of Ukrainian innovations in economic practice (holding various festivals, forums, competitions, creation of thematic groups in social networks, etc.). 3. Training of specialists in the field of innovation management and implementation of their work in the daily practice of organizations producing / implementing innovations. 4. Creation of factors of strong social protection for researchers, introduction of incentive and compensation system of work.	1. The lack of information support of the promising achievements of Ukrainian scientists. 2. Underestimation and often humiliation of the image of the scientist in the public eye. 3. The predominance of penalties in the system of work of researchers. 4. Lack of stimulating principles of work and confidence in the near future. 5. Uninitiated superficial social policy that does not imply real interest of either the state or society in the development of science. 6. Insufficient debugging of communication mechanisms.
Technology	1. Introduction of new technologies (equipment, control, etc.) into the work of scientists. 2. Implementation a policy of real demand for the creation of new technologies for the state. 4. Improving the quality of inventions and their compliance with industry standards. 5. Obtaining of new commercially attractive patents.	1. Absence of the latest technological approaches in the work of scientists. 2. The impact of the Internet (open publications, mainly containing important technological / commercial information, prevent further IP protection). 3. Specificity of technology use, non-compliance with world standards, low degree of liquidity.

Source: compiled by the authors.

University of Kyiv, the total amount of research funding in 2018 amounted to UAH 133 million, of which UAH 108.4 million at the expense of the budget fund, and UAH 16.7 million at the expense of the special fund (contractual R&D, sale licenses, etc.) [26].

In 2018, 2,469 patents for inventions were registered in Ukraine, wherein the national applicants registered only 55% of that number. The overwhelming majority of invention applications came from universities, where the National University of Bioresources and Nature Consumption was the leader with 106 inventions, the National University of Food Technology took the second place with 127, and the Odessa National Academy of Food Technology was the third with 60. Only the 14 applications came from Taras Shevchenko National University of Kyiv. However, it shall be noted that applications for inventions were also registered by industrial enterprises of Ukraine, in particular, the largest number of applications was received from *Mayak Plant* Public Company" and *Motor Sich* Public Company (8 applications), from *Darnytsya Pharmaceutical Company* Public Company and *Engineering and Technical Center" Mining Machines* LLC (7 applications), from *Kotloturboprom* LLC, LLC *Corum Group* and *Global Kemikel Group* LLC (6 applications), from *Main Specialty Design Bureau of Wagon Construction* LLC and *Idna* LLC, which is an agricultural enterprise for breeding poultry (5 applications) [28]. However, it is obvious that industrial enterprises do not play a key role in technological invention.

Commercialization of research results requires an active approach, which must combine at least the efforts of researchers, experts in the market promotion of technologies and business partners who have decided to use a particular technology.

The ultimate goal of a commercialization strategy of research results is to establish a commercial relationship with the other party that results in a mutually beneficial contract (Partnership agreement). Contracts may be concluded both for the purpose for the sale of certain services (for example, measuring water quality or analyzing a particular market) or for the sale of a specific intellectual work product protected in a legal field (patent or license). However, in Ukraine, in spite of a large amount of work and the state patent costs, only a small number of them receive further market introduction. One of the most pressing problems in the patent commercial realization is the variety of barriers and risks for foreign and national investors who agree to enter into high-tech and high-risk business in Ukraine. This sector discourages them due to the imperfect mechanisms of innovation, the collisions of the relevant legislation, and the main one is the lack of socioeconomic stability and the uncertainty in the rules of the game (Table 1).It is quite difficult to apply foreign experience in the field of innovation, given the rather difficult conditions that have arisen in Ukraine due to the constant transformations in the economy and the high degree of uncertainty of the market environment for most domestic enterprises and organizations. That is why the advantages in the research sphere and technology transfer will long be gained by those countries in which the best conditions (material, technical, moral) for development of science will be created.

II. *Strengths and weaknesses, opportunities and threats*

Formulation of effective strategic approaches to commercialization of the results of intellectual work in leading Ukrainian universities involves the analysis and understanding of the strengths and weaknesses of the problem, as well as identifying the opportunities and likely threats that may arise in the way of certain innovative transformations (SWOT analysis).Despite the fact that scientific activity is leading in all the top universities in the world, because it is focused on the acquisition of new knowledge, while the educational is focused on the use of acquired knowledge in the educational process, in Ukraine preference is still given to educational process, that is due to a number of factors (Fig. 4). In addition, an important prerequisite for the formation of an entrepreneurial climate in universities is the development of

Strengths
- highly qualified scientific potential;
- acceptable base of material and technical equipment;
- availability of certain financial and economic resources;
- high scientific and technical quality of inventions and developments;
- market interest in technological solutions that can be put into business practice;
- possibility of using the brand of the university;
- prompt decision-making;
- strong links with state administrations, business entities, etc.
- cooperation with world experts in the field of innovative entrepreneurship through the Enterprise Europe Network (EEN).

Weakness
- outdated material and technical base;
- insufficient number of exclusive innovative projects;
- incompetence of innovation managers;
- lack of own funds to create and market innovative products;
- limited access to credit resources;
- relatively low wages and a lack of a sense of stability / confidence in the future for scientists;
- lack of incentive measures for the implementation of commercially oriented scientific activities;
- ignoring of need for market research.

Opportunities
- intensive innovative development of universities (resource, brand, etc.);
- effective use of the skills of highly qualified personnel;
- material and technical re-equipment;
- attracting significant targeted investments;
- activation of mutually beneficial cooperation with business, conquering of markets;
- increase in the number of students, postgraduates, scientific and teaching staff;
- formation of entrepreneurial academic culture;
- opportunity to become a locomotive of economic development of a certain region;
- getting of super profits.

Threats
- institutional barriers to financing and promotion of promising technologies;
- problems in IPR legal protection;
- irrevocable aging of material and technical and intellectual potential;
- fatal errors in the assessment and forecasts of innovation trends;
- sharp fluctuations in the market conditions of research results;
- loss of own positions in the scientific and educational market and disappearance from the market;
- loss of scientific and technological image.

Fig. 4. SWOT-analysis of the prospect of commercialization of Ukrainian university technologies
Source: compiled by the authors.

theoretical and methodological aspects of assessment the effectiveness of promotion of research results, taking into account their attractiveness to the market. Indeed, now marketing intelligence is not actually conducted.

In addition, an important prerequisite for the formation of an entrepreneurial climate in universities is the development of theoretical and methodological aspects of assessment the effectiveness of promotion of research results, taking into account their attractiveness to the market. Indeed, now marketing intelligence is not actually conducted.

Until now, Ukrainian universities have made and continue to make certain steps to activate their innovative and technological academic entrepreneurship, as well as to improve the efficiency of innovative infrastructure, but the resources and capabilities of universities with the involvement of their own and extra-budgetary funds, funds of partners and situational investors-contractors are not enough, so the unique ideas of researchers are gradually lost. At present, inventors are often unaware of the commercial importance of their own innovative product and do not know how to present their research results to the market, and often do not even pursue this goal because they are afraid of losing their intellectual property rights. They do not have the tools to commercialize scientific products and are not ab-

le to competently present their projects, to tell them to potential investors, and to work effectively in a team. These aspects of commercialization of research results can be addressed through the creation of an appropriate, well-functioning infrastructure. Establishment of commercial transfer of technologies will promote the development of innovative activities, as well as the creating stimulating conditions for increasing the efficiency of scientists, the strengthening the productive interaction of universities with industry, the ensuring the transfer of research results of employees of universities and other individuals and legal entities on contract terms, the creation of technology on the basis of the university material and technical base, as well as the attraction to universities of mutually beneficial contracts and grants. However, at present, the issue of creating innovative infrastructure in Ukraine, in particular at universities that are actively engaged in research, is gaining momentum very slowly. Thus, according to the Statute in force of the leading university of Ukraine — Taras Shevchenko National University of Kyiv, the main tasks in the field of science development are the following tasks: carrying out scientific activity by conducting scientific researches; ensuring an organic combination of educational, scientific and innovative activities; establishing international relations and implementing principles of international activity in the scientific field [29, p.12]. However, nothing has been stated about the commercialization of research results and the principles by which it shall be occurred, including the need of pre-assessment the commercial potential of an intellectual product before it is introduced to the market. The low academic entrepreneurship culture at the university is, in particular, the result of the absence of a specialized structural unit (department) responsible for innovation management.

Usually, the potential for commercialization of a particular research result is determined by certain parameters. The most important of them are: 1) well-considered cost of the commercial development; 2) competitive advantages; 3) market demand; 4) high probability of receiving additional products; 5) availability of industrial design. However, in order to assessment the commercial potential of intellectual work products and ensure the transfer of such a product, it is first of all necessary to: 1) have a team of specialists who are proficient in technology transfer (a separate permanent department of technology transfer); 2) technology readiness for transfer; 3) availability of technology buyers.

In some Ukrainian universities (National University of Technology and Design, National University "Lviv Polytechnic", etc.) there are technology transfer departments, but their activities are filled with a number of problems, namely: 1) people working at transfer of technology, also engaged in bureaucratic work (providing different types of reports to different authorities); 2) there is no financial opportunity to acquire European experience in technology transfer from developed universities in Europe or the world for researchers, PhD students and staff of relevant departments of universities; 3) potential investors do not have information on research and development were carried out by universities and are in no hurry to invest in risky technology projects.

Without organizational and financial support of the state, it is extremely difficult to practically implement large-scale institutional and infrastructure projects that involve the creation of separate specialized departments, in particular, in technology transfer, organization of specific trainings in the field of innovation management, involvement of foreign specialists as consultants, creating additional jobs for specialists with the purpose of providing a process of scientific entrepreneurship, of providing explanatory and communication work.

III. *Strategic priorities and ways to implement the strategy*

Now Ukraine is on the verge beyond which innovative development is turning into a critical imperative of economic growth. Therefore, attempts

to establish an effective structure of innovation development institutions are an impetus for the revival and development of innovative potential and the creation of a competitive innovation economy in Ukraine. The creation of separate structural units in mega-universities of Ukraine and the involvement of foreign specialists for conducting trainings on practical innovative entrepreneurship with the involvement of successful entrepreneurs in teaching are important issues of now time in Ukraine. Such an infrastructure to support the diffusion of innovations will be built on the needs of the market, will contribute to the formation of a favorable environment in universities for the emergence of new ideas and the founding of small innovative enterprises. High-tech companies created at mega-universities will be able to become a powerful foundation for the emergence of an innovative economy, a constant source of transparent investments and an activator for the emergence of world-class competitive enterprises. The relevance of these ideas meets the objectives of the State Regional Development Strategy for the period until 2020 and is confirmed by the declared state priorities in the Sustainable Development Strategy "Ukraine 2020", in the "Strategy for the Development of the Sphere of Innovation for the period until 2030" and in the development programs of mega-universities, in particular, in the Development Program of the Taras Shevchenko National University of Kyiv for 2012—2020.

In the context of establishing an effective process of commercialization of research results, the fundamental **strategic priorities** of mega-universities shall be as follows:

- complete change of principles of carrying out of research activity;
- establishing of close relationships with business;
- creation of technological companies on the university material and technical base;
- increasing the number of prospective investment projects;
- increasing the share of international grant and partnership projects;
- integration into the world, first of all, European research area.

The university shall become the perfect center for the rapid and high-quality transformation of creative ideas into innovative products and services. For this purpose, the principles of conducting research activities shall be completely changed. The first step in establishing of effective management of intellectual property is to create a university brand. Top-managers need to be aware of the magnitude of commercial potential in the research field. This requires the exchange of experience and best practices in the field of commercial transfer of knowledge and technology between university managers from Ukraine and managers from European universities who have made significant progress along these lines, as well as the creation of effective technology transfer units in mega-universities.

Accordingly, the strategic targets shall be as follows:

- increasing the efficiency of the innovative and technological component of universities, which will accelerate the transition of Ukraine to the innovative stage of development;
- the creation of a special unit at the University to manage the scientific and innovative process, as well as the involvement of professional personnel;
- conducting and organizing marketing, patent and market research for the successful promotion of competitive commercially promising scientific developments created at the University and which are transferred to management of the University on the basis of relevant agreements on the domestic and international market;
- the identification of intellectual property rights created at the University as a result of scientific and scientific-technical activities, the implementation of patent research, research on patent purity, ensuring the protection of the rights to inventions, utility models, industrial designs, rationalization proposals, trademarks, scientific discoveries, integral layouts micro-

chips, trade secrets, know-how, computer programs, databases, plant varieties and other intellectual property items;
- rendering technical, organizational and legal assistance to the subjects of innovative activity in development and promotion of innovative and investment projects, as well as other qualitatively new relevant services for innovative managers of other universities in Ukraine;
- creation and support of information databases serving technology transfer clients, as well as providing access for customers and partners of the University to international databases of technological transfer and scientific and technical information;
- implementation of measures to use the results of research and development, objects of intellectual property rights of high-tech products of universities, support of licensed activities of the University and technology transfer;
- founding of profitable science-intensive business by creating small innovative enterprises;
- educational orientation: providing awareness-raising, training and counseling for the University researchers in the field of commercialization of research results, as well as the popularization of ideas for the development of scientific and technological entrepreneurship in other universities of Ukraine;
- ensuring the proper remuneration of researchers and knowledge transfer specialists in accordance with the current legislation [30], as well as organizing advanced training for raising the level of knowledge in the field of science and innovation entrepreneurship, in particular, the exchange of experience with foreign partners;
- joining to the implementation of priority strategic directions of economic development in the context of the implementation of the European Strategy *Europe 2020* [31], taking into account: the UN Sustainable Development Goals, the provisions of the Association Agreement with the European Union and section IV on a deep and comprehensive free trade zone between Ukraine and the EU.

The implementation of the strategy for creating innovative infrastructure on the basis of Taras Shevchenko National University of Kyiv will lead to the accumulation of investment funds for the regions, in particular from structural funds, including the Horizon 2020 and COSME programs, as well as to the strengthen the integration of research and the entrepreneurial complex of the regions of Ukraine and the institutions of the European Union, which will significantly save the state budget and significantly increase the effects of the use of scientific results.

Due to the coordinated work of the technology transfer department at mega-universities, its specialists (specially trained managers in innovation management) will be able to support innovative projects of other universities, to conduct thematic lectures, trainings, consultations, seminars, webinars, to organize testing of knowledge-intensive business models, and to meet successful entrepreneurs and etc. in the context of clarifying a logic of building of technological business, as well as of information promotion the promising business projects, the development of small innovative enterprises and so on.

Strategic target groups and beneficiaries of technology transfer strategy:
- scientists, teachers, PhD students and students of mega-universities of Ukraine through providing a number of services to support university innovation projects, as well as conducting thematic lectures, trainings, consultations, seminars, webinars, marketing research, meetings with successful entrepreneurs, etc.;
- representatives of Ukrainian and international companies interested in use of innovations and scientific results of researchers;
- full-time and attracted employees of other universities and research corporations;
- the city of Kyiv and other regions due to the increase in innovation and investment attractiveness.

The implementation of this initiative will create additional high-paying jobs and, the most importantly, intensify the commercialization of com-

mercially attractive results of scientific activities, activate the startup movement and provide unique opportunities for self-realization of talented innovative managers in their country.

Management of innovative infrastructure at the University shall include:

- development and implementation of the University's policy in the field of intellectual property and technology transfer, development of necessary documents and forms to ensure the transfer of university technologies;
- conducting research on the development of innovation and technology transfer;
- informing the business community, state organizations and departments, as well as other potential participants who collaborate with the University about the University's capabilities in scientific-technical field and the field of technology transfer, dissemination and promotion of scientific knowledge;
- stimulation the joint initiatives between the University, industry, foundations and other organizations in the scientific and technical field;
- stimulation of research activities of scientists and specialists in knowledge transfer;

Table 2. **Risks that May Arise in the Implementation of the Research Product Commercialization Strategy at an Entrepreneurial University**

Stage	Risk	Risk factors
Creation of a specialized unit for the scientific-innovation process management	Obtaining a negative result	Incorrect interpretation the provisions of legislation in the field of science, innovation and innovation-entrepreneurial activity
	Absence of result in due time	Errors in organizing the unit
		Errors in financial calculations, shortcomings
Search and recruit potential managers for innovation management	Obtaining a negative result	Wrong search box for applicants, mistakes in selecting of executors with inappropriate level of education and inappropriate experience
		Incorrect interpretation of the provisions of the labor legislation and the legal field of educational, scientific-innovative and innovative-entrepreneurial activity
		Errors in the organization of manager employment of innovation management
		Errors in financial calculations, shortcomings
	Absence of result in due time	Mistakes in estimating terms for the technical capabilities of start of work of managers of innovative management.
		Mistakes in estimating the resources needed for their successful work.
Activities of specialized unit of scientific-innovation process management	Obtaining a negative result	Incorrect integration of results and / or of choice of way of commercial realization the results of university research and of activation of innovation-investment potential of development of regions in Ukraine.
		The inability to realize the result at this level of institutional development of the innovation sphere in Ukraine
		Errors in calculations, shortcomings
	Lower than planned economic result	Mistakes in the choice of institutional and market methods in activation the innovation and investment potential of regions development and commercialization of scientific results.
		Mistakes in the marketing approach

Source: compiled by the authors on the basis of [4], [6], [9].

- taking part in the organization and maintenance of competitions for the implementation of industry-oriented scientific research and innovative projects;
- organization of conferences and seminars on technology transfer, entrepreneurship and scientific and technical exchange;
- participation in exhibitions and fairs, conferences and seminars, various competitions and tenders, presentations;
- development of international cooperation and cooperation in the field of technology transfer, scientific-implementation and production activity.

Strategic principles for commercialization of high-tech products. The implementation of research and developments (state budget, departmental, commercial, grant, partnership, including with international partners) shall be consistent with the following:

- each research or development shall be appropriate to the technological or social needs of the market;
- marketing research and actions shall be carried out for all research or developments of relevant research teams, namely, main marketing and research results shall be presented at business conferences, round tables, seminars, fairs, exhibitions, etc.;
- in order to search for customers and partners, especially foreign ones, you need to do periodic newsletters about the most progressive research results;
- if it necessary to carry out a preliminary assessment of the commercial attractiveness of research, as well as, if necessary, determine the feasibility of patent processing;
- the formation of a commercial proposal executed in the form established by the University shall be the result of such research;
- a portfolio of promising scientific developments shall be posted on the University website;
- incomes, in case of successful implementation of intellectual property, shall be distributed among all entities involved in the process of its creation, while researchers shall receive at least 30%;
- in the case of joint research and innovation with legal entities belonging to one or more EU countries, the allocation of intellectual property rights and the financial conditions for such research shall be regulated in accordance with the provisions of international agreements on scientific and technical cooperation of Ukraine with the EU; the result of such research shall be the formulation of a business idea on the basis of joint scientific and technical development, an assessment of its degree of readiness, as well as the possibilities of its implementation;
- in order to protect confidential information, open publications are made with the consent of the expert commission of the faculties, which be confirmed by a relevant act of examination, which states that the materials do not contain information that can be protected by the application of the invention and, if necessary, agree by a foreign organization-partner, in addition by the current domestic legislation in the field of intellectual property protection and regulations of the country.

Economic implications: an increase in exports of R&D products of universities, which will be realized by the newly created Start-Centers, is planned by at least 20% and the introduction of innovations into domestic production by 30%.

Conclusions. So, summarizing the above, we can conclude that taking into account the stated strategic approaches to commercialization of research results in the management of modern business mega-universities of Ukraine will contribute to:

- the formation of a commercially innovative interactive platform to activation the innovation and investment potential of regional development through the intensification of creative industries in the field of scientific entrepreneurship;
- the formation of entrepreneurial climate in universities;

- the establishing an effective mechanism for attracting domestic and international investments;
- the strengthening the autonomy of financing scientific activities in the regions, and in general in the country, which will increase the degree of financial autonomy of science and strengthen it by obtaining a modern material base.

Discussion. The results of the study will have an integral effect in the context of the formation of the innovation-investment economy in Ukraine and the improvement of the country's competitiveness among the countries of the world.

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СТРАТЕГІЧНІ ПІДХОДИ ДО АКТИВІЗАЦІЇ АКАДЕМІЧНОГО ПІДПРИЄМНИЦТВА В СУЧАСНИХ МЕГА-УНІВЕРСИТЕТАХ: ПЕРСПЕКТИВИ УКРАЇНИ

Вступ. Наразі науково-дослідна діяльність є провідною в найбільш рейтингових університетах світу, адже вона орієнтована на отримання нових знань, тоді як освітню діяльність спрямовано безпосередньо на використання отриманих знань. Проте в Україні розвиток академічного підприємництва не набув належного рівня.

Проблематика. Втілення ідеї активізації інноваційно-інвестиційного руху в університетах України передбачає апгрейд наявної інноваційно-орієнтованої інфраструктури та розроблення реального плану дій для тих закладів, у яких наявні матеріально-технічне та інтелектуальне підґрунтя.

Мета. Обґрунтувати стратегічні підходи до комерціалізації дослідницької продукції в сучасних мега-університетах, що загалом передбачає активізацію провадження дослідницької діяльності у контексті просвітництва міжнародного академічного підприємництва як імперативу розвитку високотехнологічної, експорторієнтованої та соціально-відповідальної моделі економіки.

Матеріали й методи. Використано методи економічного (зокрема PEST- і SWOT-аналізи) та логіко-структурного аналізу, методи порівняння, синтезу, прогнозування, теоретичного узагальнення, а також економіко-статистичні методи аналізу фактичних даних.

Результати. Сформульовано рекомендації та дієві кроки щодо примноження небюджетних джерел фінансування університетської інноваційно-дослідницької діяльності в Україні, зокрема через підняття прибутковості об'єктів інтелектуальної власності та створення малих інноваційних підприємств.

Висновки. Одержані результати дозволять сформувати стратегічні принципи розроблення нової методичної парадигми комерціалізації результатів інтелектуальної праці в університетах з урахуванням тенденцій розвитку світової та особливостей вітчизняної наук.

Ключові слова: стратегія, академічне підприємництво, університети, інтелектуальна власність, трансфер технологій, малі інноваційні підприємства.