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UDC 330.341.1

УДК 330.341.1

I. E. Novikova, Candidate of Economic Sciences,
Zh. Huiyu, Candidate of Engineering Sciences,
O. R. Bediukh, Candidate of Physics and Mathematics, Senior Researcher

I. E. Новікова, к. е. н.,
Ч. Хуіюй, к. тех. н.,
О. Р. Бедюх, к. ф.-м. н.,
 ст. наук. співробітник

THE ENTREPRENEURIAL UNIVERSITY AS IMPERATIVE FOR IMPLEMENTATION OF THE STRATEGY OF INTEGRATION INTO THE SYSTEM OF EUROPEAN KNOWLEDGE TRANSFER: THE UKRAINIAN EXPERIENCE

ПІДПРИЄМНИЦЬКИЙ УНІВЕРСИТЕТ ЯК ІМПЕРАТИВ РЕАЛІЗАЦІЇ СТРАТЕГІЇ ІНТЕГРАЦІЇ В СИСТЕМУ ЄВРОПЕЙСЬКОГО ТРАНСФЕРУ ЗНАЬ: ДОСВІД УКРАЇНИ

Urgency of the research. An important direction of activity of modern universities is the science-intensive enterprise, which is actualized in Ukraine in the context of the formation of an innovation-investment model of the economy and the implementation of the European integration strategy.

Target setting. The integration of Ukrainian education and science into the European transfer of knowledge is gaining momentum, but in our country, high-tech business has not become popular yet.

Actual scientific researches and issues analysis. Ponderable contribution into the theory of "entrepreneurial university" was made by G. Itskovits, B. Clark, J. Krisman, J. Rypke, G. Dmitriyev, A. Romanovsky, S. Slotter, P. Schult and others.

Uninvestigated parts of general matters defining. The role and ways of forming of the entrepreneurial university in Ukraine have not been determined yet.

The research objective. The aim of the article is to study the possibilities of forming the entrepreneurial universities in Ukraine.

The statement of basic materials. The transformation of the scientific and educational sphere of Ukraine has been shown under the conditions of market relations and the development of international cooperation. The main achievements and miscalculations of Ukrainian universities in the way of formation of academic entrepreneurship have been set out and recommendations on the elimination of the difficulties of European integration of knowledge have been given.

Conclusions. European integration policy in the educational and scientific sphere of Ukraine is accompanied by institutional changes, which have become the catalysts of the essential transformation of universities by formation an entrepreneurial movement. However, discrepancies, risks and mistakes impede it.

Keywords: entrepreneurial university; Euro-integration; technology transfer; commercialization of research results; Ukraine.

DOI: 10.25140/2410-9576-2018-1-2(14)-222-231

Urgency of the research. Now, in the context of the formation of the information society, the rapid pace of development of advanced national economy is built thanks to the action of the knowledge economy. Human knowledge has long been recognized as the most powerful factor of economic growth, as its share among other factors (total capital and natural resources), according to expert estimates, is more than 60%. The drivers of the growth of post-industrial economies are modern universi-

Актуальність теми дослідження. Важливим напрямком діяльності сучасних університетів є розвиток наукоємного підприємництва, яке у контексті формування інноваційно-інвестиційної моделі економіки та реалізації стратегії євроінтеграції актуалізується й в Україні.

Постановка проблеми. Інтеграція української освіти та науки у європейський трансфер знань набуває обертів, однак у нашій країні наукоємний бізнес популярністю не користується.

Аналіз останніх досліджень і публікацій. Вагомий внесок у розвиток теорії «підприємницького університету» зробили Г. Іцковіц, Б. Кларк, Дж. Крісман, Й. Рьопке, Г. Дмитрієв, О. Романовський, Ш. Слотер, П. Шульц та ін.

Виділення недосліджених частин загальної проблеми. Невизначеними є роль та шляхи формування підприємницького університету в Україні.

Постановка завдання. Метою статті є дослідження можливостей формування підприємницьких університетів в Україні.

Виклад основного матеріалу. Показано трансформацію науково-освітньої сфери в Україні в умовах дії ринкових відносин та розвитку міжнародного співробітництва. Виокремлено основні досягнення та прорахунки українських університетів на шляху становлення академічного підприємництва та надано рекомендації відносно усунення складнощів євроінтеграції знань.

Висновки. Євроінтеграційна політика в освітньо-науковій сфері України супроводжується інституційними змінами, які стали каталізаторами сутнісної трансформації університетів зумовивши підприємницький рух. Однак невідповідності, ризики та прорахунки гальмують його.

Ключові слова: підприємницький університет; євроінтеграція; трансфер технологій; комерціалізація результатів наукових досліджень, Україна.

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ties, which accumulate the results of intellectual activity and quickly implement advanced achievements into the science and technology in production. The effectiveness of this model of the innovation cycle, better known as the "triple helix", depends on the degree of constructive interaction between universities, business and the state. Within the framework of the implementation of the European integration strategy, which has gained momentum in Ukraine in recent years, it is also planned to integrate Ukrainian education and science into the European transfer of knowledge, since this is the most promising way of preserving and modernizing the scientific and technical potential. The opportunities that the Ukrainian scientific community will receive from this process should be appreciated. After all, this is not the only chance to join the developed sociocultural platform on equal footing, but also a real prospect of overcoming educational and scientific isolation, which will have a positive impact on the image of the Ukrainian scientists and on the opportunities for the commercialization of Ukrainian developments on international markets. Therefore, the task of Ukrainian universities, for the near future, is equitable access to the European and world educational and scientific space. In the context of intensification of international scientific and technological cooperation, there arises the need to develop a theoretical and practical basis for the management of knowledge transfer.

Target setting. In the context of deepening of international innovative cooperation, the integration of Ukrainian education and science into the European transfer of knowledge is gaining momentum, but in our country the high technology business has not become popular yet, so it is advisable to analyze the situation.

Actual scientific researches and issues analysis. The essence of the concept of "entrepreneurial university" attracted the attention of many famous scientists. A significant contribution to the study of the phenomenon of university entrepreneurship and the development of the theory of "entrepreneurial university" was made by G. Iskovits, B. Clark, J. Krisman, J. Rypke, G. Dmitriyev, A. Romanovsky, S. Slotter, P. Schult et al.

Uninvestigated parts of general matters defining. However, the available theoretical results do not provide answers to important practical questions. The real ways of forming of the entrepreneurial universities in the Ukrainian economy are remained vague.

The research objective. The purpose of the study is to determine the essence of the entrepreneurial university and its role in the formation of the innovation and investment economy in the context of increasing the importance of commercially attractive knowledge and implementing the strategy of the European development vector in Ukraine.

The statement of basic materials. The notion of "entrepreneurial university" began to appear in the theory of the economy of education from the 80s of XX century. In the late 1990s the theory of "entrepreneurial university" received wide practical content. After all, the consequence of economic crises and shocks of that period in many leading countries of Europe and the world was the reduction of social programs, in particular in education and science. The laws of the market, for which the higher education institutions had to learn to live, dictated their own rules, which provided the need to maximize the commercialization of university activities. For few decades the definitions of the phenomenon of "entrepreneurial university" has gathered a lot. However, in general, an "entrepreneurial university" should be understood as a higher educational institution, in which educational, scientific and entrepreneurial potentials are successfully combined, corporate culture and entrepreneurial methods and management are introduced.

In modern European universities education and science have become more associated not with the social good, but with a powerful economic resource that is the locomotive of the economic development of countries. Now the level of productivity of the entrepreneurial way of university development is constantly increasing. So, the income from the transfer of knowledge and technologies of Cambridge (Cambridge Enterprise) during the penultimate fiscal year (from 1.08.2015 to 31.07.2016) was £ 22.5 million. The total costs (for academic exchange of experience, £ 18.4 million, as well as staff and other operating expenses, £ 3.8 million) were £ 22.2 million. Investments in intellectual assets (patents and utility models) were £ 792 000. In addition, within one year 127 commercial and research licenses were signed for £ 35.3 million, as well as 14 companies received new or additional investments totaling £ 5.3 million. Currently Cambridge Enterprise manages of 1473 active projects in the field of IP, licensing and consulting and 74 mutual contracts, with 1605 researchers involved in all stages of the

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commercialization process [1]. Such indicators could be achieved due to the successful management of the scientific and technical university potential, which primarily implies the existence of an institution for the commercialization of the results of intellectual work (technology transfer centers and science parks, highly qualified managers of the relevant specification, etc.), of the organization of specialized funds (for example, in Oxford University), as well as the establishment of effective interaction between the main participants of progress – science, education, business / production and the state.

In Ukrainian universities the conquest of new intellectual and business peak was undertaken with the introduction of the norms of the new Law of Ukraine "On Higher Education" s. Now acknowledgment of the achievements of the university community of Ukraine should receive international recognition, which will be displayed in worthy places of the world's most famous university ratings. So, in 2018 Taras Shevchenko National University of Kyiv took the 411-420 position in the world university rating QS (England), and in the influential rating of Times Higher Education was 801+. In 2016, the Clarivate Analytics, the owner of one of the world's most respected resources for access to publications and to science-metric analysis, the Web of Sciences database, recognized the University as the most effective university in Ukraine in terms of the number of publications (more than 11,000) in this database.

In the field of education. The excessive supply and unfair competition that takes place in the market of educational services in Ukraine makes higher educational institutions look for the new efficient ways of keeping the positions won earlier. For real reflection of the situation, which is formed according to the moods of potential entrants, the administrations of universities periodically conduct anonymous sociological studies among entrants and students. Thus, the results of a survey conducted at the Lviv University in 2015 showed that more than 30% of respondents chose this educational institution because of the wide choice of specialties, for others, the main determining factor was positive feedback on the quality of the education, the professionalism of teachers and the prestige of the university. The main motivational factors for the selection of specialties by the entrants of that year were: the prospect of finding work after the completion of training (30.7%), the prestige of the university (27.1%) and the opportunity to show initiative (24.4%) [2, p. 6].

The work over the adjustment of the choice of specialties is being actively carried out in other universities of the country as well. In particular, in the Taras Shevchenko National University of Kyiv in the academic year 2017/18, more than 470 new professional and educational programs were developed and approved as well as special requirements for the assignment of professional qualifications that would help to increase the trust level of labor market to the qualification certificates of the university [3; 4]. Such actions of the management of this educational institution were due to the fact that the obsolete specialties irretrievably lost their attractiveness, and even the brand of the main university of the country did not save from the decline (and often complete absence) of demand for them from the entrants. After all, those times when young people received the education for the very fact of its receiving have already passed. Now everyone is trying to gain knowledge that will become a pledge of one's own well-being in the near future, such that in the long run they necessarily transform into inexhaustible long-term profits sufficient for the life of a person with higher education. So, during the introductory campaign of 2016 at this university on the specialty of the bachelor's degree "Economic theory and economic policy" (rebranding the former "Economic theory", 15 state seats were allocated, the license volume was 60 seats, and the original documents were submitted by only 4 (!) persons who were accepted subsequently. Obviously, this situation when all financial risks should be endured by the university is very dangerous! [4]. Total number of students is influenced by the state policy of allocation of budgetary places and cost of training¹. Young people who graduated from the budget "bachelor" program are not in a hurry to continue their studies on the contract for "magistracy" in their native alma mater. The consequence of this is a significant reduction in the number of students (Tab. 1).

As of the beginning of 2017/18 academic year, 1329964 students were studying in Ukrainian universities, academies and institutes (against 2066667 in the 2010/11 school year), of which 608 625 at

¹ The cost of studying at the Taras Shevchenko National University of Kyiv is the most expensive in Ukraine and during the introductory campaign of 2017, depending on the specialty; it was 26.25-54.6 thousand UAH per year, while the average salary of the population is only 5380 UAH in month.

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the expense of the state budget, 12 944 at the expense of local budgets, 6968 at the expense of funds of legal entities and 701 427 at the individuals' funds (in the academic year 2010/11: 798571, 14486, 8374 and 1245236, respectively) [10].

Table 1

Dynamics of the number of students² enrolled in the leading universities in Ukraine

Relevant academic years	Enrolled students during the introductory campaign in the relevant academic years								
	To the Taras Shevchenko National University of Kyiv			To the Ivan Franko National University of Lviv			To the Odessa I.I. Mechnikov National University		
	license volume	state seats	on the contract	license volume	state seats	on the contract	license volume	state seats	on the contract
2012/13	-	5 204	3 114	-	-	-	-	5 097	6 055
2013/14	20 551	4 939	2 955	29 138	3 859	4 468	12 265	4 948	5 785
2014/15	19 252	5 193	2 775	18 765	4 178	4 416	9 186	4 766	5 573
2015/16	-	4 391	2 255	-	3 958	3 553	-	4 301	4 911
2016/17	-	2 541	2 403	-	3 949	2 667	-	3 970	4 774
2017/18	-	4 500	3 077	-	-	-	-	-	-

Source: compiled based on statistical data [2-3; 5-6; 7-8]

Taking into consideration the complicated market laws in Ukrainian universities, in particular at the National Taras Shevchenko University of Kyiv, here gradually began to focus on foreigners (Fig. 1).

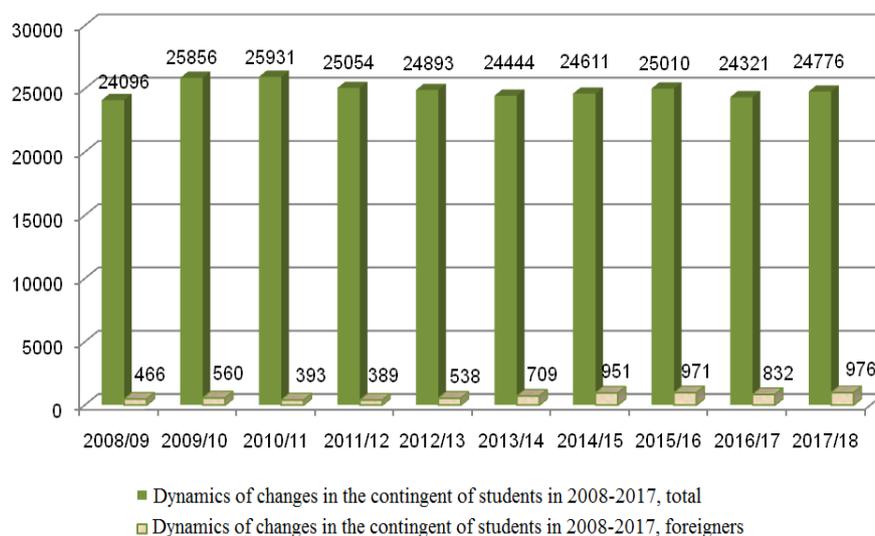


Fig. 1. Dynamics of changes in the contingent of students in 2008-2017 academic years at the Taras Shevchenko National University of Kyiv

Source: compiled from [3, p. 6]

Thus, in the 2016/17 academic year there were 183 foreigners from 24 countries (Azerbaijan, Belarus, Georgia, Egypt, Iran, China, South Korea, Lithuania, Libya, Germany, Pakistan, Russia, the USA, Turkmenistan and etc.) at the preparatory department of this university and this is in 1.8 times more than in the 2014/15 academic year (101 people from 22 countries)³ [3, p. 12], and in general 976 people studied in various specialties whereas in the 2008/09 academic year there were only 466 foreign students. The training of foreigners mainly takes place on humanitarian, economic, engineering, technical and medical-biological directions. Strengthening the orientation toward a foreign consumer is

² Here are the students of all qualification levels ("junior specialist", "bachelor", "specialist", "master").

³ In connection with geopolitical instability in 2014/15 academic year the outflow of foreign entrants was observed throughout the country.

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primarily due to the introduction of popular English-language educational programs such as "Medicine", "International Law", etc. [9]. The total number of foreign students in universities of Ukraine in the beginning of 2017/18 academic amounted to 48836 people, of which 8013 were enrolled in this academic year [10].

Therefore, leading universities are actively working to improve the qualifications of teachers in the direction of increasing the proficiency in foreign languages. In addition, with the aim of significantly improving of university positions in the world-known rankings, university administrations encourage the faculty to work intensively to publish the results of their research in journals included into international databases. However, the compulsory availability of such works became a serious obstacle for PhD students, because this requires the preparation of high-quality material and involves burdensome financial costs (200-500 €). So, in year 2017 the average efficiency of the PhD course of the National Technical University of Ukraine "Igor Sikorsky Kyiv Polytechnic Institute" was only 10%, on the whole in Ukraine was 23.6% for PhD study and 28.2% for Doctoral study⁴ [10]. In the Taras Shevchenko National University of Kyiv in 2017, due to the impossibility and reluctance to continue working in the PhD direction, the 87 PhD students were dismissed, in 2016 - the 140, in 2015 - the 117⁵ [11, p. 99].

Complicating factors in the introduction of competitive educational activities in Ukraine are: increased competition in the market of educational services, access to quality higher education outside Ukraine; negative trends in the development of the economy; gaps in the norms of the new educational laws; lack of effective mechanisms that would allow financially-unsecured students to pay for themselves for training; changes in the area of public procurement and education financing, as well as the introduction of new standards of higher education, new procedures for licensing and accreditation procedures, and the like.

Recommendations. Consequently, in the context of the implementation of the European integration policy, prior educational tasks should be: increasing the attractiveness of certain specialties by creating new educational programs and specializations that would take into account the requirements and needs of employers, including the international labor market; introduction of a broader cross-entry in the magistracy with the aim of preventing the outflow of graduates of primary universities to other educational institutions (including outside Ukraine); attracting to the teaching of actual training special courses not only the best own teachers, but also professors of leading foreign universities (including on-line); perfection of forms and methods of selection of talented young people for admission to PhD study; the introduction of English-language educational and scientific programs for the training of PhDs, as well as the formation of a system of internal and external evaluation of the quality of the educational and scientific components of the preparation of the PhDs; providing of the decent material and moral assessment of the work of the faculty.

In the field of science. Reforms in recent years in the field of science in Ukraine have emphasized the collective nature of scientific research. Now the scientific teams consist of groups of researchers working on joint project on the basis of a certain structural subdivision of the organization. The motivational factor of the group's activity should be the success of the commercialization of its research results. However, this approach contains certain risks. After all, in the world, the market nature in scientific research has caused significant changes in its normative-value system. After all, the main stimulus in scientific work has become a competitive relationship between teams that force them to deal with actual problems for the market and issue results with a clear periodicity the value of which at least "visually" will respond for the resources invested into the research. At the same time, the social direction of science completely disappears, since a concrete scientist can no longer afford the luxury of disinterestedly engaging in science for the sake of understanding "truth" [12, p. 16-17].

Intensive integration of practical research, technological developments and innovative activities of groups of people into a single production process of goods and services has resulted from transfor-

⁴ As of January 1, 2018, the total number of the PhD students in Ukraine was 24786 people, and the Doctoral students - 1 646. Graduation of the PhD studies in Ukraine in 2017 was 6087 people, out of them were only 1438 (or 23.6%) with protection, of the Doctoral studies - 543, with protection - 153 (or 28.2%)

⁵ While the 282 students joined the PhD school of the University in 2017 and in 2016 - 287.

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mation of science in the modern society. This determines the leading role of scientific teams in the socio-economic development of national economies, as well as the vector of scientific and technological policies of countries. Scientific research rapidly takes on an international character, which significantly increases the importance of information technology and communication in a scientific society. As a result, the functions of research teams are significantly expanded, and the qualification requirements for their members are increased, their structure and the nature of the relationship are changing, since the leading role is played by technology and managers. These transformations are superimposed on the Ukrainian scientific community in the process of its integration into the European transfer of knowledge.

Now, the market transformation of the scientific and research industry in Ukraine is taking place through the establishment of an effective process of commercializing the results of scientific and technical work of university research teams. However, the formation of the foundations of academic entrepreneurship requires the adoption of important decisions that would ensure a unified approach to the improvement of the mechanism "from idea to practical result". In this connection, the directions, boundaries and degrees of international technological cooperation are expanding, in particular, an institutional infrastructure is being created that will engage in the professional promotion of innovative technological products to the market. In the civilized world, the centers of technology transfer are the main institutional units linking science and business and that professionally carry out the commercialization of inventions and developments. These structural units for the transfer of technology to production operate at every powerful university in the US, Europe and Asia. Now the corresponding centers are being established at the leading scientific (National Academy of Sciences of Ukraine) and educational institutions in Ukraine (National Technical University of Ukraine "Kiev Polytechnic Institute", Kiev National University of Technology and Design, Kiev National Economic University named after Vadim Getman and others).

The development of the technology transfer network is also being carried out at the leading university of the country – the Taras Shevchenko National University of Kyiv. The technology transfer system at the University is created on the basis of the Patent and Licensed Department which is a separate structural subdivision of the Research Department of the University. The main objectives of the Patent and Licensed Department are: advice on design of patents or certificates on intellectual property rights; execution and support of applications for inventions (utility models), record keeping concerning patents, certificates; preparation, registration and maintenance of contracts between the University and the inventors, execution and maintenance of license agreements, intellectual property protection in administrative and judicial procedure. In the structure of the Patent and Licensed Department there is a group of support of international projects, the main task of which is the aid in the preparation and maintenance of international projects and grants, including the European framework program, i.e. the Horizon 2020. In addition, specialists of the Department are involved in other aspects of the technology transfer, including the popularization of University research products at various exhibitions, business conferences, business negotiations and also work with the EEN and so on.

In 2017 Ukraine became a full member of the European Union Program - Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME). After the Program, the project «Innovation capacity building in Ukrainian SMEs and enhancing cooperation with European SMEs» was won, in the performance of which the main attention will be focused on work of the Consortium EEN-Ukraine and which provides additional financial resources for the development of the technology transfer at the University.

The primary practical task of the University technology transfer is a continuous update of database of projects that have commercial potential. At the 2017 this base has more than 140 proposals. These proposals are presented in Ukrainian market, mainly through participation in annual national and international exhibitions, as well as in the three key technology markets of the world - the EU, US and China. Presentation of the proposals in these markets mainly takes place through electronic networks. For instance, in the EEN since 2014 with the participation of the University there were presented more than 50 technical and business proposals. In 2017 the four Partnership Agreement were signed within the framework of the EEN. In the Chinese market the job is primarily consists in presentation of the proposals on core activities in China and cooperation in joint projects. Currently, negotiations on the

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organization of several joint Ukrainian-Chinese research groups in the fields of energy, radio physics, biotechnology and medicine are conducted. Considerable attention is paid to the application of projects and participation in competitions in various international and European programs. In particular, within the framework of the Horizon 2020 program, 6 scientific projects are being implemented at the University [11, p. 60-62]. However, the prior tasks for the University remain issues of security, energy efficiency, defense capacity and support of Ukraine's critical infrastructure.

The effectiveness and cost-effectiveness of research work at the University is indicated by indicators of the analysis of the effectiveness of the use of funds provided by the state (Fig. 2). Efficiency was defined as the ratio of funds earned by research teams to the amount of funds allocated by the state to finance budgetary topics. Thus, in 2017 the effectiveness of scientific research at the University was 0.86.

The University is actively working to improve the efficiency of using budget funds. In this regard, active work is underway to conclude dozens of agreements on scientific and technical cooperation, the design of grant agreements and patenting the results of intellectual work.

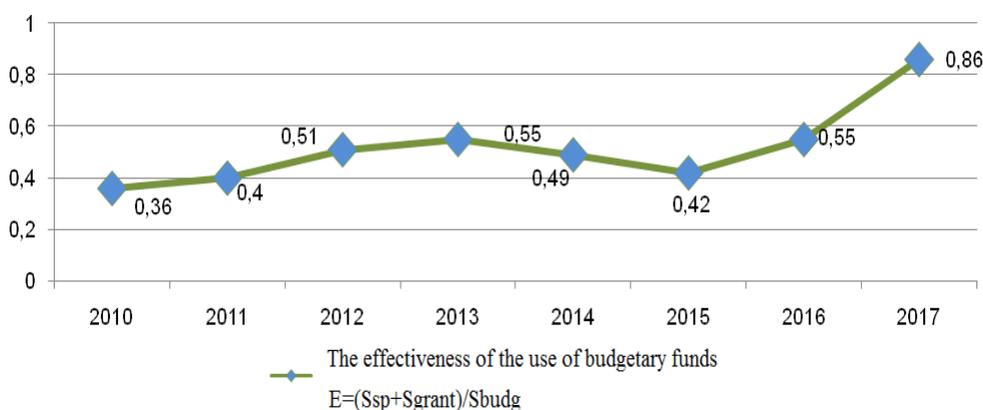


Fig. 2. Dynamics of the effectiveness of the use of budgetary funds in Taras Shevchenko National University of Kyiv

Source: compiled from [11, p. 2]

In the beginning of 2017, the University owned of 155 documents on intellectual property rights, of which more than 100 patents for inventions that constituted 65% of all documents, 33 patents for utility models - 22%, 1 patent for industrial design - 0.65%, 2 patents for varieties of plants - 1.3%, 2 certificates trademarks - 1.6%, 14 certificates of registration of copyright for a work - 9% of the total number of objects of intellectual property. [11, p. 66].

Now the University's portfolio of intellectual property is 90% of patents for inventions and patents for utility models relating to industrial property, of which almost 80% are patents with a 20-year validity, which is evidence of the significant research potential of the University for solving of complex scientific and technical problems. It should be noted the increase in the number of applications for obtaining certificates of registration of copyright for official work, in particular, for computer programs developed based on the University. This testifies to the understanding by the University staff of the importance of state registration and protection of intellectual property. The University is actively working to attract investors and partners to jointly implement their own research and development (R & D) in order to successfully commercialize the research results in the domestic and international intellectual property market.

Thus, the foregoing demonstrates the high level of the University's scientific potential, as well as the priority of implementing the integration strategy into the European knowledge transfer system of the university's scientific community, which, through stimulating applied research, will increase the share of extra-budgetary funding from international sources.

In general, in Ukraine, the important evolutionary steps of the R&D sector are: bringing the activities and structural organization of the scientific and research sphere in line with the current Law of Ukraine "On Science and Scientific and Technical Activities"; support of scientific projects that increase the competitiveness of Ukrainian goods and services in international markets and meet the

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requirements of the country's defense capability; increasing the level of scientific research by providing new scientific equipment and infrastructure in universities, as well as stimulating the creation of scientific results of worthy international science-based databases; deepening of cooperation of university scientists with scientific parks with the aim of commercializing the results of scientific research and interaction of science and business, as well as ensuring the continuous operation of small innovative enterprises; orientation on the innovative significance of scientific developments and the possibility of commercializing the results of scientific research, as well as their alignment with international standards and current needs in Ukraine; expansion of international scientific cooperation in the framework of mobility programs, as well as in joint international scientific projects within the framework of the EU program the Horizon 2020 and other international grant programs.

Miscalculations. However, the development and implementation of new strategies and techniques, to increase the effectiveness of research achievements, in Ukraine is full of risks. Now the decision on the state financing of these or other scientific projects is made thanks to a transparent procedure common to all collectives, the results of which are published in open network access. However, a loss in such a competition can automatically lead to a significant reduction in the staff of scientific workers, because basic funding for the submitted projects in our country is not yet provided. In addition, the decision on the MES research programs is usually delayed, even for several months. Meanwhile, all researchers must be dismissed in the end of previous topics and are in the status of the unemployed for a period of time. This negatively affects the activity and efficiency of scientific teams, many of which are disintegrating.

Recommendations. In addition, at the state level, it is necessary: to finance the creation of separate technological zones in the leading universities or one large zone for individual regions, but with the obligatory allocation of their own sectors in such zone for leading universities; to stimulate the formation of targeted investment funds; differentiate taxes; provide other interesting preferences for the development of innovative business.

Conclusions. So, the European integration policy which is carried out in the educational and scientific sphere of Ukraine in recent years, accompanied by significant institutional changes, i.e. formally (at the level of adoption of legislative and normative documents of fundamentally new impact) and informally (the transformation of mentality: a different attitude to education and science, the definition of their role for the state, business and the individual, strengthening the integration movement by organizing joint conferences with European universities, forums, scientific and educational etc.). This ultimately can become catalysts of the substantial transformation of the domestic universities and defined the entrepreneurial movement. However, the changes occurring in the top Ukrainian universities are characterized by certain inconsistencies, risks and miscalculations. However, it is obvious that integration into the system of European knowledge transfer in the context of increasing of their commercial attractiveness will contribute to the formation of a successful innovation-investment model of the economy. In this regard, the main tasks in the organization of educational and scientific activities should be the following:

- conducting interdisciplinary fundamental and applied scientific research, having innovative character and containing innovative technologies;
- introduction of international research and innovation and training programs, links, standards for the internationalization of education, the implementation of mobility schemes;
- optimization of the network of scientific specialties, which provides training of highly qualified personnel and the creation of integrated programs for the transition from the preparation of masters to the preparation of PhDs, based on the scientific and innovative components of training;
- effective use of the scientific potential the scientists who have defended their dissertations in other countries;
- activation of the implementation and commercialization of postgraduate scientific research;
- attraction of grants to support promising, commercially attractive innovative projects;
- activation of PhD students' participation in international fund programs (Horizon-2020, Erasmus, Humboldt Foundation, German Academic Exchange Service DAAD, USID, "Revival" Foundation, etc.);

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- ensuring proper payment of labor for researchers and knowledge transfer specialists in accordance with the current legislation, as well as organization of raising their skills at the expense of the state to increase the level of knowledge in the field of scientific and innovative entrepreneurship, in particular, exchange of experience with foreign partners.

References

1. Oxford University Innovation. *innovation.ox.ac.uk*. Retrieved from <https://www.innovation.ox.ac.uk> [in English].
2. Zvit rektora LNU im. I. Franka [Report of the rector of the LNU named after I. Franka]. (2017). *univ.kiev.ua*. Retrieved from <http://univ.kiev.ua/pdfs/zvit/zvit-rektora-2017.pdf> [in Ukrainian].
3. Zvit rektora KNU im. T. Shevchenka [Report of the rector of the KNU named after T. Shevchenko]. (2016). *univ.kiev.ua*. Retrieved from <http://www.univ.kiev.ua/pdfs/zvit/zvit-rektora-2016.pdf> [in Ukrainian].
4. Informatsiyana sistema «Konkurs» [Information system "Competition"]. *www.vstup.info*. Retrieved from <http://www.vstup.info/> [in Ukrainian].
5. Zvit rektora KNU im. T. Shevchenka [Report of the rector of the KNU named after T. Shevchenko]. (2015). *www.eurosvita.net*. Retrieved from <http://www.eurosvita.net/prog/data/attach/4682/zvit-rektora-2015.pdf> [in Ukrainian].
6. Zvit rektora LNU im. I. Franka [Report of the rector of the LNU named after I. Franka]. (2015). *www.lnu.edu.ua*. Retrieved from http://www.lnu.edu.ua/wp-content/uploads/2017/06/zvit_rektora-2017.pdf [in Ukrainian].
7. Zvit rektora ONU im. I. Mechnykova za 2016-2017 rr. [Report of the rector of ONU named after I. Mechnikov for 2016-2017]. (2017). *onu.edu.ua*. Retrieved from <http://onu.edu.ua/pub/bank/userfiles/files/rector/zvit-rektora-2017.pdf> [in Ukrainian].
8. Zvit rektora ONU im. I. Mechnykova za 2010-2015 rr. [Report of the rector of ONU named after I. Mechnikov for 2010-2015]. (2014). *onu.edu.ua*. Retrieved from <http://onu.edu.ua/pub/bank/userfiles/files/rector/otchet-rektora-2014.pdf> [in Ukrainian].
9. Vartist navchannya z-hidno pereliku spetsialnostey ta osvitnikh prohram na 2017/2018 n.r. [The cost of training according to the list of specialties and educational programs for 2017/2018 academic years]. (n.d.). *vstup.univ.kiev.ua*. Retrieved from <http://vstup.univ.kiev.ua/pages/80> [in Ukrainian].
10. Ukrstat (2017). Vyscha osvita v Ukraini 2017 rik [Higher education in Ukraine in 2017]. *www.ukrstat.gov.ua*. Retrieved from http://www.ukrstat.gov.ua/druk/publicat/kat_u/publosvita_u.htm [in Ukrainian].
11. Naukovo-doslidnytska robota v KNU im. T. Shevchenka: pidsumky za 2017 i zavdannya na 2018 r. [Research work at Taras Shevchenko National University of Kyiv: results 2017 and tasks for 2018]. (2017). *science.univ.kiev.ua*. Retrieved from http://science.univ.kiev.ua/upload/ZVIT_SCIENCE_2017_fin.pdf [in Ukrainian].
12. Pekushkina, O. A. (2005). Sotsialnaya tekhnologiya upravleniya integratsiyey rossiyskogo nauchnogo soobshchestva v sistemu evropeyskogo transfera znaniy [Social technology of integration management of the Russian scientific community in the system of European knowledge transfer]. *Extended abstract of candidate's thesis*. Nizhnyy Novgorod: Lobachevsky State University of Nizhni Novgorod [in Russian].

Література

1. Oxford University [Electronic recourse]. - Retrieved from: <https://www.innovation.ox.ac.uk>.
2. Звіт ректора ЛНУ ім. І. Франка [Електронний ресурс] // ЛНУ ім. І. Франка. – 2017. – Режим доступу: http://www.lnu.edu.ua/wp-content/uploads/2016/05/zvit_rektora-2016.pdf.
3. Звіт ректора КНУ ім. Т. Шевченка за 2017 р. [Електронний ресурс] // КНУ ім. Т. Шевченка. – Режим доступу: <http://univ.kiev.ua/pdfs/zvit/zvit-rektora-2017.pdf>.
4. Інформаційна система «Конкурс» [Електронний ресурс]. – Режим доступу: <http://www.vstup.info/>.
5. Звіт ректора КНУ ім. Т. Шевченка за 2015 р. [Електронний ресурс] // ГО Центр міжнар. проект. «Євроосвіта». – Режим доступу: <http://www.eurosvita.net/prog/data/attach/4682/zvit-rektora-2015.pdf>.
6. Звіт ректора ЛНУ ім. І. Франка за 2016 р. [Електронний ресурс] // ЛНУ ім. І. Франка. – Режим доступу: http://www.lnu.edu.ua/wp-content/uploads/2017/06/zvit_rektora-2017.pdf.
7. Звіт ректора ОНУ ім. І. Мечникова за 2016-2017 рр. [Електронний ресурс] // ОНУ ім. І. Мечникова ім. – Режим доступу: <http://onu.edu.ua/pub/bank/userfiles/files/rector/zvit-rektora-2017.pdf>.
8. Звіт ректора ОНУ ім. І. Мечникова за 2010-2015 рр. [Електронний ресурс] // ОНУ ім. І. Мечникова ім. – Режим доступу: <http://onu.edu.ua/pub/bank/userfiles/files/rector/otchet-rektora-2014.pdf>.
9. Вартість навчання згідно переліку спеціальностей та освітніх програм на 2017/2018 н.р. [Електронний ресурс] // КНУ ім. Т. Шевченка. – Режим доступу: <http://vstup.univ.kiev.ua/pages/80>.
10. Вища освіта в Україні 2017 р. [Електронний ресурс] // Державна служба статистики. – Режим доступу: http://www.ukrstat.gov.ua/druk/publicat/kat_u/publosvita_u.htm
11. Науково-дослідницька робота в КНУ ім. Т. Шевченка: підсумки за 2017 р. і завдання на 2018р. [Електронний ресурс] // КНУ ім. Т. Шевченка. – К., 2017. – 278 с. – Режим доступу: http://science.univ.kiev.ua/upload/ZVIT_SCIENCE_2017_fin.pdf.
12. Пекушкина, О. А. Социальная технология управления интеграцией российского научного сообщества в систему европейского трансфера знаний: автор. дис. ... кандидата социологических наук : 22.00.08 / Нижегород. гос. ун-т им. Н.И. Лобачевского. - Нижний Новгород, 2005. – 27 с.

Received for publication 01.03.2018

ІННОВАЦІЇ

Бібліографічний опис для цитування :

Novikova, I. E. The entrepreneurial university as imperative for implementation of the strategy of integration into the system of European knowledge transfer: the Ukrainian experience / I. E. Novikova, Zh. Huiyu, O. R. Bediukh // Науковий вісник Полісся. – 2018. № 2 (14). Ч. 1. – С. 222-231.

**Новікова
Ірина Едуардівна**

кандидат економічних наук, старший науковий співробітник кафедри НДЧ,
Київський національний університет імені Тараса Шевченка;
<https://orcid.org/0000-0003-0440-2616>;
SPIN-код: 1522-7651;
E-mail: ie_novikova@meta.ua;

**Novikova
Iryna Eduardivna**

Candidate of Economic Sciences, Senior researcher at the Research
Department, Taras Shevchenko University National of Kiev;

**Хуіюй
Чжоу**

кандидат технічних наук, старший науковий співробітник кафедри НДЧ,
Одеський національний політехнічний університет;
<https://orcid.org/0000-0001-8546-9606>;
E-mail: 170021121@qq.com;

**Huiyu
Zhou**

Candidate of Engineering Sciences, Senior Researcher at the Department of
Research, Odessa National Polytechnic University;

**Бедюх
Олександр Радійович**

кандидат фізико-математичних наук, старший науковий співробітник
кафедри НДЧ, Київський національний університет імені Тараса Шевченка;
<https://orcid.org/0000-0001-6549-0897>;
E-mail: bediukh@gmail.com;

**Bedyuh
Alexander Radiiovych**

Candidate of Physical and Mathematical Sciences, Senior Researcher at the
Research Department, Taras Shevchenko National University of Kiev