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THE ASNALYSIS OF UKRAINIAN UNIVERSITIES' EXPERIENCE IN TERMS OF ACADEMIC ENTREPRENEURSHIP DEVELOPMENT

The article is devoted to the problem of academic entrepreneurship development in Ukraine. The aim of the article is as follows: to analyse the experience of Ukrainian universities on the subject of academic entrepreneurship development. It is proved that taking into account the open nature of science, the wide use of information and communication technologies, the need for the integration of science and business, modern universities direct their efforts to the development of innovative activities. The problem under research is studied by scholars all over the world especially in terms of innovative activities of universities, development of an entrepreneurial university, various types of entrepreneurship as well as academic entrepreneurship. The experience of a dozen of modern Ukrainian universities, which occupy leading positions in the national rating "TOP-200 Ukraine 2024" has been analysed. It was found that academic entrepreneurship in their experience is realised in the formats of innovation ecosystems, cooperation with various funds, investment companies, sponsors, start-up schools, engineering and technological centres, scientific parks, etc. It is proved that the requirements for universities as educational, scientific, social, cultural and innovative centres, as well as their academic staff, are increasing. However, insufficient attention is paid to the problem of forming the readiness of academic staff to implement academic entrepreneurship. At the international, national, and institutional levels. the legal framework for the development of academic entrepreneurship is being developed, but the conceptual justification of academic staff training for this type of activity remains an urgent scientific problem. The study showed that modern universities have developed systems of professional development that require constant improvement, in particular for the formation of readiness for academic entrepreneurship implementation, which opens perspectives for further scientific research.

Key words: Ukraine, university, academic entrepreneurship, innovation ecosystem, cooperation with stakeholders, start-up schools, engineering and technological centre, scientific park, academic staff, training for academic entrepreneurship, professional development.

Problem statement. At the beginning of the second decade of the 21st century, Ukraine has a developed system of higher education, which includes institutions of various forms of ownership (budgetary, profitable, non-profit) and types. Taking into account the open nature of science, the wide use of information and communication technologies, the need for the integration of science and business, modern universities direct to the development of innovative activities. The search for opportunities to implement academic entrepreneurship, which is applied in various formats is of special topicality.

The analysis of recent research and publications. We find confirmation of this thesis in the scientific publications of domestic and foreign researchers, which highlight various aspects of innovative activities of universities (M. Baranovskyi, H. Doroshchuk, V. Lapteva, S. Zhukov, L. Kozak, G. Kozlova, I. Korinlova, L. Olich, S. Mytsiuk, P., D'Este, S. Mahdi, A. Neely, F. Rentocchini),

development of an entrepreneurial university (G. Beckman, R. Cherwitz, M. Blimpo, T. Pugatch, B. Clark, A. Cartter, B. Pergamon), various types of entrepreneurship (K. Buzymska, I. Tsaruk, O. Gudzenko, K. Davidkova, V. Oberemchuk, N. Kinakh, I. Mazur, V. Gura, H. Solodovnikova, A. Basu, M. Casson, N. Wadeson, B. Yeung), etc. A special scope of the literature is devoted to highlighting certain aspects of academic entrepreneurship (I. Zinkova, V. Kyrylyuk, Oya Kolyadych, I. Ryabokon, A. Krutova, T. Staverska, I. Lytvyn).

The aim of the article is to analyse the experience of Ukrainian universities on the subject of academic entrepreneurship development.

The research results. At the beginning of the second decade of the 21st century, Ukraine has a developed system of higher education, which includes institutions of various forms of ownership (budgetary, profitable, non-profit) and types. Our scientific interest consists of a dozen of modern universities

of Ukraine, which occupy leading positions in the national rating "TOP-200 Ukraine 2024", which is compiled according to a special methodology and involves considering the indicators by which the activities of universities are evaluated [23].

Interesting for our research is the experience of the National Technical University of Ukraine "Ihor Sikorsky Kyiv Polytechnic Institute", which created the "All-Ukrainian innovation ecosystem "Sikorsky Challenge Ukraine" in the war and postwar periods" [7]. The functioning of the innovative ecosystem "Sikorsky Challenge Ukraine" is based on cooperation between various institutions (Junior Academy of Sciences, lyceums, universities, institutes of the National Academy of Sciences of Ukraine, business environment) and presupposes the involvement of talented individuals in the implementation of academic entrepreneurship. It is noteworthy that the "All-Ukrainian innovation ecosystem "Sikorsky Challenge Ukraine" in the war and post-war periods" cooperates with various funds, investment companies, sponsors presenting external stakeholders, and also has its own structural divisions (Department of Innovation and Technology Transfer, Engineering centres, etc.), which contribute to both the organization of incubation training and holding of various competitions, the establishment of cooperation with investors, the provision of support for the opening of companies, preparation for serial production of products at the factory, etc. [7].

The analysis of "Sikorsky Challenge Ukraine" concept shows that the All-Ukrainian innovation ecosystem is aimed at the development of the defence and security sphere, "as other high-tech sectors of the economy generate: industrial high-tech, aviation and space, environmental and energy security, agricultural engineering and food security, civil and military infrastructure, biomedical engineering and human health, information technology, cyber security, transport and logistics" [7, p. 4]. Among the main tasks of this project there are the creation of start-up schools; creation of innovation clusters; organization, holding and participation in competitions of startups and scientific and technical developments at various levels: international, national, local; initiation and support of small high-tech enterprises; establishment of cooperation with large and mediumsized enterprises; establishment of international cooperation for the purpose of further use of innovations proposed by foreign developers [7].

In the context of our research, special attention is drawn to the training for start-up projects implementation, which is offered for students and postgraduates, scientists, entrepreneurs. Theses trainings annually cover up to 3,000 interested persons and are organized according to several stages: the first stage – "training under the program "Innovative entrepreneurship and start-up practice"

(1.5-2 months); the second stage – "incubation – preparation of the start-up project for investment" (3-4 months); third stage – "participation of selected teams in competitions of the city or region" (1-2 weeks); the fourth stage – acceleration of start-up projects "for an investor or investors" (6 months – 2 years) [7, p. 13].

Excellent experience is demonstrated by Taras Shevchenko Kyiv National University, which in 2022 developed the concept of "University Innovation Ecosystem", presents its own developments in the "International network of technology transfer (by the end of 2022, this network united more than 2.5 million enterprises from 69 countries of the world) the European network of enterprises - Enterprise Europe Network (EEN). ... Starting from May 2022 to November 2022, the University presented 42 profiles on the new EEN platform. Among them there were 23 technological proposals, 18 business proposals, 1 business request for R&D. Proposals for requests came from higher education institutions, institutes of the National Academy of Sciences of Ukraine, as well as medium and small businesses. In November 2022, 14 applications received the expressions of interest in published profiles posted online by foreign organizations" [1, p. 78]. It is worth noting that within the "Innovative Ecosystem of the University" the KNU Business School functions, which is a subdivision of the Science Park and directs its own activities to the training of students and young scientists interested in the development of their own start-up projects [2].

The results of the analysis of the document "The main results of the work of the team of the Lviv Polytechnic National University in 2023" indicate that the "Tech StartUp School Business Innovation Centre of Lviv Polytechnic was created for the activation of innovative activities, the development of start-up projects, technology transfer to business, commercialization innovations, adaptation students to entrepreneurial activity" [9, p. 37]. Tech StartUp School of Lviv Polytechnic implements its activities in the format of projects covering such categories of participants as school and student youth, entrepreneurs, young inventors, etc. [9]. The activities of the Tech StartUp School of the Lviv Polytechnic are also represented by educational programs that are implemented within the scope of the projects and include taking courses in online and offline formats, as well as participation in workshops, trainings, master classes, etc. [24].

The Centre of Scientific, Technical and Economic Information operates within the structure of Sumy State University, which manages the operation of the resource "Innovation Sumy State University" [17]. The analysis of the information presented in the catalogue "Sumy State University for the Communities of Sumy Region" shows that this university actively cooperates with the business environment and communities of the region in the following directions: "training

of specialists in basic specialties; development of personnel potential of the territorial community; promotion of socio-economic development; energy saving; information and communication technologies; environmental protection; social and humanitarian studies, social mission of the university" [18, p. 5].

Sumy State University also has a Startup Centre, which cooperates with the "Sikorsky Challenge" Innovation Ecosystem, Science Park of Taras Shevchenko Kyiv National University, the Association of Industrial Automation Enterprises of Ukraine, etc. [19]. The start-up centre directs its activities to "holding seminars, trainings, business games with the participation of entrepreneurs; organization of presentations, performance tests, brainstorming; participation in all-Ukrainian support for and international competitions; development of partnership and mentorship with leading start-up projects, start-up hubs, investment funds" [19].

The main tasks of the Science Park of Lviv University "Innovations and Entrepreneurship' are defined as: "creating new innovative products, implementing measures for their commercialization, organizing and ensuring the production of scienceintensive, competitive on domestic and foreign markets, innovative products; ... the involvement of higher education students, University employees and partners in the development and implementation of Science Park projects; promotion of development and support of small innovative entrepreneurship; organization of training, retraining and advanced training of specialists; ... provision of favourable conditions for the creation by students, employees of the University innovative enterprises that bring the results of scientific and technical activities to the stage of development on their basis of competitive innovative technologies, goods and services and production of innovative products; development of cooperation in the field of scientific, technical and innovative activities in Ukraine and abroad, promotion and attraction of foreign investments; performance of other functions [4]. It is worth mentioning that the Science Park of Lviv University "Innovations and Entrepreneurship" offers various categories of courses for students that can be useful both for their personal and professional development [4].

The similar experience is demonstrated by the National University of Life and Environmental Sciences of Ukraine, which launched the "Start-up School of NULES of Ukraine" [13]; V. N. Karazin Kharkiv National University, which has centres that cooperate with the business environment and the community in several areas, namely "medicine, psychology, security, chemistry, biology, ecology, law, physics, foreign languages, philology, history, finance, international economy and world economy, business, sociology" [20]; National Technical University "Kharkiv Polytechnic Institute", which

opened the Startup Center of NTU "KhPI" SPARK [6]; Kharkiv National University of Radio Electronics, in which the Science Park "Synergy" began its activities in 2019 [21].

In 2023, I. I. Mechnikov Odesa National University founded the Technology and Innovation Support Centre within the framework of the TICS international project to support innovations and start-up projects, which directs its own activities to the development of international cooperation, innovative development at the regional level, the implementation of start-up activities, the development of entrepreneurship, initiation, establishment of cooperation with stakeholders, implementation of scientific and research activities, as well as provision of opportunities for education and training [15].

Based on the study of resources, which reflect the main areas of activity, experience, and achievements of ten of the best higher education institutions of Ukraine in this field, we conclude that they have both: advantages and disadvantages in terms of academic entrepreneurship development and the academic staff training for its implementation.

We see a positive in the fact that the development of academic entrepreneurship is followed in the activities of modern universities, and their scientific, innovative, inventive activities are aimed at meeting the needs of the country's economy, business environment, and the social sphere of society at various levels: local, regional, national, international. This testifies to the efforts of higher education to become an active participant in the innovationoriented economy, which makes it possible to implement innovative and ground-breaking ideas, developments, and technologies. However, in addition to economic advantages, it is also worth emphasizing social ones, in particular, the development of an and entrepreneurial mentality entrepreneurial culture, which contributes to the production of new knowledge, its transfer, the development of innovative and entrepreneurial activities, raising the level of education of population, which in turn contributes to the provision of an appropriate level of well-being, financial independence, etc.

The advantages of academic entrepreneurship development in Ukraine include the development of regulatory and legal support, which reflects the state's vision regarding the determination of priority areas of innovative activity, the development of science and technology, etc., and its implementation is seen in the development of international scientific and technical cooperation, the application of an integrative approach to the use of innovations with various branches of knowledge, creation of innovative infrastructure, establishment of innovative industries, etc.

The analysis of the experience of modern universities shows that the active opening of divisions in their structures (science parks, start-up schools,

business incubators), as well as the formation of associations of scientific and academic staff from different universities, and often from different countries, in the format of research groups and projects that work on the development of solutions to current economic, environmental, engineering, and social problems. In some cases, the development of innovative activity and academic entrepreneurship are components of the University's Innovation Ecosystem [1; 7].

We consider the involvement of talented youth in the work of start-up schools to be an important aspect in the development of academic entrepreneurship. It is not only about student youth [19], but also about students [24], which promotes both the popularization of science in general and the educational programs of a specific university in particular, the development of knowledge about entrepreneurship, opportunities to attract resources for the implementation of innovative ideas, and projects, etc. We consider this activity to be positive, because among the basic competencies required for lifelong learning in the 21st century, the Council of the European Union singles out entrepreneurial competence, which is interpreted as "the ability to act using opportunities and ideas and turn them into values for others. It is based on creativity, critical thinking and problem solving, initiative and persistence, the ability to work together to plan and manage projects of cultural, social or financial value" [25, p. 11].

Declaring in regulatory documents the demand and relevance of the problem of innovative activity development in general and academic entrepreneurship in particular, making efforts initiating the development of academic entrepreneurship, modern universities do not pay enough attention to academic staff training for its implementation. We conclude on the basis of the fact that on their websites, the universities that became the object of our research, provide rather fragmentary and insufficiently complete information on academic staff training for the implementation of academic entrepreneurship within the scope of the work of science parks and start-up schools. If such proposals are implemented, they are characterized by a situational nature of provision (in particular, within short-term projects, individual courses, seminars or trainings), and the main consumers of such proposals are presented by students and apprentices, entrepreneurs, etc.

The analysis of the activities of university departments responsible for professional development also confirmed the absence of programs aimed at academic staff training for academic entrepreneurship implementation [2; 5; 8; 10; 11; 12; 14; 16; 20; 22].

However, it is worth paying tribute to Sumy State University, which offers its academic staff the

Professional Development Program "Promotion of educational services, or why does a teacher need copywriting?", which, among other things, teaches how to promote one's own developments in the market of educational services [19], as well as "Social Media Marketing: a basic teacher's course", which provides the following learning outcomes: "understand the basic principles of winning the loyalty of the target audience by communicating with potential and actual customers in social networks; understand the peculiarities of running social networks in pedagogical interaction; have the skills to develop and implement a marketing strategy in social networks; be able to create visual content for social networks; be able to create and promote video content in social networks" [19, p. 2]. These programs partially contribute to the development of entrepreneurial competence of academic staff.

Conclusions. Hence, based on the analysis of the research literature, the experience of the best universities of Ukraine, the conclusion was formulated that at the beginning of the 21st century, the requirements for universities as educational, scientific, social, cultural and innovative centres, as well as their academic staff, are increasing. However, insufficient attention is paid to the problem of forming the readiness of academic staff to implement academic entrepreneurship. At the international, national, and institutional levels, the legal framework for the development of academic entrepreneurship is being developed, but the conceptual justification of academic staff training for this type of activity remains an urgent scientific problem. The study showed that modern universities have developed systems of professional development that require constant improvement, in particular for the formation readiness for academic entrepreneurship implementation, which opens perspectives for further scientific research.

References:

- 1. Київський національний університет імені Тараса Шевченка. Науково-дослідницька робота в Київському національному університеті імені Тараса Шевченка. Підсумки за 2022 рік та завдання на 2023 рік. 2023. URL: https://science.knu.ua/upload/zvit_nauka_2022.pdf
- 2. Київський національний університет імені Тараса Шевченка. *Науковий парк.* 2024. URL: https://scp.knu.ua/ua/pro-korporatsiiu
- 3. Київський національний університет імені Тараса Шевченка. Інститут післядипломної освіти. Відділ підвищення кваліфікації. Програми для педагогічних та науково-педагогічних працівників. 2024. URL: https://ipe.knu.ua/pedagogichni-ta-naukovo-pedagogichni-pratsivnyky.html

- 4. Львівський національний університет імені Івана Франка. Науковий парк Львівського університету «Інновації та підприємництво». 2024. URL: https://ihub.lnu.edu.ua/?_gl=1%2Ag291ph%2A_ga%2AMzM2MzM2ODkuMTY4NDMyMTc0OA..%2A_ga_EZYEYGNTQR%2AMTcyMzAxNDUwNS43Lj AuMTcyMzAxNDUwNS4wLjAuMA.
- 5. Львівський національний університет імені Івана Франка. Центр забезпечення якості освіти. Відділ викладацької майстерності. Програми підвищення кваліфікації. 2024. URL: https://education-quality.lnu.edu.ua/about/subdivisions/teaching-excellence/
- 6. Національний технічний університет «Харківський політехнічний інститут». Стартап-центр НТУ «ХПІ» SPARK. 2024. URL: https://web.kpi.kharkov.ua/spark/
- 7. Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського». «Всеукраїнська інноваційна екосистема "Sikorsky Challenge Ukraine" у воєнний та післявоєнний періоди». 2024. URL: https://drive.google.com/file/d/1CbSz9tVRpUY8CEfKUf-DZ-mf2H47K6yRU/view
- 8. Національний технічний університет України «Київський політехнічний інститут імені Ігоря Сікорського». Підвищення кваліфікації співробітників КПІ ім. Ігоря Сікорського. Програми підвищення кваліфікації. 2022. URL: http://ipo.kpi.ua/povyshenie_kvalif/pkv-kpi/
- 9. Національний університет «Львівська політехніка». Основні результати роботи колективу Національного університету «Львівська політехніка» у 2023 році. Матеріали до звіту ректора Юрія Бобала на Конференції трудового колективу 31 січня 2024 року. 2024. URL: https://lpnu.ua/sites/default/files/2024/pages/26134/zvit-rektora-20230102.pdf
- 10.Національний університет «Львівська політехніка». Кафедра педагогіки та інноваційної діяльності. Курси підвищення кваліфікації. 2024. URL: https://lpnu.ua/pio/kursy-pidvyshchennia-kvalifikatsii
- 11. Національний університет «Львівська політехніка». Центр інноваційних освітніх технологій. Курси підвищення кваліфікації. 2024. URL: https://lpnu.ua/ciot/napriamy-navchannia/kurs-pidvyshchennia-kvalifikatsii
- 12.Національний університет «Львівська політехніка». Відділ навчання і розвитку персоналу. Програми підвищення кваліфікації. 2024. URL: https://lpnu.ua/nrp/prohramy-pidvyshchennia-kvalifikatsii
- 13.Національний університет біоресурсів і природокористування України. *Стартап школа НУБІП України*. 2024. URL: https://nubip.edu.ua/ node/64214

- 14. Національний університет біоресурсів і природокористування України. Навчально-науковий інститут неперервної освіти і туризму. Підвищення кваліфікації. 2024. URL: https://nubip.edu.ua/node/1069/17
- 15.Одеський національний університет імені І. І. Мечникова. *Центр підтримки технологій та інновацій*. 2024. URL: https://onu.edu.ua/pub/bank/userfiles/files/international/buklet_TISC.pdf
- 16.Одеський національний університет імені І. І. Мечникова. Навчальний відділ. Програми підвищення кваліфікації науково-педагогічних і педагогічних працівників в ОНУ імені І.І. Мечникова. 2024. URL: https://onu.edu.ua/uk/acad-office/pidvyschenya-kvalif-stag
- 17.Сумський державний університет. *Pecypc* "Innovation Sumy State University". 2024. URL: https://innovation.sumdu.edu.ua/index.php/uk/
- 18.Сумський державний університет. Сумський державний університет еромадам Сумщини. 2024. URL: https://innovation.sumdu.edu.ua/media/attachments/2022/05/15/Zbirnik-SumDU-Gromadam-Sumsini-2 compressed.pdf
- 19.Сумський державний університет. Програма підвищення кваліфікації педагогічних, науковопедагогічних та інших категорій працівників «Промоція освітніх послуг, або навіщо викладачу копірайтинг?». 2024. URL: https://crkp.sumdu.edu.ua/images/profil promo.pdf
- 20. Харківський національний університет імені В. Н. Каразіна. *Інститут післяди-пломної освіти та заочного (дистанційного) навчання. Підвищення кваліфікації для викладачів ЗВО.* 2024. URL: https://sites.google.com/karazin.ua/dist-karazin-ua/%D0%BF%D1%96% D0%B4%D0%B2%D0%B8%D1%85%D0%B8%D0%B0%D1%85%D0%BD%D0%BD%D1%85%D0%BD%D0%BD%D1%86%D1%96%D0%BA%D0%BB%D1%86%D1%96%D1%97/%D0%B2%D0%B8%D0%BA%D0%BB%D0%B0%D1%87%D1%83-%D0%B7% D0%B2%D0%BE
- 21.Харківський національний університет радіоелектроніки. *Науковий парк «Синергія»*. 2023. URL: https://nure.ua/branch/naukovij-park-sinergija
- 22.Харківський національний університет радіоелектроніки. Програми підвищення кваліфікації у ХНУРЕ. 2024. URL: https://nure.ua/pidvishhennja-kvalifikacii-stazhuvannja/programi-pidvishhennja-kvalifikacii-u-hnure
- 23.Центр міжнародних проєктів «Євроосвіта». *Рейтина університетів України «ТОП-200 Україна 2024».* 2024. URL: https://euroosvita.net
- 24. Tech StartUp School Львівської політехніки. Проєкти Tech StartUp School. 2024. URL: https://tsus.lpnu.ua/all-project

25. The Council of the European Union. Council recommendation on key competences for lifelong learning. Official journal of the European

Union. 2018. URL: https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX: 32018H0604(01)

Гельжинська Т., Мукан О. Аналіз досвіду українських університетів на предмет розвитку академічного підприємництва

Стаття присвячена проблемі розвитку академічного підприємництва в Україні. Мета статті полягає в наступному: проаналізувати досвід українських університетів щодо розвитку академічного підприємництва. Доведено, що враховуючи відкритий характер науки, широке використання інформаційно-комунікаційних технологій, необхідність інтеграції науки та бізнесу, сучасні університети спрямовують власні зусилля на розвиток інноваційної діяльності. Проблема дослідження вивчається науковцями з усього світу, зокрема, інноваційна діяльність університетів, розвиток підприємницького університету, різних видів підприємництва, а також академічного підприємництва. Проаналізовано досвід десятка сучасних українських університетів, які займають лідерські позиції в національному рейтингу «ТОП-200 Україна 2024». Встановлено, що академічне підприємництво в їхньому досвіді реалізується у форматах інноваційних екосистем, співпраці з різними фондами, інвестиційними компаніями, спонсорами, старт-ап школами, інженерно-технологічними центрами, науковими парками тощо. Доведено, що вимоги до університетів як освітніх, наукових, соціальних, культурних та інноваційних центрів, а також їхніх науково-педагогічних працівників зростають. Проте. недостатньо уваги приділяється проблемі формування готовності науково-педагогічних працівників до реалізації академічного підприємництва. На міжнародному, національному та інституційному рівнях розробляється законодавча база розвитку академічного підприємництва, але концептуальне обґрунтування підготовки науково-педагогічних працівників до цього виду діяльності залишається актуальною науковою проблемою. Дослідження засвідчило, що сучасні університети мають розроблені системи професійного розвитку, які потребують постійного вдосконалення, зокрема для формування готовності до реалізації академічного підприємництва, що відкриває перспективи для подальших наукових досліджень.

Ключові слова: Україна, університет, академічне підприємництво, інноваційна екосистема, співпраця зі стейкхолдерами, стартап школи, інженерно-технологічний центр, науковий парк, науково-педагогічні працівники, підготовка академічного підприємництва, професійний розвиток.