

**TRAINING OF INNOVATIVE ENTREPRENEURSHIP –  
A KEY TO CREATION OF STARTUPS**

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*Innovative startup companies that emerged in the late 1990s are now widely supported by countries with developed innovation systems. The aim of this article is to analyse the experience of creation innovative programs in entrepreneurship, with a further perspective for introducing similar programmes into Ukrainian universities. For this, the authors presented their own developed program of monitoring the Ukrainian universities on availability of courses of innovative entrepreneurship. The results of this survey will be analytical prerequisite for decision-making of establishment special curriculum of innovative entrepreneurship in technical and natural Sciences universities for the development of startup-ecosystem in Ukraine.*

**Key words:** *startup, courses in innovative entrepreneurship, United Kingdom, Germany, program of monitoring.*

*Companiile inovatoare startup, care au apărut la sfârșitul anilor 1990, în prezent, sunt sprijinite pe scară largă de către țările cu sisteme de inovare dezvoltate. Scopul acestui articol este de a studia experiența de creare a programelor inovatoare în domeniul antreprenoriatului, cu perspectiva introducerii unor programe similare în universitățile ucrainene. Pentru aceasta, autorii au prezentat propriul program de monitorizare a universităților ucrainene cu privire la disponibilitatea cursurilor de inovare a antreprenoriatului. Rezultatele acestui studiu vor fi drept bază analitică pentru luarea deciziilor cu privire la crearea programelor speciale educaționale de antreprenoriat inovativ în universitățile tehnice și în științele naturale pentru dezvoltarea ecosistemelor startup în Ucraina.*

**Cuvinte-cheie:** *startup, cursuri de antreprenoriat inovativ, antreprenoriat, Marea Britanie, Germania, program de monitorizare.*

*Инновационные стартап компании, которые возникли в конце 1990-х годов, сейчас широко поддерживаются странами с развитыми инновационными системами. Целью данной статьи является изучение опыта создания инновационных программ в области предпринимательства, с будущей перспективой введения аналогичных программ в украинских вузах. Для этого авторами представлено собственную разработанную программу мониторинга украинских вузов о наличии курсов инновационного предпринимательства. Результаты такого обследования станут аналитической основой для принятия решения о создании специальных учебных программ инновационного предпринимательства в вузах технических и естественных наук для развития стартап-экосистемы в Украине.*

**Ключевые слова:** *стартап, курсы по инновационному предпринимательству, Великобритания, Германия, программа мониторинга.*

**JEL Classification:** *O25, L53, M15.*

**Introduction.** The support of innovative startups in the USA, Israel, South Korea, and European countries is growing: Governments have started state programs of startup support are due to their positive effects on the development of economy:

- creation of new jobs and the reduction of unemployment;
- increased competition;

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- enhanced innovation and new technology and accelerated structural change in the economy;
- is a way of eliminating regional economic disadvantages [2, p. 8-9].

New OECD evidence indicates that most of the net job creation originates in young and fast-growing firms. Young firms less than five years old have represented about 20% of non-financial business sector employment over the last decade but have generated nearly half of all new jobs [4, p. 177]. Evidence for various countries suggests that 4-6% of high-growth firms may create half to three-quarters of all new jobs (OECD, 2013) [4, p. 72].

National support measures of innovative startups in the leading countries, as a rule, are implemented in parallel with furtherance programs of venture capital, innovation management, advisory services, and programs of direct support of business R&D in form of grants and loans [5, p. 582].

However, the declared strategic guidelines of innovation development of Ukraine, which should be based mainly on new knowledge, information, and production of high-tech goods and services, have not been systematically supported with relevant programs and activities of Government.

There are no such tools of state support of innovative startups in Ukraine still, formalized definition in the normative-legislative field of the term «startup company». Also there is not carried out monitoring of activities of Ukrainian innovative startups. In accordance with European Methodology State statistics of Ukraine every two years is conducted a survey of innovation activities of enterprises, with the aim of obtaining information about implemented innovations at enterprises. But this study does not consider the features of innovative startups. O. Kurchenko and O. Salikhova have developed the program of monitoring of innovative activity of Ukrainian startup companies as the most dynamic agents of the national innovative system. This program consists of general information about startup, business practices, staff, financial providing, innovation activity and public policy [6]. Based on this statistical form of monitoring of innovative startups, in May-June 2016 a pilot study of Ukrainian startups was held by Institute for Economics and Forecasting, NAS of Ukraine.

**Results.** The study showed, that programs of startup support consists of: direct (including: grants, subsidies, venture financing, credit/loan guarantees and indirect support (tax benefits) [4, p. 175].

But, given the fact that, startup is a small company and consists of 2-10 employees (human capital), considering founder of company – success of company entirely depends on quality and level of education, which received or receives each of employees. Carriers of core startup competencies (are CEO (General Director), CTO (Technical Director) and CMO (Director of marketing)) complement each of other in different competencies, education and skills. In this way, development and support of intellectual capital is gets particular importance.

**Foreign experience of creation innovative programs in entrepreneurship.** According to the final report of the Expert Group for the European Commission “Entrepreneurship in Higher Education Especially within Non-business Studies”, in the 2000s entrepreneurial education and training programs on entrepreneurship was insufficient or did not set up, the engineering and science faculties often lacked qualified personnel and as a rule did not set up in many EU countries, in particular, in the new member States of the European Union [1, p. 78].

Recently, many countries in the UNECE (the European and North America countries, Central Asia and Western Asia) region have seen an increase in the number, scope and level of higher education that focus on commercialization and entrepreneurship. Inter alia, these programs aim at facilitating communication between researchers and business managers. The curricula include cross-disciplinary issues related to technology, intellectual property rights, business management, entrepreneurship and IT, and emphasize practical know-how through established links with private business or university-based commercial operations [1, p. 58]. The final objective of training is encouraging students to set up their own ventures. To achieve this, in programs use such tools as mentoring and coaching, and business plan competition [1, p. 45-46].

One of such example of successful functioning of program is the United Kingdom. In 2000, the Government of the United Kingdom initiated a programme of cooperation between Cambridge University and the Massachusetts Institute of Technology (CMI or Institute) providing a budget of USD 100 million. The objective of the programme is to promote lasting cooperation between British industry and university educational and research activities. The programme focuses on sectors that traditionally have not had active interaction with universities, such as ground transportation and construction and also to strengthen the cooperation of research institutions with high-technology companies in aviation, biology,

communications, etc. and intends to broaden its outreach into retail trade, leisure and travel, distribution and the food chain.

Projects of the Institute primarily target the following areas:

- education for innovation, i.e. promoting the entrepreneurial culture at degree level of education in ways that enhance the propensity of students to be more innovative as entrepreneurs;
- integration of new technologies in the economies of communities;
- deeper involvement of industry into the knowledge exchange, enabling universities to reach far further into the industrial sector.

In the process of Program implementation, has been created several networks, one of the largest of them being the Cambridge University Entrepreneurs: having launched 31 startups in 2005-2007, it has become the United Kingdom's most successful student-led undertaking of this kind. In 2009, as many as 20 of the established companies were operational, and their estimated market value exceeded GBP 22 million [1, p. 45-46].

A central government organization in Ireland - Enterprise Ireland, that helps Irish firms to develop and grow, gives a *CORD Grant*, which includes one-year startup courses offered by the Irish Institutes of Technology that include formal business education, entrepreneurship training, personal development, business mentoring, and business guidance. The grant equates to 50% of the candidate's salary in the previous year, up to a maximum of EUR 30 000 [2, p. 25].

In 1997 in Germany was launched program EXIST, created for solving problems of:

- increasing the number of university graduates, dare to make the transition into professional self-employment or start up their own companies;
- adding in curricula matters relating to entrepreneurship, culture of entrepreneurship, which were lacking on that time;
- increasing number of innovative business startups, because a great potential for startups at universities was rarely exploited.

In 1998 there were created 5 regional networks to increase motivation for students and academic employees in universities and research institutions to enter into self-employment [3, p. 1, 4].

***Program of monitoring of Ukrainian universities on availability of courses of innovative entrepreneurship.*** There are no such initiatives of creation of courses of innovative entrepreneurship in Ukrainian universities. But, the beginning of any measures requires a preliminary assessment of presence of innovative entrepreneurship courses of technical and natural Sciences in universities.

As showed the conclusions of research, now in Ukraine for the budgetary funds, prepare specialists in the field of Economics and Law annually in three times more, than experts in natural and physical and mathematical Sciences, able to generate new knowledge, produce, adapt and use advanced technology, providing innovative development of the economy. This, in turn, will contribute to the creation of a new generation of engineers, mechanics, communications technicians, designers, and energy experts, i.e., experts in STEM-education, which will be at the forefront of the development of the national startup-ecosystem and create new high-tech companies.

That's why, authors created a statistical form of monitoring about the existence and content of courses of innovative entrepreneurship in Ukrainian universities. The content of statistical form of monitoring of innovative startups in the original edition is presented below.

### **1. The structure of program of monitoring of innovative startups**

**Section 1** is concerned on questions on availability and content of courses of technological entrepreneurship.

1.1. Specify, branches of knowledge (this list was compiled on the basis of STEM Disciplines) and total number of students in university on 01.09.2016 including all forms of learning (if there is no, put "0" or "-")? (table 1).

1.2. In which the above mentioned branches of knowledge (except Business and Management, Economics, Accounting), is taught students the *course of innovation management*, which gives practical skills to students on how to transform ideas into real products, services and processes; to assess the potential of innovative ideas as the basis for innovative projects; create business plan for new innovative enterprises; to build a successful enterprise strategy and implement it; to find funding sources (including learning the basics of venture investing), and to build an effective team?

2.3. If «Yes», please specify: numbers of directions, in accordance with question 1.1, and number of hours for each direction (for example: 1. - 100 hours; 2. - 50 hours; 21. - 10 hours, etc.).

2.4. In which the above mentioned branches of knowledge (except Business and Management, Economics, Accounting) is taught students other courses, which provided skills on how to transform ideas into real products, services and processes; to assess the potential of innovative ideas as the basis for innovative projects; create business plan for new innovative enterprises; to build a successful enterprise strategy and implement it; to find funding sources (including learning the basics of venture investing) and to build an effective team?

Table 1

Total number of students in Ukrainian University on 01.09.2016

No	Branch of knowledge	Total number of students
1.	Accounting	
2.	Agriculture	
3.	Architecture	
4.	Aviation	
5.	Biomedical	
6.	Business and management	
7.	Communications	
8.	Computing and Information Technology	
9.	Economics	
10.	Engineering	
11.	Environmental Science/Development	
12.	Forestry	
13.	Geology	
14.	Health Services and Wellness	
15.	Mathematics	
16.	Medical, Dental, Nursing	
17.	Mining Engineering	
18.	Pharmacy	
19.	Physical Science	
20.	Technology	
21.	Veterinary Science	

*Source: developed by authors.*

2.5. If «Yes», please specify: numbers of directions, in accordance with question 1.1; the names of courses and the number of hours for each; (example: 7. – 75 hour. – Communications; 20. – 100 hours. – Technology, etc.).

2.6. What, disciplines, on your opinion, should be introduced to help students and graduates to create their own innovative companies?

- Innovative management.
- Startup (start-up own business).
- Business management.
- Another variant.

**Section 2** includes questions on encouraging students/graduates of the University's to start up their own companies as well as their participation in meetings with representatives of businesses and venture capital organizations.

2.1. Are there any contests on best projects of innovative startups for students, graduates and scientists in the University?

2.2. Is there a necessity for beginning any contests on best projects of innovative startups in University and provide financial support in form of grants, vouchers?

2.3. Is there a necessity for creation a state support program of innovative startups for the development of innovative entrepreneurship in Ukraine and improving the interaction between universities, research institutes and industry?

2.4. On what stage, in your opinion, state program is the most important?

- During the study (for students).
- After graduation (for graduates).

2.5. Does occur meetings with representatives of companies from private sector, owners of venture capital, and innovative startups in University and invite students/graduates of technical specialties to attend them?

A survey of Ukrainian universities is critical to the adoption of effective legislative and normative-legal documents, science-based management decisions related to the strengthening of entrepreneurial thinking and entrepreneurship, particularly for technical disciplines, as well as implementation of the state program of support of innovative startups.

**Conclusions.** The introduction of courses of modern technological entrepreneurship in universities of Ukraine becomes particularly important. The Ministry of education and science of Ukraine should provide training of innovation managers and experts able to conduct a professional feasibility study and the implementation of innovative projects. Because STEM-specialists are able to create, to multiply, to spread new knowledge and use them efficiently in their activities, and this will provide an opportunity to build a national startup-ecosystem and create new high-tech companies.

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*Recommended for publication: 26.08.2016*