

STARTUPS' AND STUDENTS' ENTREPRENEURSHIP SUPPORT AT HIGH EDUCATIONAL INSTITUTIONS

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Annotation

The article presents opportunities of university business cooperation and possibilities for innovative startups. The main steps of innovative startups' technological product development and university support for its creating in mentoring, curriculum, finance and community are shown. The functions of information technology (IT) clusters in Ukraine are presented. They include: promotion IT industry, innovative activity, private entrepreneurship, collaborative researches, education management. The education management key points of Lviv Polytechnic National University in innovative process are presented and strategy points are given for future education development.

Key words: university, informational technology, education management, partnership relations, innovations.

Introduction

Nowadays, role of High Educational Institutions (HEIs) becomes more wide and specific. To be in touch with modern society it needs to turn into successful and open for challenges business partner. The university-business cooperation item occupies a prominent place in the researches of the foreign and Ukrainian scientists: James A. Severson [1], Debackere K. [2], Bay S. [3], Morrison J., Galan N., Tovkanets S., Afonin A. and others. But still there are some problematic questions in education management of information technology science and students' innovate entrepreneurship support.

1. Technologies, industry, collaborative R&D

The first discussions about cooperation, collaboration and partner relationship between enterprise, government and university appeared in Harvard Business School, IM Group, Center for Relationship marketing. The key factor for companies to be innovative is systematically studying process and adopting to changeable customer needs. University and industry comes closer for common operations that, in result, will cause appearance of new and useful commercial technology (figure 1).

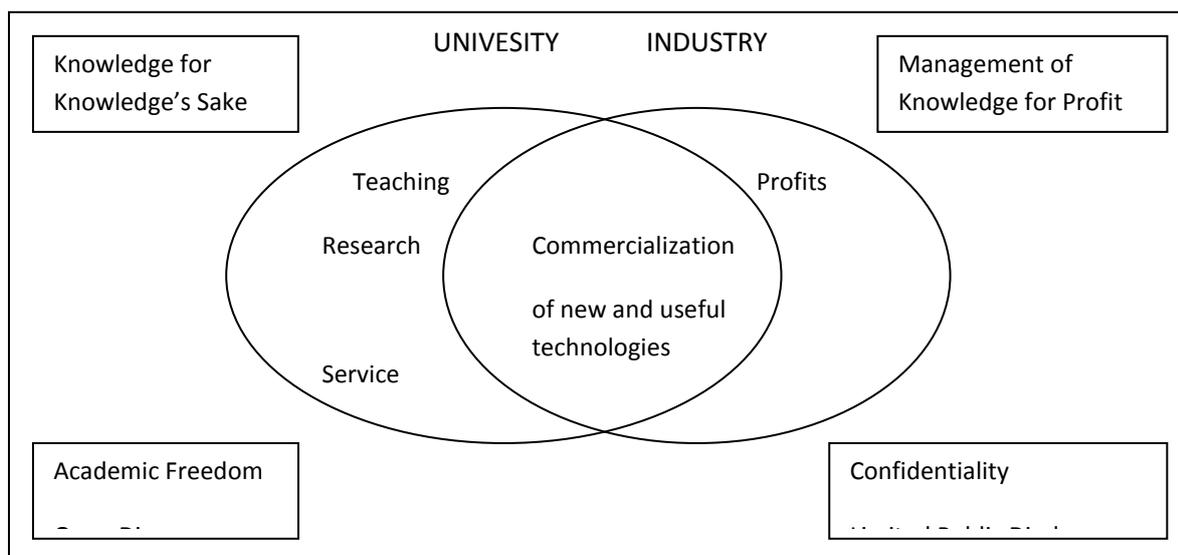


Fig.1 University – Industry cooperation model

Author: [1]

Nowadays in Ukraine academics, business representatives and students recognize the potential of innovations development. Growth of startups emergency becomes popular among young people and students. Progress in information technology (IT) sector and cluster model of economy becomes a good base for innovative activity.

For example, there are 5 big IT clusters located in Lviv, Lutsk, Dnipro, Odessa and Kharkiv that have connected activity of IT companies, government programs, unproductive sectors and service centers, local universities and collegiums.

In general, the main strengths of Ukrainian innovative technological growth are:

- top-tier technology/science talent;
- problem-solving mindset;
- soft skills of youth, including communication activity, flexibility, open mind, community working;
- growing startup culture and development of innovative space;
- global outlook, history.

The IT market growth in Ukraine connected with short commercialization timeline of products and possibilities for free entering international marketplace. In software development, period of realization from idea to real tested product lasts in general 1-3 years. For instance, in biological science such period lasts 5-10 years, in pharmaceuticals over 15. Figure 2 shows timeline measure from idea to commercialization product of typical IT startup:

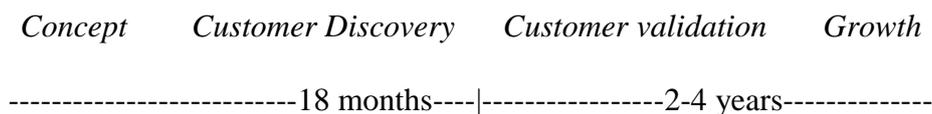


Fig. 2 Timeline of IT product development

Author: based on [4]

As it is shown the process of startup idea realization consist of 3 main parts:

1. formation (idea);
2. validation (realization);
3. growth (market).

But still, there are some difficulties with startups development that increase 75% of falls, including following points:

- business plan often change after first contact with a customer;
- startups cannot have long-term business plans;
- lack of resources (human, technical, capital, finance)
- marketing gaps.

The main challenges of startups' development in Ukraine: lack of business mindset and business culture; intellectual property protection; weak institutional support of government; lack of mentorship.

The IT clusters activity in Ukraine and university-business cooperation supports startups in different fields. This cooperation is based on mutual benefits, needs and aims. LITaC that is located in Lutsk promotes IT professions among school pupils, and it's EDUUP project supports education reforms in graduates' preparation. One of the greatest projects performed by Kharkiv IT cluster was creating of IT Legal Support Center. Among this, the international activity takes place in Kharkiv that cooperates with US-Ukraine Business Council [5].

The biggest promotional Lviv IT Cluster projects are: Lviv IT Arena conferences, that covered the most promising and edgy areas of IT industry and Lviv IT Tour. The strategic goals of Lviv IT Cluster are to turn Lviv into one of the largest IT centers in Central-Eastern Europe and to encourage the development of business eco-system for IT [8].

Nowadays, Ukrainian HEI meets different challenges in its functionality. The basic challenges appeared throw European integration of the country and include: the internationalization of education and research, diversification and specialization of knowledge created in higher education institutions, increased demand for higher education, the emergence of new expectations regarding needs in education and training which stem from building the knowledge-based society and others [9].

Based on European education framework, education management in Ukrainian HEI should be focused on:

- creation of effective system for knowledge transfer;
- improvement competitiveness among universities;
- improvement of education quality and standards in education process;
- evoking industry satisfaction of knowledge of the graduates.

To generalize on the above-mentioned demands from higher education institutions, it may be concluded that they primarily include: relevance of produced and provided knowledge, efficiency and ensuring quality and efficacy of education [10].

The University plays great role in IT clusters and in partnership relation with young entrepreneurs and startups creators can provide following recourses (Table 1).

Table 1

Main resource types from University to Startup support

№	Type of resource	Characteristics
1.	Curriculum	business training projects, market strategies education, product design support
2.	Mentors	industry experts, marketing specialists, technology assistance
3.	Community	group of innovators entrepreneurs, coworking places
4.	Finance	access to angel investors

In order to successfully enhance this transfer of created knowledge and innovation to the market, a knowledge region must promote and stimulate entrepreneurship. The process of academic entrepreneurship and new venture creation is to a large extent spontaneous and organic. However, universities, as incubators of entrepreneurial innovations, can create the context, structure and processes that facilitate new venture creations [2].

The key opportunities for startups in providing cooperation with university in IT cluster are: shortening of the product development time; lowering of the product development price; high quality of products; concentrate operation management.

The good practices of students' startups support and cooperation HEIs with industry will increase the general political, market, economic, scientific development.

2. Students entrepreneurship support at Lviv Polytechnic National University

Lviv Polytechnic National University (LPNU) cooperation with companies is diverse, from classic partnership relations to different forms of innovation development supporting growth. LPNU is a member of Lviv IT Cluster and being in this cooperation produces such tasks:

1. quick changes in science, education, technology, specifics of teaching, methods and forms of studying;
2. modern actualization in scientific knowledge in the education process;
3. preparing students and graduates to innovation activity
4. research that knowledge and those applications which society will need in 5 - 20 years.

The challenges in Computer Science, Computer Engineering, Information Systems education programs and processes took place in LPNU in the last years and its made university more innovative in field of information technology. Students of IT have become an essential part of the scientific community and their learning is at the center of attention. Also, students are encouraged to take part in such events like Imagine Cup (Microsoft), Samsung Developer Challenges, Android Developer Challenge (Google).

At present, many courses, including degree and certificate programs, are offered by universities and professional development centers. For example, LPNU structure of scientific work done for 2008 – 2016 (fig.3):

1. Financed by international agreements;
2. Financed by governmental programs;
3. Financed by grants (ICDD, CRDF);
4. Financed by international projects (TEMPUS, ERASMUS MUNDUS, FP7).

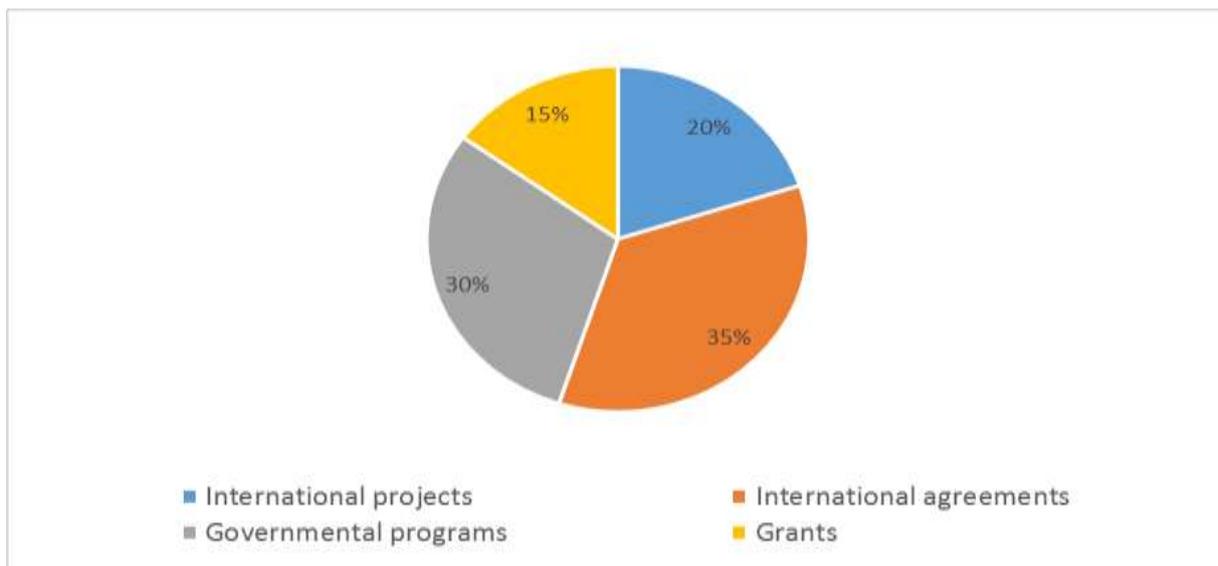


Figure 3. Scientific work structure in cooperation frameworks
(Based on [6])

LPNU activity also includes encouraging departments in cooperation with business, promotion of innovative entrepreneurship among students, promotion startups and internationalization. IT-companies are paying more and more interest to cooperation with universities for joint training of specialists.

Another innovative projects' contest "IT-Eureka! Ukraine" is open for any IT-students of Ukrainian universities and is supported by Ukrainian Government Ministry of Education and Science. The Contest is organized as a part of the TEMPUS Project "National Education Framework for Enhancing IT Students' Innovation and Entrepreneurship" [7]. The aim of the project is to employ students, to establish connections with companies, make promotion of HEI, find out business needs, develop education management and quality, share promising start-ups to invest.

Close cooperation between LPNU and industry is needed to shape university curricula to the needs of industry to raise graduates to meet the requirements of the industry and also to carry out research to direct scientific knowledge toward technology development and technology to innovation for the benefit of society and industry.

In this case, one of the key strategy points of LPNU should be:

- getting in touch with business and taking supportive actions with students and scientists in common research projects;
- active community building between companies, students, researchers, academics and its promotion;
- developing international scientific collaboration;
- encouraging students' innovative projects development and researches.

A good practices of digitization, virtualization, integration at education take place in LPNU.

However, in order to establish a sound cooperation and synergy between university and technology, the basic requirement is that both parties should deeply and sincerely feel the urgent need for such cooperation and then start working together, using available financial instruments and support programs at national and international levels.

Conclusion

Cooperation innovative companies with universities raise their technological and administrative capabilities. The benefit for universities in such cooperation lies in finding new research topics in innovation and in growth of technological commercialization. The cluster model of economy provides great support in IT development of Ukraine in education management, legalization, marketing, technological and other fields.

In modern education management students and graduates have better carrier opportunities and they may try to establish own startups in education frameworks. Key strategic points for university management may include developing international scientific collaboration, encouraging students' innovative projects, getting in touch with business partners and develop common education programs.

These strategic points realization will enable to increase the innovative entrepreneurship of youth, startups' development and its competitiveness on internal and external markets.

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