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START-UP AS A FACTOR OF INNOVATION DEVELOPMENT OF UKRAINE

Start-up industry gains more and more importance in the world economy, as well as the volumes of investments in this sphere. The article highlights the main trends in start-up environment. The key elements of start-up ecosystem in Ukraine are examined. The importance of institutional infrastructure for innovational development is under consideration.

Key words: start-up, innovation, technology, investments, innovation activity.

The developed countries' experience shows that countries with the innovative model of development take leading positions in the global market. The leading countries are the United States with world market 85% of the innovative product, Japan – 75%, Germany – 55% and other. The economy of Ukraine produces less than 1% of an innovative product that does not correspond to its modern innovation and intellectual potential. Ukraine is among high human developed countries (81th place) according to Human Development Index 2015 [1]. Also, according to the Global Innovation Index 2015, Ukraine occupies 64th place in the ranking out of 141 countries in terms of innovation potential [2].

Based on current world trends of start-up encouraging, innovative production intensification should be carried out through the creation of a national startup-industry, in particular, the development of Ukrainian start-up ecosystem. The national economy is in the process of transformation, hence, innovative development strategy should be aimed at creating proper infrastructure to bring beginners to the market.

The start-up global trends

At the global level digitalization and penetration of IT in all spheres of human life continues and, accordingly, new start-ups pop out instigating investment boom.

Talking about specific areas of start-ups in 2015, it should be noted that the leading positions are occupied by:

- hardware-projects in the field of nanotechnology. They provide, for example, access to 3D-print, drones and all kinds of electronic handheld devices, and the like;
- big data includes management of large data array that can be used for business development and growth;
- augmented reality. These start-ups enter world market and major market players are interested in purchasing their technology (for example, Apple bought the start-up Metaio in May 2015);
- financial services. Start-ups in this segment are able to save time for business and conduct financial transactions in seconds, speeding up operations in international trade;
- pharmacology, biotechnology and medicine. Start-ups are aimed at improving the quality of life, effective treatment of diseases and disease prevention. For example, applications that monitor biological parameters of the body, or platform allowing you to select a qualified doctor and get effective treatment from anywhere in the world;
- creation of artificial intelligence. The information comes almost every day about creating new robots capable of performing new functions and tasks;
- lifelong learning and acquiring new knowledge. It is another trend based on the use of modern technologies for learning and virtual education. Educational platforms are created

to help study remotely or virtually (starting with IT and ending foreign languages (Coursera, edX and others)).

It is worth mentioning that the global start-up market in 2015 is characterized by an increase in the total number of investors (26%) compared to the previous year (Forbs). Especially popular for private investors is IT-sector.

Another trend of last year is providing start-up visa by several countries. In France, the opening of the program French Tech Ticket was announced, the same did Israel.

Nowadays, improving the investment image and simplifying the business environment are the priorities of the national investment and innovative policy. In the “National Development Strategy - 2020” target of foreign direct investment inflow (FDI) at the level of 40 billion USD is declared [3]. In line with general trends, modern Ukraine managed to declare about itself with IT-start-ups at the global level. Political instability in the country, hostilities in the eastern part, as well as the critical state of Ukrainian economy led to decline in the country’s investment opportunities. In particular, in 2014 the volume of business angels’ investments and venture capital funds in the Ukrainian start-ups decreased by half - to 40 million USD, compared to 2013. However, IT-start-ups are able to change the situation because investors are discovering some benefits. In the first place, there is favorable tax climate for the development of the IT-industry. According to the Tax Code of Ukraine for the period of 2013 – 2023 IT-companies are exempt from paying value added tax and the income tax rate is 18% from 2015. As a result, in 2014 there were held about 50 deals in the IT sector for a total amount of about 20 billion USD. And Ukrainian IT-specialists in the same year, despite military actions in the country, exported about 5 billion USD under contracts for their own products.

At the end of the year the general rating of the best Ukrainian start-ups in 2015 was published, based on a survey of industry experts (AIN.UA).

1. LookSery is an application for correction photos and videos in real time. LookSery was sold for 150 million USD and, of course, was the main event of the 2015 start-up market.

2. Ecoisme is the home energy management system. Its global aim is to preserve the environment around the world and at the same time to help households to save through energy efficiency.

3. Soncepter is a team that created iBlazr flash for Iphone and other gadgets. Conceptor team became famous when in 2013 held successful campaign on Kickstarter. Since then Conceptor has grown into an international business and iBlazr flash is sold in official Apple stores. In 2015, the team launched the second version of its flash, which was actively supported by the appreciative audience on Kickstarter: iBlazr 2 has collected 70,000 USD just in three days.

4. Jeapie is a service for push-notifications delivery on mobile phones. Jeapie is the service for companies that want to save money on SMS-mailing. Company Mobify, in turn, is engaged in the business solutions in the field of mobile e-commerce in Europe, America and Asia. Mobify bought the company in 2015. The sum of the deal is not disclosed, but experts estimate it in millions USD.

5. Competera is an online pricing analytics service for e-commerce. It is real-time service that helps Internet-merchants to set prices daily corresponding to the market conjecture.

6. Delfast is a delivery service on electric bicycles (Kiev). In February 2015 DelFast raised 250,000 USD from Russian Fund - Imperious Group. In May 2015 this service was also launched in Poland.

7. Kwambio is a platform for creating 3D-products. Kwambio is an online platform for designers and users of 3D-printers for which designers can upload their 3D-projects, and users can change their appearance and print on their own devices. Project gets 30% from the

price of each model sold. In April 2015 the team also presented a working prototype of 3D-printer UNIQUE One. Kwambio participated in a famous Boston accelerator program TechStars and received 650,000 USD on the development of the start-up.

8. Preply is service to find local and online tutors. Preply is an online marketplace for searching tutors or placing a request on finding a specialist in foreign languages for hobby, school curricula and even business. On the platform, you can choose a tutor not only from local teachers, but also online tutors from other countries. Preply reached the European division of TechStars and received 120,000 USD investment.

9. SOC Prime is a cyber-security platform. SOC Prime was the first company to build a platform to protect enterprises against cyber threats. Despite the fact that the company was founded in 2014, it became active in the first half of 2015. By the end of the year in the company's customer list there are included such structures as OTP Bank, Starlight Media, UkrSibbank, Volia, Sberbank Russia.

10. UGears is mechanical 3D-jigsaw puzzles made of wood. The project became famous by incredible campaign on Kickstarter. UGears set a goal to raise 20,000 USD and already in the first day campaign raised 24,000 US Dollars. By the end of the campaign they managed to raise 400,000 USD that is 20 times higher than the goal. And now mechanisms are already sold in Poland and Germany and the launch of the US project is planned.

As we see innovative ideas have been implemented, in most cases, with the participation of business-incubators or accelerators. As practice shows, the development institutional infrastructure as a part of innovational system is a key to the transformation of ideas into a successful start-up.

The start-up ecosystem

There is no common approach to defining the term "start-up", so this paper is based on the definition, which often occurs in the relevant literature, namely Steve Blank and Bob Dorf. Start-up is a temporary structure, which is engaged in the search for scalable, repeatable, cost-effective business models [4].

The elements of a start-up ecosystem of the transformational economy, to which the Ukrainian economy belongs, are shown at Figure 1.

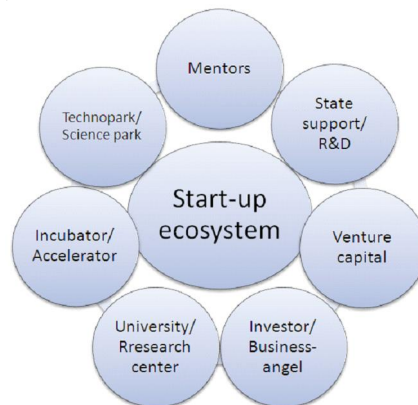


Figure 1. Start-up ecosystem of the transformational economy

An important element of the start-up ecosystem remains the fully-functioned system of creating new knowledge and ideas. Scientific and educational complex of Ukraine has

preserved its potential even under critical conditions. Now in Ukraine there are over 350 higher education institutions with 3-4th accreditation level. 5 research parks, 16 techno parks and 11 industrial parks were created, which generate and implement innovative products [5]. Today, in Ukraine, only 4 active business incubators work with start-up projects, managing about 50 start-ups per year [6].

The number of projects implemented in 2015 by incubators (accelerators) in Ukraine is summarized in Table 1, with their help 24 million UAH were drawn to Ukrainian start-ups.

Table 1

Incubators / Accelerators in Ukraine

Incubators / Accelerators	Base	Number of projects
GrowthUP	BayView Innovations и BVU Group	350
East Labs	East One Group	-/-
Wanna Biz		15
Happy Farm		42

Source: UVCA

Over the last 10 years Ukrainian scientific environment has undergone significant changes. The number of R&D, as well as the number of scientists who participated in the research was reduced by 1,5 times. However, this element of the ecosystem remains one of the most developed. Visualization of data on the number of organizations that perform research and development, as well as the number of scientists is shown in Figure 2 [7].

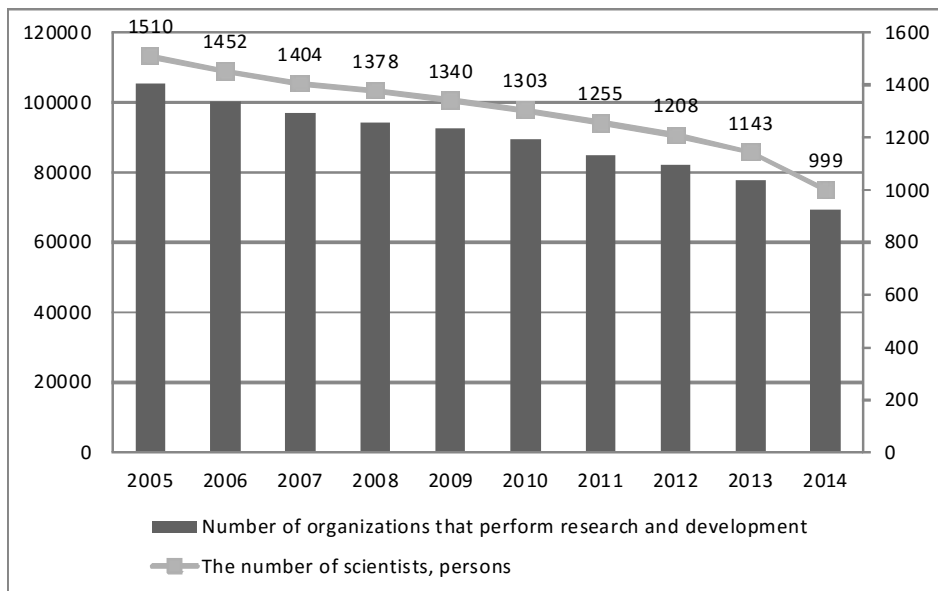


Figure 2. Scientific personnel and the number of R&D

Source: Ukrstat

Innovation activity at the state level is regulated by several laws, namely: “On innovation activity”, “On the scientific and technical activity”, “On the scientific and technical expertise”,

“On investment activity”, “On Collective Investment Institutions” [8 – 12]. At the same time, it can be stated that the main shortcomings of the national legal framework include: the opacity of innovative projects financing, ignoring the tax benefits, the absence of legislatively fixed guarantees for foreign investors, the lack of a specialized law on venture capital activity, etc. These drawbacks are direct deterrents and have negative impact on the level of innovation development as a whole.

At the same time, there is a positive change with another element of ecosystem that is venture capital. In 2014, despite the military, political and economic instability in Ukraine, Ukrainian venture capital association (UVCA), which has received membership in EVCA (European Venture Capital Association) and Ukrainian Association of Business Angels (UAngel) were established. Only during the first half of 2015 venture capitalists invested 11 million USD in 34 Ukrainian start-ups and venture projects [13].

Table 2**Top 20 start-ups, according to the amount of attracted investments in the first half of 2015**

Investor	Start-up	Investments, thousand USD
iTech Capital	Clickky	2000
SMRK	Settle	1300
Almaz Capital, Aventures	Petcube	1100
The Hive	Augmented Pixels	1000
SMRK	Ajax Systems	1000
WannaBiz, 2 Angels, Imperious Group, TechStars	Kwambio	650
Altera Investment Fund, Imperious Group	Coursmos	600
NA Baltic investors	QROK	500
Polish VC fund Xevin Investments and business angel Bas Godska	Traqli (Startup Newsmate)	300
NA business angel	Skidka.ua	250
Imperious Group	DelFast	250
BeValue	Wishround	200
BeValue	Coppertino	200
4 Angels, GrowthUp	CourseYard	150
TechStars	Preply	120
TechStars	GVMachines (Zakaz.ua)	120
NA business angel	Eatsmart.ua	110
Noosphere Ventures	Chargeries	100
Polish incubator Next.Step	Kaznachei	50
Angel (Torben Majgaard)	poptop.fm	30

Source: LIGA Business Inform

More than everyone, domestic SMRK Venture Fund invested 2,3 million USD in the Ukrainian start-ups and projects during the first half of 2015. In particular, 1,3 million USD were invested in the service of mobile pre-orders in the Settle restaurants and another 1 million USD funding got hardware-design Ajax Systems, which develops security systems and sensors for “smart home”.

Evaluating the company that attracted the largest amount of investment, start-up Clickky (Odessa) should be noted. In 2015, the company received 2 million USD from the

Russian fund iTech Capital. Clicky is one of the largest platforms in Eastern Europe, which specializes in the promotion of mobile applications, bringing the audience and its subsequent capitalization. Clicky also provides customers with traffic analysis and advice on optimization.

Almost half of investments were attracted by well-known Ukrainian start-up Petcube, a gaming device for pets. It received a seed-round of 1,1 million USD from AVentures Capital and Almaz Capital. And Ukrainian project Augmented Pixels, which develops augmented reality technology, has attracted 1 million USD from California Foundation The Hive.

Basing on the analysis of all elements of start-up ecosystem and their activity, in Ukraine, there are a number of significant shortcomings in the functioning model of innovation system, namely: the lack of a transparent and effective legal regulation; reduction in the amount of R&D; inefficiency of invested funds; lack of development organizations and institutions, aimed at the acceleration of high technology; the imbalance of the ecosystem, and so on.

Conclusions

The current level of country's economic development depends on the degree of innovation activity of domestic entities. This scientific, technical and technological progress ensures the competitiveness of the national economy in the global market. Therefore, Ukraine's transition to innovative development is one of the primary tasks.

Ukraine is at the first stage of the development of an effective national innovation ecosystem, which is based on a strong scientific and intellectual potential. With eliminating the disadvantages, this process will lead to a positive result. This is evidenced by the growth of the volumes invested, the accelerated infrastructure development and the presence of organizations who are engaged in scientific development, as well as the increase in the number of venture capital funds and joint investment institutions.

National legislation in this area requires changes, especially in the protection of foreign investments, the organization of the venture capital funds, the stimulation of innovations and investment infrastructure framework, etc. Also the whole national system of innovation production requires significant improvement, using the experience of developed countries.

Taking into consideration the intensification of transformation processes and the overall crisis in the national economy, the development of scientific innovations and IT-projects still remains relevant. Unstable political situation and the hostilities should not become an obstacle to the innovative development of the country. For example, Israel is a country with the highest FDI per capita, which is "at war" from the first day of its existence. Ukraine's reputation as the country of investment opportunities is declining, but current practice shows that there are projects that can change the situation in the country. Therefore, the following benefits are opened up for investors who are interested in Ukrainian IT-startups:

- favorable tax climate for this particular area;
- availability of highly qualified developers of know-how, innovation and ideas;
- skilled workforce;
- resource independence can minimize the risk of loss due to the instability of the political system (in contrast to other industries, such as engineering, mining and others, with a clear territorial attachment and dependence on resources);
- availability of competitive projects and relatively developed innovative, investment and market infrastructure.

Ukrainian start-up ecosystem, according to the estimations, will show rapid growth in the next few years. This can be explained by the growing popularity of a start-up industry, in particular in the IT-sector; activation of Ukrainian start-ups participation in the international

specialized events; increasing efforts aimed at ensuring the inflow of foreign capital; as well as the necessity to change the paradigm of economic development towards the transition to the new technological order.

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СТАРТАП ЯК ФАКТОР ІННОВАЦІЙНОГО РОЗВИТКУ УКРАЇНИ

Зазначено, що стартап індустрія стає все важливішою для світової економіки, так само як і обсяги інвестицій у цій сфері. Висвітлено основні напрями стартап середовища. Описано ключові елементи стартапу екосистеми в Україні. Розглянуто також важливість інституційної інфраструктури для інноваційного розвитку.

Ключові слова: стартап, інновації, технології, інвестиції, інноваційна діяльність.