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The importance of startups for construction of innovative economies

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Abstract

The aim of this article is to determine the impact of startup businesses on the innovation of the economy. The statistics are from foundation reports, specializing in the study of the startup environment in Poland, Eurostat databases and the Central Statistical Office. The article attempts to define the concept of startup as a business, based on an innovative idea or pioneering business. As a result, they are companies that create a completely new product or service, not based on replicated offers from other market players, and do not replicate existing ones. Business activity is subject to a considerable degree of risk. The analysis of the correlation between the number of Micro-enterprises and GDP per capita (PPS) as well as the number of patents issued for national inventions by the Polish Patent Office and GDP per capita (PPS) showed a strong correlation between the variables tested. The benefits of developing a country-wide startup ecosystem contribute to government-directed R & D, in order to create a favorable environment for a new business model. The development of new businesses is an opportunity to improve the condition of national economies and the situation of society, and above all to increase the innovativeness of regions.

Keywords: Startup; innovation; innovative economy; startup ecosystem

JEL codes: H32, F63, M13, 018

INTRODUCTION

Startup companies are economic entities, which relatively recently have found their place in a discussion on economic development. This term is very frequently overused as a definition for each newly initiated enterprise, even one created as franchise. Additionally it is usually associated only with e-business. It is mainly due to a lack of unanimous definition and classification criteria for these companies, as well as small literature resources on the subject.

In order to determine explicitly the subject of studies, an attempt was made in the article to define startups, treating them as companies based on innovative idea or pioneer business ventures. In result these are companies creating completely new product or service, neither basing on duplicated offers of other entities operating on the market, nor imitating the already existing initiatives. Their activity is burdened by a considerable degree of risk. Considering their financing, the studied companies do not apparently differ from the other enterprises. They base mainly on their own capital, more rarely on foreign capital. In case of startups their founders acquire capital from founders or investors, from the EU funds of from so called business angels. It is difficult to predict development predispositions for the companies of this type, particularly due to the fact, that in most cases nobody has previously paved the way of a novel product or service evaluation. A company development model, like in any other, not only startup activity, depends on many factors, yet the thesis that the discussed startup companies affect labour market and the economy of the country in which they operate, is undeniable.

The paper aims to determine the influence of startup companies on the economy innovativeness. The source of statistical data are reports of foundations specializing in investigating the startup environment in Poland and Eurostat, Strateg and StartupHub databases.

CHARACTERISTICS OF STARTUP COMPANIES

An enterprise is defined as an entity separate in economic terms, whose activity focuses on three areas: production, service and commercial. Economic difference of the company is in the first place connected with determining the company's assets and securing the expenses from own incomes. In theory many types of businesses may be distinguished, depending on their ownership forms, sizes or organizational structures. Irrespectively of the terminology, each firm strives to generate the maximum profit for the longest possible period of time. Classification of enterprise has recently encompassed a new kind of business activity, i.e. startups. Salamzahed and Kawamorita Kesim (2015) define startups in three areas: organization, management, entrepreneurship. They defined a startup companies as newly born companies which struggle for existence. Giardino, et all. (2016) described a newly type of startup named software startups. This type of company is defined as organizations focused on the creation of high-tech and innovative products, with little or no operating history, aiming to aggressively grow their business in highly scalable markets. Being a startup is usually a temporary state, where a maturing working history and market domain knowledge leads to the analysis of current working practices, thereby decreasing conditions of extreme uncertainty. Somer, Loch and Dong said that startup companies often face not only risk, but also unforeseeable uncertainty, which means the inability to recognize and articulate all relevant variables affecting performance. So far, no new provisions have

appeared in Polish legal system, which would regulate functioning of this form of business activity. They are mostly regarded as small and medium-sized enterprises (SME). A firm employing on average no more than 10 persons per year and generating a yearly net income of maximum two million € is regarded as a micro enterprise. A definition of a small enterprise uses the criterion of the number of employees not exceeding fifty people and the level of net income below ten million € per year. A medium-sized enterprise employs no more than two hundred people per year at net income below fifty million € (Dz. U. RP, 2016, poz. 1829, z 2004 r. R. 5, art. 104-106). Startup companies usually operate in SME sector. S. Blank (2013), who so far has contributed the most to the systematizing of knowledge about the discussed area, both theoretically and empirically, pays particular attention to understanding the 'startup' term. This activity is not meant to imitate operation of a large firm. It is a temporary institution seeking a profitable, measurable and also repeatable business model. At an early stage of its activity development the organization bases primarily on suppositions and ideas, without the customer background and usually even a possibility of market analysis due to its specific character and uniqueness of its branch. S. Blank distinguished two kinds of startups, i.e. scalable startups and startups for sale. The founder is convinced that his idea will conquer the world and he would become a billionaire. At first he hopes to find a business model, which should be measurable and repeatable. Due to the necessity of raising considerable funds he chooses Israel, Silicon Valley, New York or some other large centres with technological background. This group of initiators constitutes a relatively small part of startup originators, however they are able to draw considerable attention of investors and press accumulating a risky capital.

The other type are startups created for sale. These are companies basing on creating applications by means of the least possible financial input. The founders count on the sale of their startups to bigger firms for the amount between 5 and 50 million dollars. A company buying a startup not only takes over the idea but also the people working on it (Blank, Dorf , 2013, p. 15-17).

The following are given as the key reasons of origination of the businesses discussed above:

- a considerable reduction of costs of product or service development, which took place over the last decade;
- increased opportunities to raise external capital, particularly in the framework of Venture Capital;
- creating own management principles, tailor made for the needs of the analysed enterprise;
- unbelievably fast process of consumer adapting to technologies and unmet needs for possessing increasingly more diversified know-how products (The Global Startup Ecosystem Ranking 2015, p.13-17).

E. Ries (2011, p. 40), the inventor of lean startup theory, called theory of constraints basing on lean philosophy, which defines value as a benefit offered to customers whereas all other activities, regards as a waste of time and capital, indicates the necessity to create a minimum real product. According to the new methodology, i.e. lean startup, an entrepreneur undertakes narrow-ranged and economical actions, in result of which a possibly most cost-effective product is obtained. His assumptions also pay attention to a difficult specificity of the startup market with no possibility to conduct market analyses

because of the impossibility to determine the consumer target group. The unquestionable factor contributing to intensification of development processes of these companies is their environment in which they operate. It is defined as a startup environment, which was presented as a set of entities striving to create innovative products or services including a considerable degree of risk, simultaneously basing on the available resources of the regulatory environment. Establishing startups is encouraged by large enterprises operating in city centres and focused on cooperation with other enterprises (Business to Business – B2B), but also by businesses operating internationally, which ensures for startups a more intensive and faster development (Nowacki, 2016, p. 59). Five areas were identified, whose proper functioning ensures development of startups and the whole system. These include: financial capital, human capital, social capital, legal regulations and institutional environment (Deloitte, 2016, p.4). Each area should be adequately analysed on the individual stages of establishing and running the company, determined according to: pre-seed, seed, early stage, expansion and late stage.

The first stage, called pre-seed is the creative process, referring to idea itself, technological idea, created innovation. Once a detailed scheme of the idea realization has been worked out as an actual product or service, usually an arduous seeking of investors follows. Due to high burden of risk attached to precursor activities, one must make every effort to raise funds. Precisely prepared business plan, estimated financial model, market analyses or even a report from initial market research are usually not enough for an easy access to financial means in Poland. At this stage obligatory costs connected with registration of a limited liability company with start-up capital below five thousand zlotys are estimated for about two thousand PLN. The higher the start-up capital, the higher the costs of establishing a business. Financial means for a "start" usually originate from so called bootstrapping, i.e. on the basis of own capital without any external assistance at introduced cost rigour in order to achieve only short-term objectives, which over a longer perspective may negatively affect the firm operations. The other, commonly called Family-Friends-Fools (FFF) source of fund acquisition for company's development are families, who believe in the company's success and in business, as well as in technological intuition of their offspring, friends supporting not only spiritually but also materially, but also other persons who are delighted by the suggested idea and wish for its market success. The second stage of startup development is called seed, when the product or service production process starts accompanied by first marketing operations, intriguing future consumers with the new but already materialized idea. With each subsequent stage of company development the chance for raising financial capital grows. Usually a cooperation with so called business angels is launched. A business angel is a physical person who invests his own means, but also knowledge and his contact data base in the enterprise at the initial stage of development but showing a considerable growth potential. Such person becomes a company shareholder, filling the capital gap.

A subsequent stage of a startup functioning on the market is Early Stage. With growing sale, the chance for raising Venture Capital, which is a part of Private Equity (PE) increases. Venture Capital are capital investments realized with an entrepreneur in order to co-finance a startup at the beginning of its development path. The mission of members of associations with VC is not only providing financial aid for startups, but also sharing their knowledge and experience contributing to long-term growth of the company. The enterprise is still burdened with a considerable risk, therefore an investor undertakes coopera-

tion with an enterprise only because of a high return on investment. VCs are a part of a wider concept, i.e. Private Equity. The term PE means capital investments not listed on a stock exchange (SE), where financial means are allocated to private equity firms.

Final stages of a startup life cycle are Expansion and Late Stage. A firm which reaches this point in its existence is already an enterprise increasing its value on the market. It more easily raises funds for extending its product portfolio. At this stage an entrepreneur should not forget that in order to stay on the market, he should constantly improve its products and services as well as widen the product range.

A startup success is considerably influenced also by the ecosystem in which it sets up and conducts its activity. A startup ecosystem encompasses many organizations, which by cooperating directly affect the startup structure. Institutions such as universities, investors, large firms, foundations or state institutions play different roles in creating its activity. Business angels, advisors and other businessmen who open up contacts with persons entering the path of business, fulfil an important function by organizing various meetings and local conferences both national and international. The process of ecosystem development is dynamic, the conditions change constantly while the, emerging institutions change the economic climate of the region (Kotsch, 2017, p. 11-13).

DEVELOPMENT OF STARTUPS ACCORDING TO A REGIONAL APPROACH

Economic growth bases among others on development of enterprises. A startup type of economic activity, although short-term and with a small range, positively affects the stimulation of local innovativeness. If a startup remains on the market longer, it contributes to an increase in GDP of the country where it operates, creates new jobs, contributes to a decline in unemployment and appreciation of the society living standards. Even today we may indicate some examples of success, such as Silicon Valley which is a cradle of startups and has been notoriously presented as a paradise for technological companies of this kind.

Table 1. Ranking of startup ecosystem in 2015

p.	Region/City	p.	Region/City	p.	Region/City	p.	Region/City
1	Silicon Valley	6	London	11	Paris	16	Sydney
2	New York	7	Seattle	12	Sao Paulo	17	Toronto
3	Los Angeles	8	Chicago	13	Moscow	18	Vancouver
4	Boston	9	Berlin	14	Austin	19	Amsterdam
5	Tel Aviv	10	Singapore	15	Bengaluru	20	Montreal

Source: own elaboration based on: (The Global Startup Ecosystem Ranking 2015, p.34).

The above list of ecosystems with the conditions most advantageous for startup companies takes into consideration four point criteria: efficiency, funding, market range, talent and experience. During analysis a statement comes to mind that large agglomerations are unmatched in this area. Unfortunately, no city or region in Poland took any important place in a ranking. Highly developed countries, with strong and well-functioning economies may shape such economic environment stimulating creative young entrepreneurs to establish their own firms based on innovations and modern technologies. However, from one year to the next an increasing number of companies of this type has been registered in the territory of Poland.

Ranking made on the basis of the Practical Know How Index indicates the dominant role of Americans in creating new knowledge, and thus the development of various kinds of startups. In spite of everything, the famous Silicon Valley in comparison to 2015 weakened in terms of the analyzed index. In the last edition of The Global Startup, the Ecosystem has not been included in any of the Polish ecosystems. This indicates a weak position of startup ecosystems in Poland and their very slow development.

Table 2. Ranking of startup ecosystem based on Practical Know How Index

p.	Region/City	p.	Region/City	p.	Region/City	p.	Region/City
1	Houston	7	Amsterdam	13	Bengaluru	21	Jerusalem
2	Atlanta	7	Sydney	14	Melbourne	22	Ottawa
3	Seattle	7	New York City	15	Barcelona	23	New Zealand
4	Kuala Lumpur	8	Boston	16	London	24	Berlin
5	Malta	9	Singapore	17	Montreal	25	Frankfurt
6	Silicon Valley	10	Los Angeles	18	Vancouver	26	Tel Aviv
6	Toronto – Waterloo	11	Chicago	19	Paris	27	Greater Helsinki
7	Austin	12	Phoenix	20	Stockholm	28	Quebec City

Source: own elaboration based on: (The Global Startup Ecosystem Ranking 2018, p. 124-210).

In 2016 Startup Poland foundation registered 2677 startup companies in its database, which is a twelve percent progress in comparison with 2015. Warsaw boasts the largest number of them. Beside the capital city, also Kraków, Poznań, Wrocław and Tricity were regarded as startup ecosystems. The studies conducted by the foundation covered 697 operating companies and exhaustive analysis of the subsequent stages of their functioning. Analysis of the employment situation revealed that almost sixty percent of the surveyed described the number of jobs offered in a company between 1 and 10. Only one fifth of the startups employed more than ten persons. Over the last half-year over half of the firms created new jobs for on average two persons, in every fourth company between four and ten persons were employed and about 6% of the surveyed companies employed over eleven people. Totally over eighty percent of respondents indicated increase in job positions. The fact, disadvantageous from an employee point of view is that almost a half of all startups staff have no permanent work contracts, which results from the specific character of the branch (Skala, Kruczkowska, 2016, p.44-49).

Despite the assumption of startup company innovativeness, only fourteen percent of the respondents possessed patents. However, a half of the surveyed stated that they created a totally new products on a global scale, over 30% regarded their offer as precursory on a local scale. Attention should be paid to divergences in defining innovativeness of activity. Every second startup owner stated that modernity is in product, which is a key feature allowing the company to be regarded as a startup. Moreover, entrepreneurs indicated the modernization of an existing product, innovation in the manufacturing process, organization, marketing or business model (Skala, Kruczkowska, Olczak, 2015, p. 41-47).

A usual phenomenon is creating one product, which conquers the market fast, but unimproved, or replaced by another more modern invention leads to the company bankruptcy. Stating explicitly the causes of startup companies development process, one should take into consideration economic conditions in a given country. Economic growth among others evidences a development of enterprises sector, as indicated by the results of the statistical anal-

ysis below, which aimed to show the correlations between the number of non-financed companies employing less than 9 people versus GDP per capita according to the purchasing power parity. The value of correlation index on the level of 0.67336 evidences a strong dependency between the analyzed variables. Analysis of correlation relationships between the analyzed variables shows a positive correlation. It means that together with economic growth of the country, the number of startup companies grows dynamically.

Development of enterprises conditioned by the economic development contributes to emerging of institutions called business angels. Usually these are larger businesses, investing some small part of their capital in new initiatives. Analysis of a startup ecosystem in Poland shows increasing number of business angels, which eagerly finance hatching new ideas. These investment cover the period from three to five years and involve the amounts within the range from fifty thousand to five million zlotys. The areas of interest for the investors are e-commerce, biotechnology and computer branch (Piekunko – Mantiuk, 2014, p. 369-371). The effect of a startup activity is the final product characterized by originality and uniqueness. It is connected with obtaining patents by the originator of the idea. Analysis of the relationship between the number of patents granted by the Patent Office in Poland and economic growth revealed a positive correlation. The correlation coefficient is 0.82697 revealing very strong dependence between the analysed variables. The analysis allows to put forward a thesis that growing number of patents in a given country positively influences the country economy and advantageously affects economic growth.

In Poland the ecosystems for startup companies are only now created, investigated and discovered. Incorporating Poland into developed countries in FTSE ranking will contribute to the inflow of foreign capital, which will cause accelerated development of the enterprises sector in Poland. Exhaustive reports on startups functioning in Poland and their environment have been appearing since 2014. The founders are facing a critical challenge, i.e. raising capital for the realization of their idea. Owing to particularly great risk accompanying these types of enterprises, it is not easy. However, the successes of startups such as Facebook or Uber Technologies encourage people with ideas and investors for active measures. Currently the startup market is regarded as one of the fastest developing areas over the recent years. The list below aims to compare the biggest Polish startup ecosystem created around the capital city of Warsaw with other ecosystems developing in European cities.

One of the taxonomic methods called Czekanowski's method was used to demonstrate similarities between individual European cities. Czekanowski's diagram has been perceived currently as a universal statistical classification tool to emphasize significant similarities between the compared entities. The following variables were used for the estimation conducted using MaCzek software: the number of startups, total investments of startups (€) and the number of employees in startup companies. The values subjected to estimation refer to 2016. After the analysis it may be stated that Warsaw reveals the greatest similarity concerning the investigated features with such cities as: Athens, Copenhagen, Dublin, Malmo or Oslo.

Development of startup ecosystems in individual countries is strictly connected with conditions for conducting economic activity which are prevailing in a given country. The graph below shows values of Doing Business (B) indicator analogous to the cities covered by the taxonomic analysis.

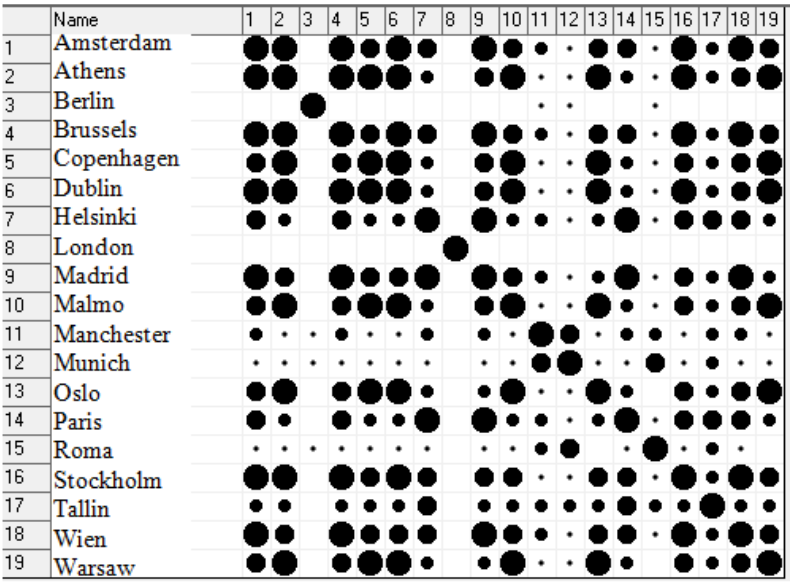
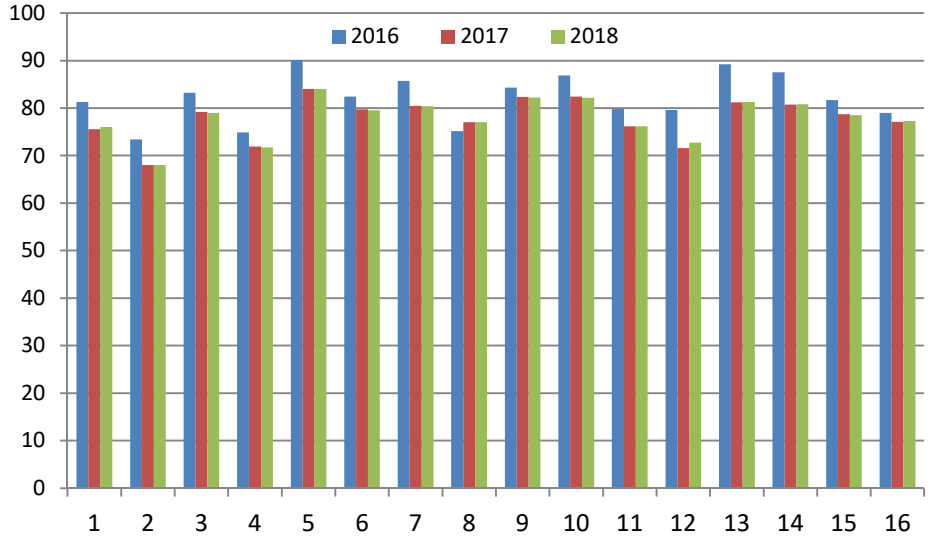


Figure 1. Czekanowski's matrix for selected European cities

Source: own calculation.



1. Netherlands, 2. Greece, 3. Germany, 4. Belgium, 5. Denmark, 6. Ireland, 7. Finland, 8. Spain, 9. Great Britain, 10. Norway, 11. France, 12. Italy, 13. Sweden, 14. Estonia, 15. Austria, 16. Poland

Figure 2. Values of Doing Business indicators for selected European countries

Source: own elaboration based on: (Doing Business reports 2016,2017,2018).

According to Doing Business report prepared by the World Bank in 2016, the following countries revealed the best conditions for conducting economic activities,

with the result exceeding 80 points: Denmark, Sweden, Estonia, Norway, Germany, Great Britain and Austria, which evidences that these were the most entrepreneur friendly countries. However, over the subsequent two years a depreciation of the analysed indicators was registered in all countries included on the list. Lower values, indicating the ease of running your own business in the indicated areas are not satisfactory. This may prove the reluctance of people to set up their own businesses. The conditions in which companies function are getting worse from year to year. Perhaps this is due to the current situation prevailing in Europe.

CONCLUSIONS

Startups raise growing interest of both science and business. They become creators of new business model of the 21st century. Their development brings numerous advantages for the whole economy, in regional, national and world dimension. Increase in the number of micro enterprises and the number of patents obtained by Polish originators stimulate economic growth, increasing GDP level per capita, as results from statistical analysis, which showed a strong correlation between the above mentioned values. Startups generate jobs, particularly for young people, owing to which household incomes grow, but also by investing in human capital they indirectly contribute to appreciation its competencies, skills and self-development. They stimulate creativity, particularly in young persons, who witnessing the success of others, themselves also decide to realize various projects. They ensure technological development, influencing creation of modern economy and make available innovative technologies to the society. Extending the range of pioneering products and services, they contribute to the promotion of country and region, improving position of the country in various rankings, such as innovation barometer. Paving the path for a development of activities based on modern technologies and brave ideas, startups support creating their advantageous ecosystem, which becomes a magnet for both national and foreign investors. The benefits resulting from startup ecosystem development in a given country contribute to State measures targeting development of these companies in order to create the environment comfortable for a new enterprise model. Development of new enterprises provides an opportunity for improving condition of national economies and situation of the societies, but in the first place for the growth of the regions' innovativeness. Creating jobs, increasing citizens' incomes and contributing to economic growth, startups are undeniable leverage of the State position. The areas of startups activity, involving mainly nanotechnologies, biotechnology, computer science or telecommunications increase innovativeness of economy.

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