Spin-off. Theoretical Approach Overview

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Abstract: In a world facing unprecedented challenges, entrepreneurs must focus their attention towards new opportunities to improve their products and services for higher turnovers. Innovation is the key that solves this challenge. In the scholarly literature, innovation has a wide range of approaches to conceptualizing. Innovation is re-working of an old idea or the transferring and embedding of existing ideas in to a new setting.

The focus of the paper is to underline the following concepts: innovation, research in universities, technological transfer, spin-offs, start-ups and the differences between the last two.

In order to understand how companies can be more competitive, the main attention in this article is paid on the importance of innovation, in a context very close related with the universities.

The main questions to be explored are: what is a spin-off and what is the role of innovation in economy, where do the routes with the university stop in the context of a society in a continuous change?

Present paper tries to answer in an original manner aforesaid mandatory questions.

Keywords: research, spin-off, innovation, technological transfer, economy.

JEL classification: O00, O30, O31, O32.

Introduction

This paper looks at the research, the development of innovation and technological transfer and draws the image of the spin-off in the context of innovation with focus on sources of public funding for research and development and the importance of such funding for the development of innovations.

1. Innovation. Beyond the Obvious

Research, widely speaking, and its components: innovation, applicative research and fundamental and technological research plays a very important role in all economies.
In the scholarly literature, innovation has a wide range of approaches to conceptualizing. Innovation is re-working of an old idea or the transferring and embedding of existing ideas in to a new setting.[http://docin.com/p-733099537.html]

Innovation it can be found anywhere in the dedicated literature as an idea, a concept, a method concerning the projection, the operationalization and the experiment of the pilot product, the process and the new functional structure with the purpose industrial application. In this way, the innovation compared with the invention is not an absolute novelty but the applicability area and the implementation speed are more accessible.

The innovation is the nucleus of the economic growth and it can be considered the evolution catalyst. Companies that register the highest rate are those who deal with the innovative processes with a high rate of income generated from new products and services.

It can be said that the innovation can be defined as architecture (fig.1), based on:

- an idea, a concept, a scientific process;
- an industrial qualified partnership;
- a national and/or international network with the purpose of research valorisation results;
- a high protection of the intellectual property.

Most great ideas for enhancing corporate growth and profits aren’t discovered in the lab late in the night or in the isolation of the executive suite. They come from the people who daily fight the company’s battles, who serve the customers, explore new markets and fend off the competition, in other words, the employees. [Spender & Strong, 2010].

In his book, The Innovator’s Dilemma. When New Technologies Cause Great Firms to Fail, Clayton M. Christensen (2013) talks about the framework that explains why decisions made by great managers can lead companies to failure. In his opinion companies fail because they do not develop the disruptive technologies. The solutions are: give responsibility to disruptive technologies to organizations, create independent organization or spin-off so as not to compete against current needs & resources, bigger organizations are best for sustainable innovation.

The technological transfer it can be seen either as process of innovation or as future stage in the architecture of innovation. In the context of valorisation of the research results that the technological transfer it can be realise as:

- transfer between two research activities (from the fundamental to applicative research);
- transfer between applicative research and industrial application;
- transfer between the innovative activities realized by PhD researchers/inventors to the applicative research.
The technology transfer offices (TTO) are offices in companies, universities and governmental organizations that identify research which has potential commercial interest and also establish the strategies in order to exploit it. The main objectives of TTOs are:

- the valorisation of the research results and the technological transfer from the research and development units to economical entities;
- the creation of data basis of their one and interconnect them with other data basis similar from the country or abroad;
- the evidence of funds distribution from different sources in order to sustain the innovation and technological transfer programs;
- the organization and participation to local, national and international actions concerning the stimulation of innovation and transfer;
- the determination of launching opportunities of the patent in production.

In conclusion, the organizations or departments that deal with the technological transfer have an interface role between social groups interested: the developing team of the resulted patent and the final applicators.

Following this concept of technology transfer, in a spin-off, new scientific knowledge is converted into an application in society. Based on this new venture creation the university research results are disseminated among interested stakeholders.

Research-based spin-off companies (RBSOs) have recently become the focus of technology and innovation policies, being regarded as an instrument for the commercial exploitation of knowledge produced in public sector research organizations [Wright et al. 2007].

Spin-offs are focusing on a technology transfer system that converts into application in society. We can find spin-offs under the following forms: spin-offs which involve the university's TTO, spin-offs functioning under a license agreement and spin-offs in which the TTO or university holds equity.

2. The role of Innovation in Economy

According to the European Commission, 79% of companies that introduced at least one innovation since 2011 experienced an increase of their turnover by more than 25% by 2014.

According to the Report Flash Eurobarometer 394, The role of public support in the commercialization of innovations, between 22 January and 11 February 2014 a survey was
conducted in the 28 EU Member States as well as in Switzerland and the United States on 11,206 respondents.

The purpose of the survey was to benchmark innovation activities in a range of areas, as well as to establish the obstacles commercialization and public financial resources applied in innovation.

The conclusions of the report were that more than three quarters of companies argued that management (87%) while (78%) the employees contributed to the development of ideas for innovations while 54% say other companies contributed to the development of ideas for innovations. While 61% of companies argue that innovative goods or services contributed 25% or less to annual turnover in 2013, 10% argue that innovative goods or services made no contribution at all.

From commercialisation, marketing and distribution of goods or services perspective the report concluded that the main barriers are: lack of financial resources encountered in the commercialisation of innovative goods or services, market dominated by established competitor and the cost or complexity of meeting regulations or standards.

From demographic perspective, the report underlines that Croatia (53%) and Portugal (52%) are the only countries where at least half of all companies have introduced new or significantly improved services since January 2011, in comparison with 18% of companies in Hungary, 20% of those in Estonia and 23% of those in Lithuania have introduced new or significantly improved services. In the report, Croatia (25%), Netherlands (19%), Latvia and Cyprus (both 18%) reported that their turnover did not contribute to the turnover in 2013. Only 20% of companies from Romania have conducted R&D activities since January 2011, in contrast with 6% of those in Lithuania and 7% of those in Luxembourg.

The sectors of the companies were the turnover was high, having innovation involved, were manufacturing and services.

Croatia and Romania (13% and 14% respectively) have the lowest proportion of companies that have innovations and commercialise them. In Romania, 76% of companies do not have any innovations to commercialise.

I would say that innovation plays an important role in a company and the effects are visible: due to a strong competition in their main market more larger, the turnover is increased.

The contribution to the development of ideas for the company’s innovation among employees depend on the number of employees in the company. According to the report, 74% of companies with 1-9 employees say employees have contributed, compared to 94% of those with 500+ employees.

From other point of view, Germany, Estonia, Finland (all 52%) and Denmark (51%) in contrast with US (28%) Poland and UK (19%), are the only countries where at least half of all companies have collaborated with partner companies or external consultants to market distribute or promote innovative goods or services since January 2011.

During economic globalization, which is marked by a divorce of value-addition and physical product, life remains “real” and must be lived.

Innovations are new products, processes, or distribution or financing mechanisms that are successfully brought into the economic process (market). Innovations are not inventions, and innovation is an economic term and lucrative.

Like it was described in figure 1, the innovative ideas come from the necessity of the economy which is in a fast change and need to be processes in methods, strategies in the university through a fundamental or applicative research.
3. The influence of the University on Spin-off Companies

Due to the fact that innovation is vital for the success of a company, this paper explains the importance of spin-offs, seen as innovation vectors in the economy based on knowledge.

First of all, a relevant aspect to be clarified is the issue of influence of the university on spin-offs. In the literature, there is a strong argument that the relationship between university and spin-offs is derived from their shared background and is often characterized by trust and a high degree of informality [Pirnay et al., 2003; Johansson et al., 2005]. Likewise, research on university spin-off creation focuses on factors that explain university spin-offs but fails to consider the role of TTOs and universities [Mirabent et.al, 2015]. Although, a common definition of university spin-offs remains elusive, a university spin-off, strictly speaking, is the outcome of entrepreneurship within a university. University spin-offs exploit research breakthroughs [Rasmussen, 2008].

More precisely, spin-offs receive from the university needed resources, access to research facilities, temporary accommodation and knowledge on management, patenting, manufacturing and practical issues.

This is why the positive relationship between university and spin-offs are the key for a successful business. Spin-offs also receive a strong legitimacy in front of potential funders and investors particularly if they have developed a broad collaboration with universities, including well-known researchers and star scientists [Zucker & Darby, 2001].

The founders of the spin-offs in general are students, graduates or academic staff. Because academic spin-offs have a historical relationship with university such as their professors previously guiding research work or former colleagues working on similar subjects, those ties could lead to a recommendation and intermediation to potential industrial partners or investors.

By maintaining strong relationships with university contacts, academic spin-offs strengthen legitimacy, improve image in front of external organizations, and increase the chance of getting research funding [Soetanto & Geenhuizen, 2015].

University spin-off ventures are sometimes narrowly defined as firms that exploit intellectual property or patented inventions generated from university research [Di Gregorio and Shane 2003].

Understanding how universities can promote the establishment and growth of spin-offs requires detailed knowledge about how these firms develop and the type of conditions and support that facilitate their success.

In the last years, many efforts were made to create spin-offs especially in North America, in the UK and continental Europe [Wright et al., 2004].

Spin-offs, companies with strong future perspective are facing obstacles in obtaining financial resources [Shane, 2004; Siegel et al., 2003]. From Wright et al. (2006) point of view, spin-offs are very risky because of their inability to obtain funding in order to continue with their innovation activity.

4. Discussion. Comparative Perspective

Start-up is an entrepreneurial venture/company designed to search for a repeatable and scalable business model, according to [Blank and Dorf, 2012]. These companies, generally newly created, are innovation in a process of development, validation and research for target markets.
Spin-offs definitely differ from other high-tech start-ups [Vohora, Wright, & Lockett, 2004]. In Peter Ducker’s opinion, the most important difference between a spin-off and a start-up is the origin of the company. If a spin-off is born in an organization (a university, a company or a research institute), a start-up is born out of an idea, an innovative business or innovation results.

A spin-off is created by the university, the technology is owned by the university and also the funding and the management team belongs to the university.

In a start-up, the university is also involved but in this case it seals the right of using the patent or the thesis results.

In table 1 are described the advantages and disadvantages of a spin-off versus a start-up.

<table>
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<th>Start-up</th>
<th>Spin-off</th>
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<tbody>
<tr>
<td>Advantages (+)</td>
<td>Disadvantages (-)</td>
<td>Advantages (+)</td>
</tr>
<tr>
<td>Brand new project</td>
<td>No history</td>
<td>Pressed team</td>
</tr>
<tr>
<td>Full patent life</td>
<td>Financial limitations</td>
<td>Experience</td>
</tr>
<tr>
<td>Diversity</td>
<td>High risk and costs since there is no proven formula.</td>
<td>Reinvestments and history</td>
</tr>
<tr>
<td>Reduced number of employees</td>
<td>A complex and detailed business plan must be elaborated</td>
<td>Good visibility Good positioning</td>
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<td>Fast managerial decisions</td>
<td>Good infrastructure</td>
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<tr>
<td>Flexibility in the relationship with the commercial partners</td>
<td>Established networks</td>
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Source: Authors property

The spin-off and start-up companies are the clients of technological transfer. The young spin-offs and start-ups in order to become more profitable and more well-known, it is recommended for them to be included in a business incubator. The role of the business incubators is to support the spin-offs during their early development with the purpose of offering them facilities for entrepreneurs with mature or fledgling ideas that could become a business.

Start-ups have advantages in getting involved in an incubator: access to a skilled workforce, good infrastructure and cost reductions for start-up’s. In any start-up, the amount of resources is limited and a significant part of the start-up’s value is therefore
determined by its human capital stock [Shrader & Siegel 2007].
In order to reduce the likelihood of failure it is necessary for the university to get involved in the business incubator in order to provide an ideal environment to create, exploit, and share knowledge.
Spin-offs and start-ups bring researchers together, foster experience sharing and a creative atmosphere with the purpose creation of new products in order to commercialize them.

Conclusion
Nowadays it became a compulsory practice for the universities to shift their focus from teaching and research to entrepreneurship, necessary to transfer knowledge and drive local economies. In order to increase the economical rate, universities have to prepare the graduates, the future managers, to develop the right competences in order to create spin-offs and start-ups.
The lack of entrepreneurial competences is considered to be a barrier in promoting the academic entrepreneurship and dilutes any positive effects of spin-off investments and programs.
Each university must have its one TTO, and must develop relationships with the economic environment at local and national level.

Acknowledgements
This work was cofinanced from the European Social Fund through Sectoral Operational Programme Human Resources Development 2007-2013, project number POSDRU/187/1.5/S/155656 „Help for doctoral researchers in economic sciences in Romania”.

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