

THE IMPORTANCE OF CAPITALIZING RESEARCH RESULTS BY MEANS OF ACADEMIC SPIN-OFFS

Gabriela BOLDUREANU¹

¹Researcher, Department for Interdisciplinary Research in Social Sciences and Humanities, „Alexandru Ioan Cuza” University of Iasi, Romania
gabrivaleanu@yahoo.com

Abstract

Universities play a key role in the creation and transmission of information and knowledge; understanding of mission requires the knowledge of several aspects concerning the types of research and the nature of its results, as well as the various ways of valuing the economic results thereof.

A current problem of universities in Romania is the very low capitalization of research results in the economic environment in the form of innovative products and services. One solution to this situation may be the creation and development of academic spin-offs whose key role in the economic exploitation of the results of scientific research in Universities was reflected in this paper.

Based on an inductive and deductive approach, comparative analysis and critical interpretation of numerous international and international studies we have investigated the process valuation of the academic research results and the role of spin-offs in this process.

Keywords: *spin-off, researchers, scientific research, entrepreneurship.*

1. INTRODUCTION

Turning the results of research into technologies and services is related to the social and economic environment and it is performed through transfer and dissemination of knowledge. To facilitate the transfer of knowledge that is the result of research and development to the social and economic environment specialized tools were established including spin-offs in addition to the classical tools specific to the academic environment (Borșa, 2013).

The university spin-offs are businesses created by Universities or public research bodies in order to exploit knowledge and research results. The university must address both technology transfer and the process of creating a new economic entity, in which this technology will be transferred. This means valuing through spin-off implies, for the university that applies it greater

involvement not only in the classic problems related to technology transfer (deposit of patents, cession of licenses), but especially in matters related to the commercialization of this technology (market survey, development of a financial plan, research of partners, putting together a team, etc.) and risk taking (Someșan, 2011).

2. MATERIAL AND METHODS

This study is the result of a process of induction and deduction, critical and comparative investigation and interpretation of numerous studies developed at national and international level on the researched topic. In analyzing the process of valuing of research results through academic spin-offs studies, national and international databases were used.

3. THEORETICAL AND EMPIRICAL FRAMEWORK

Lately, scientists have focused on the technology transfer from the University to the industry (D'Este, Neely, 2008). A special role is played by the academic spin-offs, companies whose business is the exploitation of research results developed in academia. Such firms are seen as a bridge between the academia and the industry (Shane, 2002), (Fontes, 2005), (Chiesa, Piccaluga, 2000).

The academic spin-offs first occurred in the US, where the business creation by universities experienced its first developments. In Europe, universities have only recently begun to realize the importance of spin-offs in the economic development of the regions where they were created.

The motivation for which an individual or a group of people in a University wishes to set up a company that has the object of exploitation of research results from academia, increased significantly.

Minshall and Wicksteed (2007) argue that to start a spin-off there are two kinds of reasons:

Technological: the desire to create technology platforms, or the transfer of technology that has many applications;

Personal: when the scientist is willing to bring its results on the market.

The non-technological motivation in choosing to create a spin-off is based on two aspects. The first relates to monetary reasons underlying the traditional entrepreneurship, i.e. individuals become entrepreneurs when they see an opportunity to increase their income (Amit et. al 1995), (Baumol, 1990). According to this reasoning, a number of people will leave the parent organization and become entrepreneurs (Campbell, 1992). The scientists creating a spin-off, compared to other ways to exploit the results are determined by the possibility that spin-off generates personal rewards (www.usamvcluj.ro).

The second issue concerns the non monetary motivation. It is about the need for financial independence (Birley, Westhead, 1994), (Shane, 2004), merit recognition by colleagues (Stuart, Ding, 2006), finding easier ways of funding research (Hayter, 2011), (Fini, Grimaldi, Sobrero, 2009) and the individual desire to bring some results of research on the market (Minshall, Wicksteed, 2007), (Shane, 2004).

Although the concept of spin-off is relatively unclear and covers a wide range of phenomena, in order to be qualified as spin-off, some experts (Pirnay, Surlmont, Nlemvo, 2003) state it that must simultaneously fulfill three conditions:

To take shape within an existing organization, known as the "parent organization";

Involves one or more persons regardless of status and their position within the "parent organization";

Those persons leave the "parent organization" to create a new one.

McQueen and Wallmark (1982) in his '*Spin-off Companies from Chalmers University of Technology*', states that for an academic spin-off to be classified as such, it must meet three criteria: (1) The

founder of the company or the founders must come from an university; (2) the business of the company must be based on technical ideas generated in academia; and (3) the transfer from the university to the new society company must be done directly and not through an intermediary".

According to the authors Smilor, Gibson and Dietrich (1990) a spin-off is.... "a company founded by a faculty member, a member of the academia or an academic student who left the university to create a new company or who created the company while he was affiliated to the University; this spin-off is based on a technology developed at a university".

Other researchers (Bellini et. al, 1999) claim that academic spin-offs are companies founded by academics, researchers, and students and graduates in order to commercially exploit the research results, scientific and technological knowledge in which universities were involved.

A comprehensive definition belongs to the authors O'Gorman and Jones-Evans (1999), namely: a spin-off involves the formation of a new company or organization to exploit the results of the university research.

In the work "*Spin-offs from Research Centers at a Research University*", the authors (Steffensen, Rogers, Speakman, 2000) state that a spin-off is a new company that is created by people who were employees of parent organizations and is based upon a technology transferred from the parent organization.

Another definition proposed by Klofsten and Jones-Evans (2000), namely that "spin-offs are new companies created to exploit commercially some knowledge, technology or research results developed at a university" (Pirnay et. al, 2003) draws a series of comments:

1. The term "*New companies*" means that a spin-off is a new company that has a separate legal status and is neither an extension nor a controlled subsidiary of a university but an autonomous body pursuing a profit, endowed with a distinct legal status that is neither an extension nor a subsidiary controlled university, but it is an autonomous body which seeks profit.
2. The term "... *created by universities*", refers to the fact that the parent organization of a

spin-off can be a research-oriented organization such as: universities, national laboratories, technical schools, inter-university research institutes.

3. To exploit the knowledge produced by academic activities. This includes not only technological innovations and patents (Pirnay et. al, 2003), (Bellini, 1999) but also technical and scientific know-how accumulated by an individual during the academic activity (Pirnay et. al, 2003).
4. A prospect of a profit. This means that the whole purpose of a spin-off is to bring an idea within the scope of business and make a profit from the commercial exploitation of scientific ideas.

Whether we discuss one definition or another, the unanimous opinion of researchers is that a spin-off aims to “enhance the outcomes of scientific research in universities and the commercial exploitation of these results.”

4. THE PROCESS OF CAPITALIZATION OF RESEARCH RESULTS THROUGH SPIN-OFFS

Universities have a key role in the creation and transmission of information and knowledge and the full understanding of this mission require the knowledge of several aspects of the research types, the nature of its results and the different ways of economic valuing of these results (Someșan, 2011).

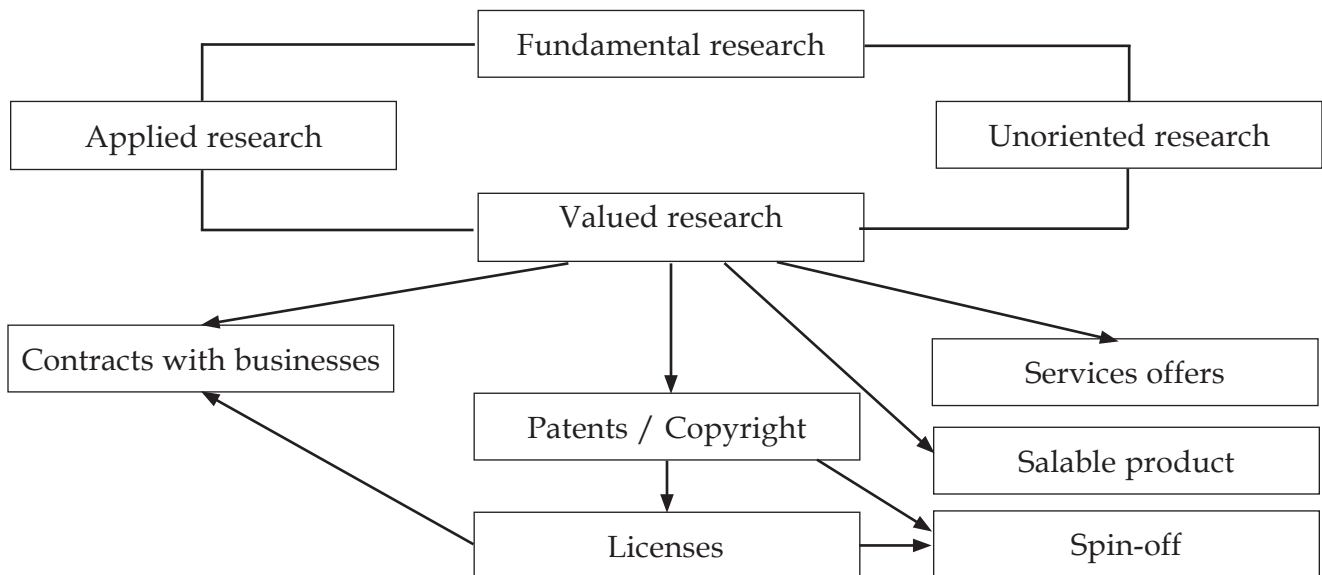


Fig. 1. Types of academic research and results (Someșan, 2011)

In their scientific approaches regarding research, development and innovation, the authors Aurel Pisoschi and Emilian M. Dobrescu (2000) bring some clarifications to the concepts of fundamental research and applied research, namely:

“The fundamental research consists of theoretical and experimental work performed for the purpose of acquiring new knowledge on the fundamentals of phenomena and observable facts without providing a special application or use. The fundamental research analyzes properties structures and relationships on which hypotheses, theories or laws are formulated and challenged).

The fundamental research results are disseminated through congresses, conferences, scientific sessions, but also through publications, scientific journals or exchanged directly between organizations or people interested in the field.

“The applied research is directed towards a goal or practical purpose determined and includes original works performed to obtain new knowledge. The results of an applied research lead primarily to a single product or a limited number of products, operations, methods and systems. This type of research allows the implementation of ideas in operational form. The knowledge or information derived from applied

research are often proprietary, but, at the same time be considered secret “.

The results of applied research relate primarily to a single product or a limited number of products, operations, methods or systems. The results of this research, the knowledge, the information obtained is often patented but may also be kept secret.

The research “problem solving” or “unoriented” type refers to specific activities, generally of short duration, consisting primarily of: tests, measurements, analysis and benefits consulting. Even if they provide only very limited scientific interest, these activities are generally well received in research centers, not only because of financial input that they provide (they are also named “food” contracts) but also because of contacts that can be maintained with partners likely to shift towards the more important cooperation relationships.

The economic valuing of university research results can take many forms: the transfer of operating licenses to existing companies and creating new activities (university spin-off).

Setting up a spin-off is subject to the existence of infrastructure and legal framework provided by the university and an entrepreneur with experience and vision capable of identifying opportunity. Their partnership will give rise to a core business beneficial to both contributors (Borşa, 2013).

The need to create an academic spin-off is based on the advantages of such methods of economic valuing of academic knowledge namely:

- The valuing in terms of products, technologies and new services of the results obtained by a university in its research activity;
- The development of perspectives and entrepreneurial skills of employees in research and development;
- Maintaining, developing and expanding the network of specialized contacts with emphasis on small and medium enterprises;
- The transfer of certain research - development activities and of good practices from University to companies;
- Identification and development of new areas of research within the University research and development units;

- The orientation of research - development activities towards meeting the immediate needs of businesses;
- Creating new jobs in the field of science and technology;
- Setting up businesses oriented towards high technology products and products with high added value.

5. CONCLUSIONS

A current problem of universities in Romania is the very low capitalization of research results in the economic environment in the form of innovative products and services, and the solution lies in the creation and development of academic spin-offs.

After the study of ways to exploit the intellectual property of the prestigious universities in the world, it is recommended to guide the research activity towards results with further recovery potential in the form of products and services.

The ability of Universities to induce economic and social progress and efficiency is virtually unlimited, which justifies treating the research and innovation as a resource of strategic importance.

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