

## Why Should University and Business Cooperate? A Discussion of Advantages and Disadvantages

by

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*Abstract.* The relation between universities and business has been in the public debate for some time. Many authors (Perkmann, 2007, Bonaccorsi and Piccaluga, 1994, Blumenthal et al., 1996, Webster, 1994, Urayaa, 2010, Etzkowitz, 2008) emphasize the new role of universities, their influence in the economy and society, the need for a pro-active approach, for strategic thinking when drawing the long-term plans. Universities evolve now from the basic functions of teaching and research to a third one, commercialization where the partnership with the industry is the most important element. The university business cooperation includes many elements from human resources involved (academic staff, students, company employees), to intellectual property rights, legal aspects in contracts, funding start-ups and spin-offs to communication and promotion of the relationship and common projects. In this paper, we present the perspectives of the industries and universities about this institutional cooperation and we focus on the advantages and disadvantages for both parts.

*Key words:* university-business cooperation, research and development, regional development

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### 1 Introduction

The university business cooperation has become a popular research topic when the European Union (EU) decided to become the most competitive economy in the world. The main objectives as the Innovation Union, the open access to information, technology or communication facilities, or increase of entrepreneurship brought in discussion the role of universities in the society, questions about the old and new missions, the evaluation of performance or the national and international competitiveness. The relation university-business and the importance of it raised many questions and opinions. One of the results is a classification of universities from the point of view of their role in the society and the relations with the various stakeholders at local, regional or national level. Universities evolved from a simple *knowledge factory* interested in innovative outputs to an *entrepreneurial-relational university* active in the region, with industry linkages and research contracts funded by the public and private sector (Urayaa, 2010). The university-business cooperation refers mainly to three distinct aspects: the relation between science and economy, the inter-organizational relations between universities

and enterprises, and the inter-personal relations between science people and professors and company employees (Croissant and Smith-Doerr, 2008).

Mainly, the university is interested in fundamental research, and the business in applicative research. Such cooperation may change the attitude and perspective of both parts and can lead to the following situation. The university is interested in applying the fundamental research in practice (in the real life), and the company searches for new products and services based on unique scientific discoveries. However, this model is ideal; in reality, we find many constraints that hinder the university business cooperation.

### 2 Characteristics of university in the modern age

In the modern time, the university is not the only knowledge depository anymore, focused on fundamental research. There is a high pressure for universities to become more active in their activity and role in the progress of the society.

In the linear model of innovation, the university transmits knowledge to the business in a static mode; the fundamental research is an input for

the product and services development. The university research changed from the *mode 1* – a linear and homogeneous model with a strict limit between researches and application to *mode 2* – a heterogeneous model where knowledge is a result of trans-disciplinary partnerships (Gibbons et al., 2005). The university loses the monopole in knowledge production, has direct competition from independent research institutes, company research labs, governmental agencies or consulting companies. All produce new knowledge, with immediate applicability, relevant for the market. As consequence, the university is interested in commercializing as much as possible, and the company in positioning as an innovative organization (Gibbons et al., 2005, Heinze, 2008).

We may state that one reason for universities to focus on knowledge production and commercialization and for companies to invest in innovation is due to the liberalization principles of the EU. The free movement of products, services, capital and persons facilitated the rapid knowledge transfer not only between companies, but also between cities, regions and nations.

The university-business cooperation includes also a third part, represented by the state (at local, regional and national level). We observe a trilateral where one of the parts takes the role of another; the university adopts marketing and management instruments and the company may develop an academic component by the internal knowledge sharing or qualify the employees by organizing trainings. The public authorities may engage in projects to popularize the education and business offer of the region. This type of collaboration influenced the theory of triple helix (Leydesdorff and Etzkowitz, 1996, 1998, Etzkowitz and Leydesdorff, 2000, Dzisah and Etzkowitz, 2008).

Dzisah and Etzkowitz (2008) state that the development notion changed, from centralization (the state as the first initiator of research, the industry responsible for technological transfer, and the university as the exclusive provider of specialized labor force) to a model based on cooperation and collaboration. The state is transferring the

decision model to a regional level, the industry is involved both in innovation and technological transfer, and the university plays an innovative role in the society, is active in the research „translation”, in the preparation of entrepreneurs, in community development. Although is large scale model, Cooke (2005) criticizes the model as an macro-economic one based on institutional agreements without taking in account the regional realities, the quality of inter-human relations, the business development. And Evans (2010) and Powel (1996) affirm that the clear delimitation of the relations between university, companies and state takes to a weakening of this network. The actual state of the university is defined by Slaughter and Rhodes (2004) by emphasizing the fact that the university goes from „a public good knowledge to an academic capitalist knowledge/learning regime”. In other words, the university is confronted often with actions specific to a free market, strategically thinking on short-term, marketing policies and instruments, development of competitive advantages, hiring qualified personnel etc. and is obliged to adopt a global capitalist thinking.

### **3 University business cooperation – the business perspective**

From the point of view of the business, research and development receive a major attention and demonstrate to be a profitable investment on long-term with an important contribution in productivity increase.

In general, the cooperation with the university can be formal and/or informal (Ortiz, 2012). The informal cooperation is specific to small and medium enterprises, which are interested in a rapid and flexible access to economic and relevant information, and are open to university partnerships. The large companies prefer the formal cooperation in form of joint-venture or contract. The joint-venture means that several companies found a new enterprise with the scope of university cooperation. The time horizon is long, the partners bring own competencies and resources, and the research objective is common. The disadvantage of this cooperation type comes from the different

organizational culture, norms and values of each partner, different work procedures, and deciding on an agreement may consume energy and efforts. The formal cooperation under a research contract has a short to medium horizon; joint teams of professors, researches and employee work and research on common objectives. The advantage of the contract is the risk and costs sharing, the minimum influence of the partners, and limited only to the contract duration. In the most common case, the company orders a research because costs are also much lower. This type of cooperation is sustained by the state by financing mostly so-called consortium – associations between universities and companies for research and development solutions.

From the business perspective, it is important that the company has the absorption capacity, the ability to identify, assimilate and exploit the knowledge obtained in these common projects (Cohen and Levinthal, 1989).

We know that a company cooperates horizontal with the competitors, vertical with the suppliers and institutional with universities and research institutes (Belderbos et al., 2004).

The institutional cooperation with the university presents a series of motives and risks. From a strategic point of view the company is interested in the economic success, smart, sustainable and based on competitive advantages. These may be developed internal through investments in research and development, product innovation, creative employees, participative management. Or it may be obtained from external sources. One source of this kind is the university which usually presents specific competencies and knowledge. The advantage of the university cooperation is brought by the speed-up of the innovation process, reduction of stages (e.g. the time between product idea and product introduction on the market). From the financial point of view, the university cooperation brings a division of costs with research and development (these costs are usually very high, e.g. pharmaceutical industry or biotechnology), and a diminishing of risk and uncertainty (especially in the case of fundamental research). In the same time, we mention that the

fundamental research is still financed in a high proportion by the state, so the company doesn't have to finance a total project. From an economic point of view, the university cooperation brings economies of scale, there is not the need for infrastructure investments or hiring special personnel. From the scientific point of view, this cooperation gives an impulse for changing the perspective on the market and development. In general, the company searches for solutions for the problems that cannot be solved with own competencies and skills. So, the investment in resources can sometimes be not so efficient, while a partnership with an university is recommended and costs less. Plus, for a company is difficult to assemble all necessary competencies in one place, at the same moment, when the cooperation with the university is a safer mode to receive innovative inputs, to access the newest discoveries.

The cooperation with the university presents also some risks (Ortiz, 2012):

- *coordination and information problems*: each part has its own hierarchy and bureaucracy, this means that the information and coordination of the common project may be negative influenced by the specific internal procedures;
- *supplementary costs*: public universities are known for standards and an excessive documentation, e.g. in Romania the material acquisition is made through an electronically auction system with long and complex procedures and limits (the offer with the lowest price has priority and quality is the second criteria);
- *ownership and commercialization of the results*: without clear specification, there is a risk that one part uses for its own purpose the results;
- *know-how piracy*: the team members in the project belong to the university and company and it is difficult to hinder the knowledge copy.

As a consequence, it is important to clarify in the contract the conditions of cooperation and collaboration, the contribution, the responsibilities and rights of each part.

#### 4 University business cooperation – the university perspective

From the point of view of the university, the cooperation with the business in research projects is an opportunity to fulfill the second mission of universities or the function of research. Together with the first mission of teaching, research represents the contribution of universities to the well-being and development of the society. For a company, research and development are activities on the value chain, and are conducted by an investment plan, they bring competitive advantages, while in universities, research rounds the teaching activity (in many cases professors have in their job description teaching and research activities), it doesn't necessary orientate on the market needs, basis on scientific rather than economic principles. What determines an university to cooperate with the business?

The decision of the EU to become the most competitive economy in the world influences especially innovation, research and development. Official documents of the Union have been translated into national legislation, therefore the industrial and innovation policies include a series of incentives and facilitations for a higher potential for innovation and development. It is not a secret that this new attitude is inspired by the American successful experience with the cooperation between universities and the industry and a range of examples of universities financed by the business that are now global research centers (MIT, Harvard, Stanford etc.). The document that influenced the rise of USA is the Bayh-Dole Act from 1980 who improved the legislation for patents and commercial trademarks. The universities received the right to register patents and give licenses based on their research projects, including also public funded projects, professors received the right to become shareholders in the spin-offs (enterprises who use business ideas or technologies developed in research projects). This document facilitated the technological transfer between universities, business and state, generated the introduction of technological transfer offices, regulated the

commercialization of research. In Romania, the legislation still needs improvements and openness towards universities. For the industry, the EU introduced in 2009 so-called *innovation checks*. These are instruments for financing the technological transfer between universities and small and medium enterprises and facilitate the access to innovative services developed by universities or research institutes. This check covers up to 90% of the eligible costs and has a maximum value of 45.000 lei (ANCS, 2012).

From the strategic point of view, the entrepreneurial university has new functions of management and marketing more specific for the private sector. For instance, the university adopts a strategic thinking, invests in priority fields, closes inefficient study programs, develops a curricula adapted to the market needs. Similar to the American model, we observe in Europe an entrepreneurial activity in knowledge transfer; universities use research in order to stimulate economic growth and regional development. Same with the companies, the university is interested also in the image and awareness and knows that a strong brand attracts the best prospect students, professors and researchers and funds from companies. In practice, the cooperation with the business is an indicator for competitiveness on the market for education services, trainings and research. This modification in attitude and strategically thinking enforces universities to internal changes, new departments are introduced, e.g. Media Department of A.I.Cuza University in Iasi – with the scope of promoting the university activities to the internal and external public, the Office for European Programs in UBB Cluj-Napoca – for a better absorption of European research funds, or the Direction for Research Management in Politehnica University Bucuresti – for a better administration of the research projects.

The university business cooperation depends also on the general frame that the university creates for its employees. We refer to the freedom of choice when deciding for a research project, the motivation and incentive systems (besides the salary, the professor might receive a percentage from the total fund or benefit after the patent registration), research infrastructure

(offices, laboratories, updated hard- and software), consulting and assistance in the search of potential partners, trainings about patents and licenses, or writing a business plan. In conclusion, the cooperation with the business depends on the opportunity costs for the professors and on the transaction costs for the university.

As mentioned before, the cooperation with the business includes also a range of financial and material benefits. Apparently, the financial component is the most important one, but in reality other benefits must be emphasized, e.g. personal satisfaction, prestige, reputation, contribution to the university performance. These results are observed also in scientific articles published in ranked and indexed journals, speeches at important institutions and organizations, conferences, work-shops, research funds from the private sector. In the same time, it is recommended for a university to militate for the open science, or dissemination of the results in the general public.

The main advantages for a university in this type of cooperation are:

- *pull of funds* – for professors means freedom in research, they can choose freely topic of interests, the university has less pressure on the division of research funds;
- *practice focused research* – new research fields open, professors have the possibility to test the results, the new methods and techniques;
- *subjects content updated with the research results* (development of new textbooks, practical experience of the students, bachelor and master dissertations based on the applicative research done by the students);
- *access to knowledge from the industry* – professors have the possibility to learn about the market reality, there is a learning effect on both side.

These advantages contribute to the profile of the university, bring opportunities for development (e.g. business administration professors participate in consulting projects), but open also the debate regarding the university functions

and the ethical aspects of commercializing results from projects financed by the state.

The main functions of a university are teaching and research. However, because of the new role of universities in the society, the partnerships with the business, and the diminishing of the public funds, universities face the challenge of commercializing (known under *the third mission of universities*). This new mission is complex, has several facets and puts the university in new situations. Montesions et. al. (2008) refers to the third mission under “services for the society” and emphasis that the university can have a social mission (services without monetary benefit), and entrepreneurial mission (the university is interested in the turnover increase) and an innovative mission (through consulting contracts, solution development for the industry).

Besides advantages, the cooperation with the business can be influenced also by threats. The bureaucratic structure of a university, lack of specialized staff in the marketing departments or technological transfer offices, high administrative costs, finance dependency are just some of the threats in such a partnership. In the same time, the external financer can impose special research topics, which can restrict the research freedom, or facilitate a brain drain, where professors and researchers move in the private sector because of attractive incentives.

## 5 Forms of university business cooperation

The university business cooperation means the interaction between students and academics, employees, organizations, public authorities and regional stakeholders. All are interested in jobs, information from and about markets, connection to the market reality (e.g. through trainings, internships or research projects), licenses, patents, product and service development, innovations etc.

The university business cooperation is done through multiple channels and in parallel, there is a transfer of resources, personnel and/or information done by:

- research – research contracts, joint-venture, licenses, joint scientific articles;

- learning/training – trainings organized in companies, internships for students and doctoral students, graduate recruitment, conferences, work-shops and seminars;
- consulting – consulting services for the business partners or for the state.

The consulting service is new in the offer of the university (especially for the Eastern European universities) and has an important impact on the profile of the professor or researcher. Usually, universities are not the first option for consulting, but a better look at their advantages can change this behavior. The university must exploit better aspects like: infrastructure (rooms, equipment, access to databases, to results from other projects), specialized personnel (professors specialize in time in niches that are seldom explored by professional consultants), awareness and trust in the institution, service quality etc.

In the article „Engaging the scholar: Three forms of academic consulting and their impact on universities and industry”, Perkmann and Walsh (2008) establish a typology of the academic consulting and distinguish between opportunity-driven, commercialization-driven and research-driven consulting. Junior professors or young academics perform the *opportunity-driven consulting*; they are interested in income; this type of consulting focuses more on solving problems rather than suggesting new project or product ideas. The motive for *commercialization-driven consulting* is technology development; the scope is licensing the results, and professors maintain the relationship with the business partner through assistance contract. The research-driven consulting exploits a research opportunity, includes a long-term relationship with the business partner, the interaction with the industry develops new instruments and techniques.

The report “The state of the European university-business cooperation” (EC, 2011) presents the eight forms of cooperation and their actual status in the Member States. The most popular form is *collaboration in R&D* and includes: joint R&D activities, contract research, R&D consulting, informal and

personal networks, joint publications with firm scientists/researchers, joint supervision of theses with firm scientists/researchers (Bachelor, Master, Doctoral Degree) in cooperation with business and student projects in cooperation with business. The other aspect of *commercialization of R&D results* needs support mechanisms and a proper legislation. The next one refers to the *mobility of academics and students*. The ERASMUS program is one useful instrument that contributes to the temporary or permanent movement from one university to another or from the university to business. A high influence of business comes in the *curriculum development and delivery*. We know that the flexibility of the labor market is important in the absorption process of graduates (Dobre et.al., 2010) therefore it is recommended to involve company managers in the design of courses and modules. And universities decide for a study program based on employability studies where companies and markets are searched in order to check the employment possibilities for its graduates. The pressure of competition on all markets including the labor markets, brings the people back in schools, therefore the *lifelong learning* programs deliver the skills, knowledge and new behaviors in order to become a better employer. The new position of the university, commercialization of the results and services, brings the need for an innovative culture and for an *entrepreneurial* behavior. The last form of university-business cooperation is *governance*. Managers are members of the administration board in the university and vice-versa academics are involved in firm-decision making.

## 6 Conclusions

The university-business cooperation brings recognized benefits but has also many barriers. Students improve their learning experience and develop skills for the future employment, companies improve their business performance, the community can benefit from the increased employment, disposable income and competitive local industry, and the university can achieve the missions while academics increase their reputation, expand their research

and contribute to the image and standards of the university.

The barriers that restrict the university-business cooperation are funding (companies still invest small amount of money in research) and relational aspects (lack of communication, different time horizon, difficulty of finding the suitable research partner).

In conclusion, the university-business cooperation is complex and an important element in the university strategy and development. Framework conditions, situational factors, people, availability of funds influence it, therefore universities have to include in their strategies and plans all kind of aspects that might drive this cooperation.

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