The Mission of Universities in the Processes of Research - Innovation and Development of Entrepreneurial Culture

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Abstract:

The article reveals the importance of academic research in the context of new requirements of the knowledge economy. The strategic mission of universities should focus on defining the elements of "a culture of research": the accumulation of knowledge, the renewal of learning methods, the enlargement of research capacity, the growth in revenues resulting from research activities, the strengthening of the links between institutions that develop research in order to meet the challenges arising from the responsibilities to the society and from pointing out the international status of the university. In the analytical approach the authors have put emphasis on the imperative of establishing a cooperative relationship between academic, industry and business environments in order to achieve the general objectives - related to social and economic development at national and regional level - as well as the specific ones - related to the progress of the education, research and innovation fields. The study presents a number of European initiatives aimed to contribute, on the one hand, to the achievement of the university strategic mission in the research domain, and on the other hand, to the defining and development of an entrepreneurial culture. These initiatives are achieved through the integration of academic activities (training, skill development, and insertion of all categories of professionals in research) with activities from the industry and business areas in some specific structures such as business incubators, industrial and research parks, "universities – business" foundations, and research networks.

Keywords: academic research, entrepreneurial culture, research and innovation, partnership universities – industry – business environment, strategic mission of the university.

JEL Classification: H 75, I 23, L 26.

1. Overview

In the context of economic changes over the past decade the creation of new intellectual capital through research activities is essential. A society unable to decide on its own development through research will be dependent on others and will never have an important role in a globalized economy. Consequently, the first issues to be considered are the volume, the level and the quality of education. The processes of generating employment and insuring a relative level of wages have oriented towards college graduates. Higher salaries for highly qualified staff respond to economic demand, but contribute to the growth of wage inequality; wage costs also influence the European social model. Industrial productivity is significantly correlated with the highest educational level and the limits of current technology.

Universities are seen as pools of knowledge for the future technological, economic and social progress, they are perceived as gateways to global information and support for regional development. They provide their region with intelligence (in the form of human resources and R&D outputs); they are implicated in planning the improvement of regional infrastructure and the quality of the environment.

The main stakeholders of the universities are academics, researchers, professionals, students, institutional leaders and managers, national governments, national agencies and advisory bodies, supranational bodies, and businesses and industry (including both transnational corporations - TNCs and small- and medium-sized enterprises – SMEs).[1]

The universities' autonomy plays a central role in encouraging not only the educational process, but also in concluding contracts with companies that cover research projects, scholarships, equipment donation, exchange of specialists, researchers and other categories as well as in developing a systematic dialogue on human resource development.[2]

The European Union has the mission to promote the mutual recognition of diplomas, stimulate mobility and eliminate restrictive practices in the employment sector; in this context the education system is even more important.

A relevant aspect is the dilemma of the diversity. The governments recognize the value and role of universities in meeting a variety of social needs, such as:

- suppliers of skilled personnel and generators of scientific information;
- poles that attract international talents and regional investments;
- sources of entrepreneurship and expertise, innovative thinking and promoting social mobility and cultural support.

This diversity of academic functions has become so important that no society can dispense of the vital role of universities. The need to develop internationally competitive centres of excellence is a priority of the leading industrial sectors. These centres must be focused on basic research, on attracting talent, on the reconfiguration of the efforts and on the stimulation of innovation at the level of European research networks.

In the recent decades, the European research from public funds has been developed mainly in non-university institutions, often with strategic imperatives. Such institutions have been rarely able to compete effectively with the most important research universities, most of which are located in the United States.

Universities with intensive research programs are characterized by several unique features that make them the ideal place to develop centres of excellence and innovation that Europe needs:

- The universities with intensive research programs can be powerful catalysts for economic development. They contribute heavily to attract business investors, to facilitate the transfer of technology and can be important partners for the development of regional government agencies through their proximity to the market.
- They are the strongest pole of attraction for young talents that otherwise would move to the best universities throughout the U.S. and Asia.
- They are unique by offering a broad range of disciplines that confer speed in the reconfiguration of research efforts, in pursuing new interdisciplinary opportunities; such reconfiguration allows a „bottom- up" approach, from individual researchers or research groups to the decision makers;
- The rigor, imagination and variety of academic research environment make it the ideal place for developing new generations of research talent.[3]

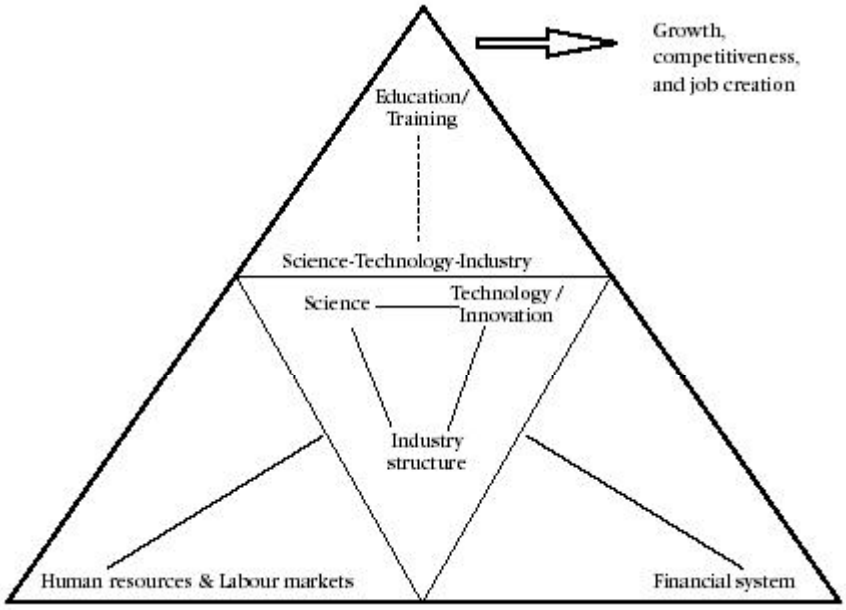
[1] Stankovic, F., 2006, *Entrepreneurialism at the University of Novi Sad*, Higher Education in Europe, Vol. 31, No. 2, July 2006.
[2] Ibid.
[3] League of European Research Universities (LERU), Unlocking Europe's Intellectual Potential – Universities and a European Common Market for Research, "Enhancing internationally competitive research in Europe's universities." Leuven, 15-16 January 2004.

Although universities have as the first responsibility economic development or establishing companies, they can significantly influence their evolution, directly, when the technology transfer offices are run by competent professionals, or, indirectly, by creating conditions to attract investment in research intensive industries.

The role of universities can be strengthened through various mechanisms:

- the creation of regional consortia, universities representing their centres;
- improving access to information;
- harmonization of legislation with European standards;
- increasing the number of researchers;
- providing financial incentives, grants, etc.;
- facilitating exchanges of specialists and other resources between universities, industries and the business environment (see Figure no. 1).

Figure no. 1: Science, Technology and Innovation system and its constituting building blocks



Source: European Commission, *Key Figures 2007 –Towards a European Research Area. Science, Technology and Innovation.*

Higher education institutions contribute substantially to the supply of skilled human resources and to knowledge creation with practical application; they represent sources of entrepreneurship and strong incentives for regional investors, as well as sources of technical knowledge and innovative thinking, promoting mobility, social justice and cultural support.

Institutions that have intensive research programs for a wide range of sciences (medicine, engineering, social sciences and humanities) are considered important elements of higher education and they are essential in the development and strengthening of the research programs worldwide.

There are several reasons why higher education institutions are seen as the most effective ways to support basic research on a global scale:

- Universities can be powerful vectors for economic development, especially where government, regional bodies and agencies for economic development cooperate and support the universities in the strategic planning process.

- The universities assume a wide range of research programmes, compared with those developed by the research institutes or industry, which provide them the ability to quickly reconfigure their efforts in order to pursue interdisciplinary opportunities. The explosive rate of economic and social changes, as well as the knowledge advance over the last 50 years, have created an urgent need to understand the problems that go far beyond the territory of a single discipline.

- Successful research depends on a culture that appreciates curiosity, creativity and genius. The mix between research and higher education system creates an environment that best ensures the acquisition of the required values by the next generation of researchers who will transfer, in return, the research output to the society.

- Not only that universities have proved to be the best place for basic research, but they are also the best option, in terms of cost and offer, to all the prerequisites necessary to achieve the objectives of the applied and interdisciplinary research. [4]

Strategic objectives related to the research & development field at European level are conditioned by the financial resources infused in higher education and in the research – innovation projects.

Table no.1: Investments in Higher Education (HE) and in R&D (% in GDP) – 2007

Year: 2007	Total investments in HE (% GDP)	Investments in R&D (% GDP)
Denmark-DEN	1.8	2.5
France-FRA	1.4	2.2
Finland - FIN	1.8	3.8
Italy - ITA	0.9	1.1
Netherlands - NL	1.3	1.8
Norway - NOR	1.5	1.6
Spain - SPA	1.2	1.1
Sweden - SWE	1.8	4
United Kingdom- UK	1.1	1.9

Figure no. 2: Investments in HE - % GDP

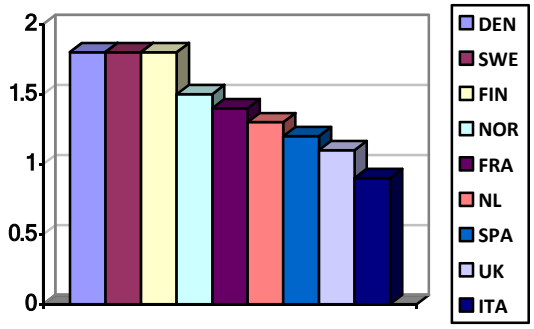
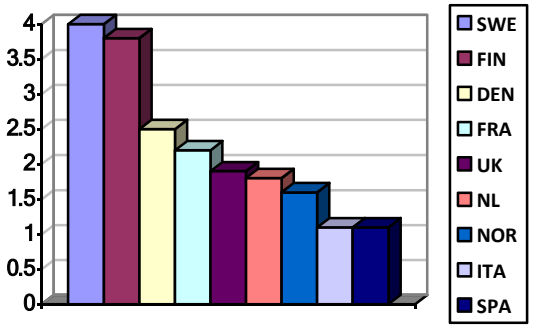


Figure no. 3: Investments in R&D - % GDP



Data source: Docampo, D., 2007. International Comparisons in Higher Education Funding, *Higher Education in Europe, Vol. 32, No. 4,* December.

[4] Ibid..

National strategies of research and development need to emphasize the enhancing role of universities in conducting research activities. In this regard:

1. **Universities must have an innovative role** as a result of:
- their increasing collaboration with research centres;
- increasing cooperation among centres of excellence;
- greater use of new scientific structures, particularly scientific and technological; parks.

Universities must become centres that generate extra-value from diversified portfolios of knowledge, and from applying and commercialization of the research results, properly protected. In addition, universities must promote entrepreneurial culture among students, and must create a stimulating environment among academics in order to raise their training in entrepreneurial projects.

2. **Higher education systems must generate a boosting effect** by increasing the participation in the transfer of knowledge and technology, in establishing companies and in patenting the research results. They *must provide solutions to problems with social implications*, such as those related to training of the active population, *must engage their structures* in order to: support the insertion in the labor market of both PhD and master graduates, and undergraduates, and ensure a greater mobility in the exchange of researchers and specialists between academic and business fields. [5]

3. **Universities must create partnerships with industry and business environment** by supporting the establishing of business incubators, industrial & research parks, "universities - business" foundations (UBF).

2. The Development of the Relationship between Research and Entrepreneurial Culture

An advantage of establishing and promoting research structures, such as: business incubators, research parks and other types of partnerships, is the contribution to changing the negative perception on personal initiative, innovation and risk-taking by promoting a favourable image of entrepreneurship.

Universities must be very active in the dialogue with the national Ministries of Education, Science and Technology, offering good support in the creation of the Law of the Universities and on the development of an entrepreneurial culture of the universities.

The opportunity to share ideas, information, experiences, etc. with other researchers, scientists, academic staff, entrepreneurs within the research units, and opportunities of establishing contacts and exchange of experience with others in the region – offers the chance to promote an entrepreneurial culture and to develop specialists possessing both the interest in accumulating information and learning and the entrepreneurial skills and mentality.[6]

[5] Comisión Interministerial de Ciencia y Tecnología, Gobierno de España. *Estrategia Nacional de Ciencia y Tecnología – 2007*.
[6] Stankovic, F., 2006. *Entrepreneurialism at the University of Novi Sad*, Higher Education in Europe, Vol. 31, No. 2, July.

For example, Kingston University - UK maintains a strong connection with business environment and industry**.** Therefore special centres have been established to make connections between the two above mentioned areas of interest, in order to realize the exchange of knowledge, resources and opportunities.

- Knowledge Transfer Partnerships (KTP) - represents a network through which industries can access the knowledge generated by the universities. [7] KTP program is partially funded by government and gives support to the companies in developing new products, services, etc.[8]
- Business Creation - supports entrepreneurs to transpose ideas into practice.

Universities provide an environment for research activities, involving the organization of events such as: conferences, seminars and workshops and by enhancing international cooperation. Attracting students in research is one of the key elements in the "business creation" process.

3. The Establishment and Development of Research Networks

The universities become members of different consortiums or collaborative research networks including companies, provincial and local governments, and different NGOs within and outside of the university.

The collaborative links through innovation units, research parks, incubators (for nurturing business start-ups), research strategies, student and graduate insertion on the labor market, etc. aim to create the strategies for the development of the technology transfer centers and academic innovation units.

The incubation centres play an essential role in the economic development by offering the natural spin-off of new high-tech companies from the universities and making the business start-ups process an important part of the future science and technology parks.

The research parks or innovation units/incubators offer accommodation to companies and projects opportunities to work with the universities in research programs, scientific development and training.

The aim of the research parks is to encourage the formation and growth of technology or knowledge-based companies. The research park companies might benefit also from a strong collaboration between the universities and regional governmental structures and from the membership in different science park associations.[9]

Also, the new companies might be encouraged to build their own space of quality if they had not had the chance to migrate to other work spaces or simply they decide to face the challenge by themselves.

Among principal strengths of research networks are worth to be mentioned:

► Shared use of specialized scientific equipment, financial facilities and professional advice: Incubators typically provide the most commonly used equipment which is needed

[7] Research and Enterprise: http://www.kingston.ac.uk/research/research-and-enterprise/
[8] Knowledge Transfer Office: http://www.kingston.ac.uk/services-for-business/enterprise-exchange/knowledge-transfer-partnerships/
[9] Birmingham Research Park Limited : http://www.brpl.bham.ac.uk/

by the dependent start-up companies. In the research parks the companies have direct access to the technical and social facilities of the university campuses.

► Facilities offered by the modern research structures (business incubators, research parks and research networks) should include additional high-quality space both for start-ups, but also multi-tenant space for small companies which are not strong enough to find adequate space elsewhere (one solution to this issue is to have several owners of the building, the owners` combination giving a higher success rate to the project).

► Management support services and professional advice.

The Research Parks management helps tenant companies to access sources of financial and professional advice. Most entrepreneurs do not have a strong background in management or experience in budgeting and cost control, personnel policies, recruiting and management, purchasing, and marketing. The incubator staff provide management assistance to the companies in the incubator and also can organize seminars where service providers in the region share common problems and solutions with the tenant companies.

The opportunities resulted from the consultation process are: management assistance in budgeting and cost control, personnel management, purchasing, and marketing; knowledge in preparation of business plans and applications for regional, state and European development funds; assistance in obtaining financing for equipment and operations and linkages to seed and start-up venture funds for the incubated companies as well as from development funds.

► Access to financial resources:

The start-up companies generally face financing problems. Developing a new technology or turning a new product into a successful business depends strongly on the marketing strategies. Establishing an adequate product sales level or selling to financially more mature companies requires from the research park professionals to draw the business plan and to identify appropriate financing sources. The best results could be reached within the public - private cooperation.

► Students and graduates` involvement:

A major role of the incubators or research parks is played by the opportunities they offer, by ensuring the framework where students can do practical work, become direct participants in different projects, learn through their own experience and develop creativity and skills.[10]

Taking into consideration the fact that the career structure and the employment perspectives for a career in the academic environment on the long term are in permanent change, the contracts for the research staff are under observation and also they are integrated into different initiatives aimed to attract and retain researchers.

These initiatives meant to include researchers in sustainable structures are related to structured partnerships between higher education institutions and national original research units, or partnerships between industry and academic fields. These partnerships combine the alternative tenure opportunities with the advantages of new career options and of those obtained from strengthening the links between applied and basic research. The researchers are more flexible and motivated to choose between the following activities: teaching, research and entrepreneurial activities (transfer of knowledge and innovation, for example).

[10] Ref.

The collaborative research networks generally cover strategic areas of study and research. Some of the research networks might be developed in areas with a strong heritage of collaborative working and others are pathfinders. [11]

Entrepreneurs are stimulated to collaborate with university partners and other companies inside and outside the research units, in order to create more business opportunities for national and international knowledge-based-companies (activating in: high – technology, biotechnology, computer systems, medical diagnostics, scientific instruments, advanced materials etc.).

For example, the University of Birmingham - UK, as research and teaching institution, has created, since 1986, a research park in partnership with the City Council. The park provides a framework for companies and project developers to work in cooperation with academic researchers in activities linked to R&D and professional training. The main purpose of the research park is the creation and development of technology and / or knowledge-based companies. The university became famous in areas such as biotechnology, computer systems, linguistic research, etc. Many of the companies were established by the university's academic staff in order to exploit the new technologies generated from research. Another category of companies is formed without the participation of academia, but run their own activities in collaboration with university departments.

The support of the activities developed by the companies in the research park is provided by the University and the City Council. The management team of the research park is implicated in facilitating the access of the affiliates to financial resources and to expert advice. The Birmingham Research Park is a member of the UK Research Parks Association.[12]

4. The Establishment of "Universities – Business" Foundations (UBF)

UBF represent specific partnerships between universities and the business environment. In Spain, for example, they may take the form of non-profit private organizations (*Fundaciones Universidad - Empresa*) emerging in a mixed formula - universities and chambers of commerce – with the objective to exploit all the opportunities arising from the collaboration between the collectives incorporated in the two types of institutions.

UBF mission focuses on 5 major lines of action:

1. Continuous, post-graduate and professional training (through the master programs and post-graduate courses, focused on labour market requirements and also through long life learning, where the programs bring in interaction the attendants with the companies from particular branches of activity);

2. Technology transfer (through boosting, contracting and administrating of research and technological development programs, by promoting cooperation projects and through patent trading and result dissemination);

3. Promoting innovation (by providing services for chambers of commerce and university departments, by looking for associated members to submit projects of public interest, by

[11] University of Birmingham , Research – Collaborative Research Networks: http://www.research.bham.ac.uk/resources/crn.shtml
[12] Birmingham Research Park Limited (BRPL): http://www.brpl.bham.ac.uk/

developing technological solutions and finding protective measures for intellectual property rights);

4. Supplying further professional training of university graduates (through practical activities and through vocational guidance services), helping their insertion on the labour market, and raising the degree of employability;

5. Establishing companies (through which the mixed structures - universities and business environment – stimulate, on the one hand, the entrepreneurship among higher education graduates, and, on the other hand, the development of entrepreneurial culture in the academic environment). In this respect, contests of ideas and projects to create innovative companies can be organized, the new business initiatives can be identified, supported and evaluated and access to financial resources can be facilitated with the aim to implement the new enterprises. [13]

5. Boosting trans- and interdisciplinary cooperation

For example, German universities combine research and teaching, in accordance with the German traditional definition for the university system, ever since Wilhelm von Humboldt.

Taking into account the quantitative indicators, universities concentrate about a fifth of the German research and development expenditures, which represent the major part of the public funds infused in research and development.

The research activity in universities is about 70% covered by the Länder funds, and approximately 30% by project funds, won through competitions (external funds).

The academic system includes all scientific and knowledge areas, and empowers its members to use the institutional context for trans-disciplinary and interdisciplinary cooperation.

Research and development activities in universities create the full range of knowledge from the so-called basic research (generated by scientific curiosity) to the applied research, aimed to solve practical problems in the business environment.

German universities are a significant component of an educational and research system financed, organized and regulated by the government.[14]

6. Increasing collaboration between higher education institutions and local and / or regional structures.

This initiative aims to guide research programs towards sustainable applied research, by establishing research networks and partnerships in innovation.

In this regard government bodies will have to find instruments to facilitate: the access to

[13] Ministerio de Ciencia e Innovacion, *Fundaciones Universidad – Empresa* : http://web.micinn.es/contenido.asp?menu1=3&menu2=0&menu3=&dir=05_Investigacion/022DAgentes/01@AdmPub/04-FunUniEmp

[14] Ministerium für Wissenschaft , Forschung und Kunst , Deutschland: http://mwk.baden-wuerttemberg.de/themen/forschung/

financial resources, the contacts with potential users of research results and the marketing of the results.

There are formal and informal mechanisms through which close contacts can be established between higher education institutions, local and regional structures (which are responsible for determining the measures needed to implement the development strategies) and industry. Thus, it is possible to set up an association, at the industry level, in the form of an Office, or a Centre, that has, as main activity, the transfer of technology, designing the set of activities generating technical and technological knowledge.

The Centre, established and consolidated at the level of the higher education institutions, acts as a structure with management functions and as an interface between academic research areas, technological and industrial sectors. In this Centre, researchers from universities and industry are encouraged to work with graduates of higher education institutions.

This collaboration provides to the organizational structure a double advantage: first of all, the Centre can benefit from existing facilities at academic level (libraries, informational computer systems, laboratories, etc.). And secondly, the education system benefits from the participation of the academic researchers to the cooperation in scientific and technological research projects both on internal and external levels. In addition, it contributes to obtaining: advanced information based on the results of extreme novelty, an enhanced image for institutions of higher education and the future collaborations and partnerships in research and education.

The creation of the research networks is based on the contacts and contracts established after participation in research projects and schemes, funded at EU level. This participation may be obtained by researchers from academia, both on the official line (by a formal promotion of a potential cooperation at the level of governmental bodies, e.g. National Commission on Science and Technology) and on the unofficial line, based on personal contacts (settled during the participation of the academic researchers at other kind of events and activities, with scientific or vocational character), which generate new opportunities for participating in research projects on a larger scale.[15]

On the other side, the mission of universities in the processes of research -innovation and development of entrepreneurial culture is affected by a series of impediments.

The knowledge economy requires a dynamic professional development. Universities and other types of research and innovation units have to foreground the recognition of their researchers' professional experience in order to address the problems the researchers are confronted with in their careers. Therefore, a lot of changes will be needed in order to improve the employment situation of researchers, which is already difficult due to uncertain and precarious employment contracts. There might be also a problem, on the long term, in convincing students and graduates to choose a career in research, and in training them in accordance to the social requirements.

The research community emphasize the fact that the training of researchers has to be more relevant for a wider variety of careers than in the past. Universities have a central role to play in the training of researchers, but in the academic community and in the industrial and business environment doubts have arisen about the capacity of universities

[15] Grigore, L., Candidatu, C., 2009. Parameters that configure the necessary framework for the development of the "research culture" at the university level, Volume of 21st May 2009, Workshop "*Global crisis and the answers from Higher Education*" (forthcoming).

to satisfy all the demands made on them. Industry is eager to employ researchers without doctoral degrees, because they are considered too specialized.

As a consequence more and more research is developed by "non-academic" institutions (companies, non-profit public or private organizations, private and public independent research centres, etc.).

The training of the students who envision a career in research becomes a real challenge, while they have to enter the non-academic market. In most European universities and research institutions the graduates began to be trained in an "endogenous" perspective on the consideration that their research career would develop in an academic research environment.

In the perspective of the European Research Area, postgraduates should be trained to enter both the endogenous academic market and the exogenous one, which means a great movement from the present practice and attitudes. This shift will involve the trainees in projects with non-academic partners as well as the involvement of these partners in the training of the new researchers.

The doctoral programs arise a set of problems too, starting with the funding, then due to the different ways in which they are organized throughout Europe and finally because of the doctoral degrees' ambiguous recognition in a broad employment context.

Regarding funding, the doctoral candidates may have to guarantee it in order to be admitted and for the whole period of doctoral stage. A lot of doctoral candidates, who form a highly heterogeneous group all around Europe, have precarious financial situations and social security rights. They are either students or universities staff members, workers and researchers, with low and medium incomes, most of them not being able to benefit from adequate funding in a form of a grant, a loan or special salary.

Concerning the organization of the doctoral programs, differences have appeared in Europe, because some countries prefer to organize the training individually, and others prefer to work within standard training programs for groups of doctoral candidates in related fields. For example, a series of countries, which initiated the idea, are interested in developing the organized training in doctoral schools, and research schools work to develop the process (UK, The Netherlands, The Nordic countries, and experimentally in Spain and Germany). [16]

The transfer of knowledge and innovation, and the structure of partnerships can be affected by the so-called academic freedom, which the researchers from the universities and other higher education institutions try to preserve above all. Even if, in the recent years, pressures were made at social, political and financial levels in order to emphasize the practical importance of research activities developed inside the academic environment, the applied research projects still grant a lower status and the academic staff involved in industry partnerships is not taken into consideration for academic promotion. Therefore the jobs in industry may be seen as a second- class option and the need to have a doctoral degree for academic positions limits the access of the industrial researchers into the academic environment.

There are also threats that generate difficulties in mobility across sectors (from academic environment to industry, from public to private sector, and vice-versa) such as: the threat of losing the acquired benefits and professional status; the threat of the difficult transfer

[16] COM, Researchers in the European Research Area: one profession, multiple careers/ COM(2003) 436

of pensions and social security rights; the threat resulted from the confidentiality of research results, intellectual property protection and publishing rights.

Another threat that must be taken into account is the quicker changing demands put on the researchers in an uncertain and open employment market. Although the doctoral programs enhance the research, communication, team working skills and the employability of the researchers, the research trainees are forced "to learn by doing", the training through research has to be conducted in units to which the doctoral candidates are attached, and in the context of financial pressures these units are hard to be created and developed.[17]

Another important threat may be the possible shortage of human resources in R&D as the Spring European Councils (Lisbon 2000, Stockholm 2001, Barcelona 2002 and Brussels in 2003) revealed, recommending to the member states to set up the necessary objectives in order to enhance the training and mobility of researchers (through the Communication "*More Research for Europe – towards 3% of GDP* " [18] which underlined the fact that member states and the research community need to be aware of the risk that a lack of sufficient human resources in R&D constitutes a bottleneck to the attainment of the 3% objective. This is further developed in the recently adopted Communication "Investing in research: an action plan for Europe"[19].

7. Final Assessments

As the new demands of knowledge economy are revealing and the global importance of providing skills, specialties, economically useful and relevant to the stage reached by industrial development, is increasing, the academic activities tend to gradually adjust to these requirements.

Thus, the increasing of the research capacity has created the prerequisites of obtaining higher qualifications and has become a key element in improving the quality of the education process.

Academic research has converted into a basic element of the mission of higher education institutions, through which they contribute to the success of regional, economic, cultural and educational development plans. In addition, conducting successful research gives rise to professional excellence, creating an academic reputation, both of which are considered essential attributes in gaining high competitive positions. [20]

► Research is vital, firstly, in accomplishing the mission of higher education institutions (even if, in the new context, difficulties in the adoption of policies, practices and strategies that do not visibly affect their traditional role, in order not to enter in conflict with the imperatives related to government policy measures in education and other fields domains).

► Secondly, academic research has a major role in attracting and maintaining a teaching staff of top professionalism and a category of students of special quality, related to the requirements and offer of the institutions.

[17] COM, Researchers in the European Research Area: one profession, multiple careers/ COM(2003) 436
[18] COM(2002)499 final of 11.09.2002.
[19] COM (2003)226 final of 30.04.2003 & SEC(2003)489 final of 30.04.2003: http://europa.eu.int/comm/research/era/3pct/index_en.html
[20] Gibbons, M., Limoges, C., Scott, P.et.al, 1994, The New Production of Knowledge, London, Sage.

► Thirdly, academic research is one of the conditions needed to create and sustain a stimulating environment for the transmission and rapid assimilation of knowledge and transfer of experience from one generation to another and between different socio-economic levels.

► Fourthly, research contributes to the establishment of relations with other institutions of higher education, with professionals and specialists in various fields (industry, business, non-academic and applied research, governmental structures, international organizations, etc.), this way expanding the intra- and interdisciplinary exchanges of information.

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