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Comparative analysis of the implementation of Triple Helix Theory in Greece and Hungary and lessons learned from both cases'

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**Comparative analysis of the implementation of Triple Helix Theory
in Greece and Hungary, its impact on the local entrepreneurship and
lessons learned from both cases´**

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ABSTRACT

This paper attempts to examine how the global financial crisis has affected the education sector and more specifically, universities. So, the impact of the financial crisis on universities role and the necessity of Universities' transformation from social institutions in knowledge – based business are the backbone of our research. In this framework, we analyze the need to straighten the collaboration of universities with industries, according to the Triple Helix Theory using the relevant literature.

In the theoretical part of our paper focused on a) The role of the Knowledge / Universities as a leader of Technological change – Knowledge transfer dynamics and its influence on Regional Development, b) the Entrepreneurship education: The role of the Entrepreneurial University, c) Knowledge Spillovers and regional Innovation System (RIS): empirical evidence of some European Regions, d) the current situation in Greek Higher Education, focusing on the new Law for Research Technology and Innovation in Greece (Horizon 2020 program) e) Life Long Learning f) The model of Knowledge Triangle – The Theory of triple Helix

In the empirical part of our paper, we are studying the restructure / reallocation of the Greek Universities and Technological Institutions. Our research methodology, based on the data extracted from targeted questionnaires addressed both to Greek entrepreneurs and Greek universities – Scientific Institutions, attempts to show on one hand how the Universities assess the business environment and their new role in the relevant new institutional framework and on the other hand how the Greek industries evaluate their cooperation with the universities sector and their new role in terms of supporting the local entrepreneurship, as well. The used method for analyzing the results is the one of SPSS (descriptive statistics, correlation – convexity indicators).

In the relevant Hungarian situation our research methodology, based on the data extracted from targeted questionnaires addressed to the Hungarian Higher Education Institutes, also attempts to show how the Universities assess the business environment and their new role in the Knowledge Economy during the current crisis period.

The main findings of both examined case studies, coming by the processing of the statistical data of our scientific researches, reveal that in crisis period the universities can find a new source of funding by “advertising” their main mission, which is the diffusion of Knowledge, and especially, the innovative one that enterprises need, in order to succeed and to overcome the crisis bad effects. Thus, we can observe that the results of our empirical analysis are strongly related to the relevant literature presented in the theoretical part of our paper. Finally, considerable general conclusions, policy proposals and questions/ challenges for further research will be presented at the end of our study.

Keywords: Universities, Triple Helix Theory, Local Entrepreneurship, Endogenous regional growth, cross country cooperation – collaboration in knowledge economy

JEL Codes: O30, O31, O32, O33, O38, R11, R58

Introduction

Universities of a country are the most important factor which is necessary for economic growth. Through the new ideas that will be created through knowledge and specialization, the economy will be helped to develop and find new ways to tackle any problems.

The main objectives of this article are to mention the major role of universities, which are not only the knowledge but the development and growth of an economy according the Triple Helix Theory. The principle of Triple Helix Theory or Knowledge Triangle is to create synergy between research, education and innovation (Kalman A., 2012).

This paper is organized as follows. In the first part which is the theoretical part we made a brief presentation of the Triple Helix Theory and the current situation in Greek higher Education. Especially we present the academic entrepreneurial culture, the relationship of Universities and Industries making a combination of the regional dispersion of Universities and the R&D policies and a brief analysis of the new Law for Research Technology and innovation in Greece. Also we makes reference to the attractiveness of the Economy of Knowledge in regional level (cooperation Universities and Industries), spin offs and international business clusters. Further more, we present and the case study of Hungarian higher Education, mainly focusing on highlighting the developments in Hungarian Lifelong Learning Policies as Means of Implementing the Knowledge Triangle.

In the second part which is the empirical one are presented the results of a questionnaire-based research from local entrepreneurs, banks and universities, in order to examine how the industries evaluate cooperation with a university and how universities evaluate the willing of the private industries to cooperate with them. Also there is a common research in Hungary which is ongoing, but we hope to have interesting results in order to elaborate a comparison analysis between the out coming results from both good practices (i.e. Greek and Hungarian ones).. According the current collected findings it is clear that there is a strong relationship between the results of our survey and the relevant literature, i.e the impact of the current crisis on universities' new role, a more direct role in the economy which reflected in the way universities interact with industries. Finally, the paper ends with the presentation of the research's main conclusions, policy proposals and questions/ challenges for further research

A. Theoretical grounds

Academic entrepreneurial culture

The role of the Knowledge / Universities as a leader of knowledge transfer dynamics and its influence on Regional Development of different cross -country regions

This part draws firstly, on an overview of the role of knowledge as a leader of knowledge transfer dynamics especially via technological change and its impact on regional growth. Thus, here it is briefly presented a more integrated approach to the role of knowledge in technological change, underling the interlinkages between knowledge flows, innovations and technological change, on the one hand and on the other hand the technological change and regional growth. Paul Romer (1990,1993), as it is referred in Runiewicz – Wardyn, M, 2013, was one of the first to test the relationship between endogenous technological change, knowledge spillovers and economic growth. More specifically, it is showed that economic growth depends on both access to new technological ideas and diffusion of these ideas through the productive action <<spillover externalities>>. Moreover, Runiewicz – Wardyn insisted on telling that: *<<despite the growing empirical literature on successful cases of the knowledge / innovation –driven growth of regions, the rate of introduction, adoption and diffusion of new technologies across different parts of the world, is not even, and so the capacity to turn knowledge and innovation into regional growth is different among regions.* In fact, many research findings have provided evidence of the importance of geographical proximity and of the development of geographically concentrated clusters of institutions (in our case universities), in new knowledge creation. So, as it is mentioned in the related to innovation part of our paper, regions play the key role in the innovation story.

The goals of LLL in Higher Education (HE) will inevitably help universities develop research and innovation orientation with local and regional stakeholders, mostly in economic and social aspects, to open access to non-traditional learners and to generate better educational services with effective methods, tools and applicable curricula. Also, lifelong learning (LLL) will assist universities in recognising and developing their third mission towards society, mainly in local and regional contexts.

Universities take part in the promotion of knowledge and skills/competencies most necessary in the labour market, and involve practitioners in education and training, in research and development. Similarly to other EU Member States, the ageing of the population also creates a need for a skills upgrade – in pursuit of enhanced productivity.

In order to maintain and enhance the quality of life in Europe, a constant upgrade of the workforce in terms of knowledge and skills is called for. Especially now, in times of financial instability and uncertain future prospects, focus should be put on finding a way out of the crisis, by building on knowledge and education and on relevant training for the European labour markets. This entails a strong commitment to higher education institutions in lifelong learning.

1. Universities and Knowledge spillovers in Europe – USA : Literature review

The universities spillovers were analyzed in many empirical studies literature. More specifically, the role of university – firms /industries collaboration networks in geographically mediated knowledge spillovers, as it is referred in the book titled <<Knowledge Flows, Technological Change and Regional Growth in the European Union>> of Runiewicz – Wardyn, M, (2013), has been emphasized and evidenced by a number of studies conducted by the following scientists: Jaffe et al. (1993), Jaffe & Trajtenberg (1996), Anselin et al. (1997), Harabi (1997), Smith (1999), Piergiovanni & Santarelli (2001), Acs et al.(2002), Real & Gimeno (2002) and Maurseth & Verspagen (2002) (they suggest the importance of inter-regional Knowledge spillovers. Regarding the European regions, the last mentioned study of Maurseth & Verspagen (2002), showed that knowledge flows are larger within single countries, rather than between regions located in separate countries, as well as within regions sharing the same language but not necessarily belonging to the same country), Bania et al. (1993), Anselin et al (1997), Baptista (2001), Saxenian (2006) and Ponds et al.(2009). In order to show more clearly, how research mobility and social networks can play an important role in all intra-inter and extra –regional knowledge flows in accordance with the universities act as “anchor institutions” by attracting and retaining talented researchers from around the regions of the globe, we are focusing on the most recent of the above mentioned scientific researches which are the ones of Saxenian (2006) and Ponds al.(2009). Saxenian (2006) investigated the process of

outsourcing and subcontracting from many developing regions, in the field of R&D. The results showed that the increasing demand for skilled scientists and rising R&D costs, have forced many firms to expand their research networks to link with many developing and transition economies. Similar scientific fields, have also been discussed by Ponds al.(2009). These analysts, in order to carry out their study, applied, an extended knowledge production function framework, to regions within the Netherlands and found that the impact of academic research on regional innovation is affected not only by geographical proximity but also by social networks, stemming from collaboration networks and global R&D networks. In this concept, the universities role is to provide local firms with access to the best global research available at any given moment. From the presentation of these two scientific works it is obvious that regions with the largest reserves of scientifically and technically trained manpower, good communication infrastructure and high knowledge absorptive goods, take better advantage of these global R&D networks.

Apart from geographical proximity, the innovative activity is also, influenced by the technological proximity between regions. In the previously mentioned scientific work of Runiewicz – Wardyn, M, was also underlined the role of technological relatedness and proximity in universities' knowledge spillovers investigated by some other researches such as Petruzzelli (2009), Brockhoff et al.(1991), Lane and Lubatkin (1998) and Brockhoff & Teichert (1995). Here, indicatively, we are presenting the results of the most recent research, i.e. the one of Petruzzelli (2009). This study tested 796 R&D university-industry collaboration cases in 27 universities located in 12 different European countries. From the findings of this survey it was revealed that innovation value have an inverted, U-shaped relation to partners' technological relatedness. In other words, that seems that in order to increase innovative performance a certain threshold of similar technological competencies between partners are required. However, here it should be pointed out that the aforementioned results might have and a bad effect, if I can say, on innovative performance, since the development of valuable innovations requires dissimilar but complementary sources of knowledge. So, the revealing general idea behind the concept of technological proximity is that in order to generate knowledge spillovers, regions must display similar technological profiles (Runiewicz – Wardyn, M, 2013). In this field, the

empirical literature, regarding the European regions, is pointing out the following results: (a)Paci & Usai (1999), Autant-Bernard (2006): gave evidence of complementary R&d activities both within a region itself and in case of collaboration with neighboring regions.b) Maggioni et al.(2007): came to the same conclusion, but for inter-regional collaborations, stating that the scale of co-patenting activity of 2 regions is positively correlated to the degree of technological similarity of their innovation system. c)Ponds's et al (2007) work indicates that technological proximity and partners' scientific and technological profiles would significantly facilitate inter-individual as well as inter-regional collaborations) (cited in Runiewicz – Wardyn, M, 2013, p.106). In this field, there is also, a recent theoretical and empirical research of Audretsch & Lehmann,2005, Chesbrough et al., 2006 and Acs et al., 2009, (cited in Stough,R et al, 2013, P.46), that have focused on the creation and transmission of knowledge, as the front end of the technical change process and in general, the full commercialization of knowledge. More specifically, in these scientific works, it is underlined that “the transformation of knowledge into economically useful knowledge is a basic element if not the key to the origins and nature of the technical change process”.

To summarize, the results of all the afore mentioned academic research studies, we can say that knowledge spillovers are determined by technological (i.e. technological interest and subject n-specific experiences) and geographic (inter – intra – local regional level) proximity as well. More specifically, as the role of universities in Knowledge spillovers concerns, we have to underlying their key role to hall mechanism. However, it must be indicated that most studies are focusing only on one or a few channels of knowledge diffusion and provide inconclusive results in terms of the impact of university R&D networks on knowledge on knowledge disseminator or social networking between researchers. Thus, there is a need for further research on the nature of knowledge diffusion and transfer activities in the academic community. In all, it is also high priority, for a systematic comparison of present and past empirical evidence for geographically and technologically mediated knowledge spillovers with the changing European Union's spatial patens not only for the sake of measuring the progress of integration of the EU research space but also the on-going process of the hall EU integration and globalization.

2. The role of the entrepreneurial university in regional development :

Literature review –

As we all know, the core activities of the higher education institutions, such as universities, are focused on training. However, this does not invalidate the process of downstream development of other initiatives – missions such as: the promotion of the inclusion of graduate students in the labour market, creation of self employment initiatives (mainly technology based ones, but not necessarily only this kind of activities, although the literature on university-industry technology transfer defines an academic entrepreneur as a university scientist who engages in the commercialization, -which as we will see further on in this unit is one of the two main activities of an entrepreneurial university-of the results of their research, principally by patenting and setting up a business), as well as the creation of solutions that meet the needs of socioeconomic and cultural development of the region where they operate (Adriano, J et al, 2013, P.164).

Generally, academics, in the field of entrepreneurship and innovation studies have long been interested in the entrepreneurial behavior of higher education researchers as well as in the entrepreneurial activities of higher education institutions (Christman et al, 1995; Stuart & Ding, 2006; Rothaermel et al, 2007, cited in Adriano, J et al, 2013, p.163). Besides, in the context of academic entrepreneurship, identification of a commercial opportunity is frequently equated with invention admission to university – technology transfer offices and with academic patenting too (Jensen & Thursby, 2001; Colyvas et al, 2002; Lubango & Pouris, 2007, cited in in Adriano, Jet al, 2013, p.164).

The entrepreneurial universities mission is to contribute to the development to their home regions, by strengthening their engagement with the public, private and third sector. In order to realize this mission their adopt entrepreneurship education programs that have tended to develop to such entrepreneurial university initiatives and consequently, entrepreneurial culture. The university entrepreneurial role and characteristics is reflected in the relevant research literature. Increasing attention towards the role of universities in regional development has resulted in a large number of publications. More specifically, a sizeable body of literature shows a specific focus on academic entrepreneurship. Initially, Etzkowitz in 1989, as it is referred in Etzkowitz et al.2000; Goldstein 2009 (cited in Erdos, K & Varga, A,

2013, p.207), argued that entrepreneurial universities, are the result of a natural evolutionary process of universities' activities as a response of declining resources, increasing competition and requirements set by the knowledge economy. Actually, according to Henrekson & Rosenberg, 2001; Rothaermel, Agung et al 2007 (cited in Feser, E, 2013, p.110), the notion of the entrepreneurial university is the subject of a rapidly expanding literature, with scholarly work accelerating beginning in the 1990s. A good definition of what really an entrepreneurial university is, was given by Jacob et al (2003) (cited in Feser, E, 2013, p.110), where it is referred that: "An entrepreneurial university, is one that has developed a comprehensive internal system for the commercialization and commodification of its knowledge". In the same scientific work are analyzed, as follows, the terms of commercialization and commodification: a) "The commercialization of university knowledge includes the delivery of custom courses, such as executive education, consultancy services, fee-based extension, services, contract research, and even new degree programs designed to capture non-traditional student markets using new teaching approaches, technologies or delivery models (i.e. on- line education, blended online and traditional teaching, offsite programs etc" and b) The commodification " is the effort to catalyze the development of wholly new goods and services from knowledge, innovation and technologies generated from university basic and applied research". Hence, the above exercised activities of commercialization and commodification can be considered by Etzkowitz, Webster et al, 2000; Nelles & Vorley, 2010 (cited in Feser, E, 2013, p.110), as very important mechanisms through which universities and mainly the entrepreneurial ones, influence directly the local, regional and as regards the national economic development. In addition, these mechanisms, according to Arabo & Benneworth, 2007; Jongbloed, Enders et al.2008, as it is referred in Feser, E, 2013: " are elements of universities' broader Third Mission, the idea that universities have a general socioeconomic and public engagement role to play, specifically, in their home regions and with local stakeholders".

More over, the contribution of the entrepreneurial universities to the supporting of local entrepreneurship and regional growth is highlighting in several scientific studies. Indicatively, we are mentioning here the scientific surveys of Nerkar & Shane 2003 and Shane & Venkataraman 2000 (cited in Adriano et al, 2013, p.163), where it is indicated, accordingly that: a) Academic spin-offs are increasingly seen as important

means of enhancing local economic development and encouraging successful researchers to become innovators. Thus enterprises created by academic researchers are crucial contributors to economic development and societal wealth and b) It is important to say that entrepreneurship is concerned with the discovery and exploitation of profitable opportunities.

In all, it is assumed the significant role of the entrepreneurial university, as a driver and pioneer in creating economic welfare in local and regional level.

3. For the entrepreneurial University – Entrepreneurial Education Contribution to the local Entrepreneurship – Endogenous regional growth

SWOT ANALYSIS

As university involvement in academic entrepreneurship has clearly increased over the last 20 years, there is by now a large extant literature on this scientific area. This literature spans both positive and normative dimensions of universities engaging in this context, including the opportunities and treats posed by the entrepreneurial turn (Etzkowitz et al., 2000, Bok, 2003, cited in in Goldstein, H & Rehbogen, A, 2013, p.62), as well as the relevant attitudes, for (Strengths) and against (weaknesses) changed. These attitudes as it is suspected in the relevant literature (Goldstein, H & Rehbogen, A, 2013 and D' Este & Patel, 2007), are more complex, because there are a number of different impacts generated by academic entrepreneurship and their valuations vary among actors.

- **So, in terms of the first part of SWOT Analysis (i.e. strengths – weaknesses) and the second (opportunities – threats) it is pointed out that:**

STRENGTHS:

- Universities may actually contribute to the local economy by social interactions between firms and university faculty in a region. Something that is well verified by the relevant literature. More specifically, Breschi and Lissoni (2001) (cited in *Runiewicz – Wardyn, M, 2013, p.15*), *argue that knowledge doesn't automatically spill over into a local economy, but is diffused in communities of practitioners through social networks.*

- Academic inventors, bring not only their technological knowledge, but also their social capital contacts which enable companies to build networks with other scientists and research laboratories (Murray, 2004). In the said collaboration is also very important the role of graduates in knowledge dissemination but in a more informal way (e.g. through public meetings, conferences, consulting and generally in a way of information exchange)(Formahl et al., 2005).
- The entrepreneurial university integrates society's interests of economic growth as a mission within the HEL, alongside research and education (Etzkowitz, 2004, cited in Ljunggren. M & Westlund, H,2013, p.87).
- Many university faculties may believe that technology – based start-ups by university staff are appropriate due to the fact that they can enhance the innovativeness and hence the competitiveness of the regional economy.
- From studies that use a broader concept of academic entrepreneurship and suggest the behavior of some universities to adopt and adjust to an altered set of external demands and even to take advantage of new opportunities such as greater autonomy, does not necessarily imply erosion of the hallmark of institutions of higher education as places of open and free inquiry (Clark 1998,2001 and Davies, 2001, cited in Goldstein, H & Rehbogen, A, 2013, p.62).
- The potential benefits of mutually leveraging entrepreneurship education and commercial engagement are considerable. Characteristic relevant example is the University of Manchester case, as it is referred in Feser,E, 2013, p.112, where it is suggested that research – intensive universities wishing to bring entrepreneurship education and knowledge commercialization and commoditization, into effective and beneficial alignment, that is in a broader model of the entrepreneurial university.

WEACKNESSES:

- There is a very limited evidence for the role of social interactions in university – industry local knowledge spillovers, which leaves a question mark behind

the validity of spillovers from universities and their impact on local universities and consequently on local economy and society.

- The role that entrepreneurship education can play in supporting technology transfer and commercialization has received very little attention (Feser, E, 2013, p.111).
- Universities' aims in the commercialization and commodification of knowledge and in essence the commercial engagement component of their third mission, have been only rarely identified by scholars, as creating opportunities to leverage or strengthen the delivery of entrepreneurship education(Feser, E, 2013, p.111).
- Universities and generally HELs (Higher Education Links Scheme) , usually, are permeated with researchers' strong tradition of individualism and independence which complicates building of a strong academic entrepreneurship and bothers the implementation of Triple Helix Theory. In addition, policy makers that attempt to increase the university – industry collaboration in terms of partnership, need to contemplate how the policies may be most effective, in order to facilitate the transfer of knowledge, technology and skills from the scientific institution to the company partner.
- Even and the mentioned above, as a strength, successful paradigm of Manchester university, that face significant challenges, requires determined strategies to overcome. Hence, we can suggest that since little can be generalized to other university situation from a single case or other separate relevant case studies, the challenges and opportunities identified in these situations should be viewed as hypotheses requiring subsequent research.
- Most difficulties occur in terms of balancing between the roles of politics/government and preservation of HEI autonomy in order to make them explore new avenues for research, development and innovation (e.g. the Science Building in Pécs will generate more research, resulting in quality education).

- A rather apparent difficulty is the lack of funds and the low capacities of HEIs in innovation, together with a somewhat limited level of mobility of both teaching staff and students.

OPPORTUNITIES:

- Participation in global production networks (for example high- tech industries and high – tech knowledge intensive services) via outsourcing and offshoring activities , can be viewed as an opportunity for the E.U. regions to upgrade their local productive and innovation systems and move towards higher added value activities.
- The opportunity of a successful participation of regions in global production networks depends on a efficient appropriate innovation management and organization training. In this framework, the primary aim of regional economic policy in an enlarged Europe should be the promotion of tertiary education and lifelong learning, especially, when it comes to mastering science – intensive technology education.
- The recent EU regional policy based on the Lisbon and Europe 2020 Strategies of Smart Growth is expected to emphasize the importance of targeted interventions to regional innovation processes, matching the support of knowledge excellence, R&D, and technological innovation with the local industrial dimension and the evolutionary path dependence of each technological field (*Runiewicz – Wardyn, M, 2013*).
- Ideally, if knowledge absorption and transfer capacities are embodied mainly in the government and university R&D in the European regions, public R&D policy, can stimulate knowledge spillovers and disseminate them within the productive system by promoting business – university collaborative links (i.e. via technology transfer agreements, sponsored research, informal exchanges, and social networks).
- In reliance to the above, economic policy to foster regional competitive advantages should consider the regions’ R&D policies in connection with

both global competition and regional industrial and knowledge basis(*Runiewicz – Wardyn, M, 2013*).

THREATS:

- The above mentioned opportunities can be transformed into threats in case that regions doesn't balance properly higher education and R&D priorities and place emphasis on the aforementioned strategic fields.
- University faculty may perceive that technology – based start-ups by university staff can lead to thorny conflicts of interest or dilute the quality of more basic, scholarly research.
- **One of the most oft- discussed potential bad effects of the entrepreneurial turn of the universities, is whether it has led to an erosion of the norms of open science. Although according to Shibayama (2010) (cited in Goldstein, H & Rehbogen, A, 2013, p.63), it is leaving open the possibility that academic entrepreneurship can be promoted by universities without compromising the norms of open science.**

4. Academic Entrepreneurial Culture under the E.U's Framework

Collaboration between Universities, Higher Education Institutions (HELs), industries and probably public sector, i.e. the implementation of Triple Helix Theory, is of significant importance in the development of economic and more specifically higher educational policy, in E.U. If we would like to present, very briefly, the E.U's relevant policy, we should focus, initially, on the European Union's research and framework programs which basically aimed to strengthen the scientific and technological bases of European industry and make it more competitive at the international level (Luukkonen, 1998, cited in Ljunggren, M & Westlund, H., 2013, p.85). In addition, in the E.U's Lisbon Strategy 2000 and in the Bologna process is highlighted the aim of modernizing the higher education system, mainly by establishing sustainable partnerships between HELs and business sector (COM, 2006). Recently, entrepreneurship education is reinforced as a priority in E.U's Europe 2020 strategy, which calls on member states to ensure a supply of science,

maths and engineering graduates and to focus school curricula on creativity, innovation and entrepreneurship (European Commission, 2010).

5. Comparative analysis, between US and Europe

The number of patents taken over academic research results, has been growing increasingly over the last 20 years, both in U.S. and in Europe. However, the US and Europe, differ in the attribution of property over academic patents. While, more than 60% of such patents in the US are owned by universities, in Europe this percentage is only around 10%. Conversely, over 60% of European academic patents are owned by business companies, while the same percentage for the US is estimated at no more than 25%. At least, till recently, the issue of commercializing academic patents was by and large felt only by US university administrators, their European counterparts having solved the problem by leaving all the initiatives in their professors' hands and from those hands into business companies' hands. In the US, we have several successful examples of superstar scientists that had raised huge amounts of capital in the market by selling the equity of their start-ups, that impressed public opinion and seemed to suggest that academia and industry could join their effort to leverage a new generation of high – tech companies, characterized by a strong research focus. So, the business angels and venture capitalists knocked on the universities doors', in search not only of promising business ideas, but also of qualified consultants' and peers' opinions to evaluate and manage the strategic choices of their financial portfolios. Thus, the academic spin – offs became a sort of advanced solution to technology transfer, that would help in finding viable commercialization strategies to growing patent portfolios (Franklin et al., 2001, cited in Franzoni and Lissoni, 2009, p.174). Furthermore, in a survey of Di Gregorio and Shane (2003) it was found that spin-off companies from top universities were more likely to attract venture capitals than those from less prestigious institutions, whereas in an other survey of Franklin et al. (2001), of key competitive factors, which conducted in UK among technology managers, reported that the researchers' reputation was ranked immediately after their scientific preparation and that this was especially true for higher performing and more experienced universities. This can be especially true within the contexts in which social rules discourage for-profit activities, in which case, only older and highly reputed scientists may dare to undergo non-traditional academic pathways (Stuart and

Ding, 2004, cited in Franzoni and Lissoni, 2009, p.178). Whereas, for younger scientists, as newly qualified PhD students and research assistants, the founding of a venture may rather become appealing as a viable strategy to exit academia ((Franklin et al., 2001, Roberts, 1991, cited in Franzoni and Lissoni, 2009, p.179). Additionally, when the goals of science and market diverge, the cost of convincing good scientists to take part in commercial activities increases and technology managers may end up with only untalented scientists.

From the above mentioned it is clear that the comparative advantage of the US academic system and consequently its much larger, than the European one, success in fostering academic entrepreneurship can be explained as a mere reflection of the US's large success in supporting scientific entrepreneurship as such. In turn, this success depends on the long – standing institutional features of the various national university systems. These institutional features, do not simply affect the intensity of patenting and firm creation activities. Generally, they explain to what extent commercial activities may or may not help scientific entrepreneurs to progress in their careers. Among those institutional features, as university autonomy, personnel mobility and the principal investigator principle stand out as the most prominent. On the other hand, patent based and spin off based technology transfer is by and last the product of a specific institutional history, that of the US research universities, where these features have been prominent. On the contrary, every introduction of those issues within the various European university systems should require first and foremost strong reflections and adjustments that take into account institutional, organizational and environmental characteristics of academic research at the national level (Franzoni and Lissoni, 2009, p.183).

B. EU 2020 - Horizon

1. Innovation

In order for a business to develop and ensure the viability should become more competitive. However, the advantage of any business is not focused only to reduce costs but has to do with innovation. **What we mean by the term innovation in an enterprise? *Innovation is the introduction and implementation of new ideas that will lead business in progress and to development, having an advantage over***

competitors. According to Schumpeter, innovation refers to new products, new production methods, new sources of supply in the exploration of new markets and new method of organizing a business. Businesses can develop innovative actions or to develop through cooperation with universities or Scientific Institutions. This can be achieved with the help of the public sector, which will encourage the cooperation between business and universities. The reason the public sector and especially local - regional - authorities should contribute in this way, is that an innovative company by operating will help local entrepreneurship and through it, enhancing endogenous economic growth. Ideally, regions, rather than states, with their knowledge base, their innovative firms and institutional interlinkages, should be the key contributors to innovation (Keeble & Wilkinson, 2000; Breshnaham & Gambardella, 2004, cited in Runiewicz – Wardyn, M, 2013). Besides, this is the main goal of the E.U Strategy, for 2020, i.e., the economic growth, basing on Knowledge and Innovation. And in order to achieve this goal it is high priority to take measures for the improvement of the training and the whole educational system, the reinforcement of R&D and Knowledge networks. Available at: <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>

2. R & D in Greece – Law on Research, Technological Development and Innovation

On 5 January 2012, the Ministry of Education launched a public consultation for the new Law on Research, Technological Development and Innovation. The new Law tries to make the public, and the private sector to contribute effectively to the country's efforts to deal the current needs and challenges and to create a unique national and European research area.

The aim is to have the necessary conditions to strengthen the area of research, technological development and innovation. The main goal is to simplify the procedures for funding to facilitate the actions of technological actors and contribute to the formulation and implementation of a National Strategy for Research, Technological Development and Innovation. During the process of consultation, which ended on 07 February 2012, there was many proposals and recommendations (206 comments) from a total of 17 entities and 79 individuals.

Below we cited some of the major points from the report of the public consultation on the project law:

- The majority of participants consider that the coordination of agencies who are planning the research policy is very important endeavor. However, there is skepticism about whether they can actually achieve a workable and effective coordination
- A great advantage of this project lies on the institution of the National Register Research Infrastructure and the accessibility through public and private sector. Particular attention should however be paid to safeguarding the rights of publication of research results.
- Very positive response is obtained from the research community, the creation of the Office of Technology Transfer under the umbrella of the general Secretariat for Research and Technology (GSRT). In this context, the proposal was to create technology transfer offices in all research institutions which will be cooperated and referred to the Office of the General Secretariat.
- The state should strengthen young researchers who wish to engage in the exploitation of their research results, via clear rules, continuous updating and adopting flexible and less costly procedures, vesting copyright.
- This new institution is expecting to provide businesses real incentives to achieve private sector partnerships with the single area of research and innovation.
- It is also proposed the private sector participation in the evaluation of research centers.

However the Ministry of Education re-issued public consultation for the new law during period 12 to 31 December 2013 but have not yet announced the results of procedure. In January 2014 there was the presentation of the European program Horizon 2020 at a special event of the Greek European Presidency in order to mention the importance.

In the official web pages of the European Commission we read: “Horizon 2020 is the biggest EU Research and Innovation program ever with nearly €80 billion of funding

available over 7 years (2014-2020) – in addition to private investment that this money will attract. It promises more breakthroughs, discoveries and world-firsts by taking great ideas from the lab to market.”

Ministry of Education presented the new Law on the restructuring research in Greece is expected to be one of the key tools to exploit these resources. The main objective is to link research with production and spur innovation, as stated emphatically General Secretary for Research and Technology Ch . Vasilakos . In this direction simplifies the funding provided incentives for private sector entities that invest in it (exemptions) and plotted strategy for the critical areas of research horizon the next seven years to coordinate the country with European funding

However the main ideas of this new project are summarizing as follows

- Extends the composition of the National Council for Research, Technology and Innovation, which now consists of 15 members , of which nine (9) will be selected through a special process evaluation , two (2) will come from the business sector and two (2) from the Regional Scientific Councils.
- Upgraded the role of the Regions in the design and implementation of RTDI policy with the institutionalization of the Regional Scientific Advisor (RSA) .
- Insert the institution of the Association for Research and Innovation in all ministries
- Upgraded the role and capabilities of the researcher through a series of provisions relating to the mobility of researchers and their participation in research projects other stakeholders internal and external
- Give incentives for coordinated cooperation between research centers, Universities and industry to implement important projects R&I for the Economy
- Motivating the utilization of research results or to safeguard them with patents or for further industrial exploitation.

C. Lifelong Learning

In the 2001 Prague meeting on the creation of a higher educational region in Europe lifelong learning came to the forefront for the first time.

The main reason of the student revolt of 1968 was that - as a consequence of democratising education - the number of students increased so fast that the improvement of the conditions in higher education was not potent enough to keep pace with. Therefore the standards of quality and service began to fall steeply. The students at Lund University took the minister of education hostage until a new radical reform was promised. Thus the 1968 student revolt achieved a reform of higher education which included the program of the so-called "recurrent education". This lay the foundations for the institutional background to formal and non-formal education comprising lifelong learning and its vertical integration with the socio-economic systems. This process was supported by the OECD up to the mid-1990s.

Recurrent education, however, did not pay attention to "informal education" and its horizontal integration with formal and non-formal education and with non-educational activities". This shortcoming was eliminated by the European Council's programme of "permanent education" inspired by andragogy. The two have been conjoined in Lifelong Learning (LLL). This "commercial trick" had some benefit, for instance in the UK Lifelong Education did not attract any attention on behalf of the political groups, while LLL saw an incredible institutional development in the UK in the late 1990s.

The following chart shows the main parameters this type of system has:

The program (concept) of survival for the continuous education

UNO / UNESCO: Lifelong Education

1. The philosophical framework of the objectives

1.1. Tendency, way of approach philosophy of education, scientific humanism

1.2. Main orientation of values, scale of values fostering the intellectual development; humanistic scale of values

1.3. Perceiving the human being, understanding humans self-realization guided by the desire for continuous development

1.4. The interpretation of equality to have equal opportunities and prospect for success; individualized methodology, democratic education and society in order that everybody should be able to evolve his/her absolute aptitude as a human being

2. Scope: It is global. Emphasis on responsibility on a global scale, problems related to the Third World, furthermore educating to achieve peace and education on raising environmental concern as well as international cooperation.

3. Proposal

3.1. General level of planning political level; formulation of long-term objectives and principles

3.2. Direction of concretizing concretization of general principles, mainly tends towards to the development of educational content

4. Administrative system

4.1. Relation to the administrative system general opposition against bureaucracy, although the relation to central administration is not made clear.

4.2. System-integration The horizontal and vertical integration of formal, non-formal and informal education wants control to a certain degree

5. Relation to the compulsory education: As a prerequisite of the continuous learning, the qualitative amendment of school education is pronounced. The educational activities both inside and outside of school should be integrated into a flexible system.

6. Relation to adult education It should develop on its own tradition, but as an integral part of the educational system that is taken as an organic whole. The continuous and overall development of adults is comprehensive and requires free investigation, exploration and learning.

7. Relation of education to social change

7.1. The main objective of the education: The main objective of the education is the individual: he/she should be able to control and manage the changes. The educational reform is a part of the change related to social scale of values and to structure.

7.2. Society of the future (future prospects) Human centred, universally solid (post-modern) learning society.

(Alanen, Aulis: Lifelong Education — Permanent — Education — Recurrent Education. Adult Education In Finland, Vol.19 No 2 1982 pp36-37.)

The above described standpoints should be examined by a research in connection with the LLL policy of EU.

The challenges

It is evident that Lifelong Education calls out for making teaching to be both learner and learning centred. This is still regarded as a topical issue. Furthermore, it is absolutely essential to restore learning and the organic unity of life (either vertical or horizontal). However, it is just a partial objective and it is neither a new claim.

The new factor in education policy today is that the state guarantees every citizen's right of access to learning, which means that adults also have the right to study during any stage of their life (Kalman, A,2012) This means that the inequality inherent in the system – that legitimises the reproduction of social inequalities as “natural selection” - should be removed.

Nonetheless, learning could not at all take place in “certificate providing” schools. “Natural curiosity and inquiry” – providing the inner motivation for learning – is punished by the educational factory as it is taken as disruptive behaviour.

Natural learning does not take place in the school but in a continuous interaction between the individual and the environment. This process of interaction will be structured as a set of repeated actions of the individual.

In every-day life, however, learning means actions initiated with the aim of learning, such as school work, studies, formal and non-formal learning.

As a consequence, there is a classification of activities in everyday usage, namely: “learning activities” and “non-learning activities”. This is what is reflected in certain propaganda communications and slogans, e.g. “from learning into the world of work”. This means that an unnaturally high achievement is expected from the learning activities in school, which is an area unnaturally designated and excluded from the quotidian reality. In school, higher learning benefit is expected from an artificially separated and constructed system of activities instead of the various learning activities as a natural basis of learning.

The so called trend of cultural pedagogy constructed this artificial system of activities by examining and imitating cultural activities that are far cry from everyday life, such as reading-writing, foreign languages, arts, sciences and philosophy.

In contrary to cultural pedagogy, the “romantic pedagogy” took sides with children and gives preference to the self-state of “natural child” instead of “adaptive child” or “little professor”.

“Development education” is superior to the conflicts of unilateral viewpoints, because it replaces the contrast (dualism) of the individual and the environment; the subjective and objective with the adoption of such dualities as external-inner, subjective-objective, physical-mental, personal-collective etc and with taking their interaction into the focus. Certainly, it does not narrow down the environment either to libraries or to forests loud by twittering birds. Furthermore, as for in the interactions between the individual and environment it regards the personal behaviour as a driving motor for the development taking place during human actions. In the simple sense that the one who does not do anything will grow old as well, but more active the person’s life is the more the process of growing old or ageing will become the process of lifelong continuous development.

Natural (informal) learning is viewed with suspicion from the schools separated from real life. It may have numerous reasons, but the most important is that by definition one can learn only good things in schools while in real life one can learn both good and bad things, too – or according to the more pessimistic ones only bad things can be acquired. There can be several interpretations of good in the sense of pedagogy and andragogy, but the most fundamental is the relation of learning to the individual

development and social development. Learning that serves the individual and social development is considered to be good, or at least does not spoil the future perspectives. Oliver Twist was taught to steal in a perfect way, although herewith his future opportunities and chances for development were drastically limited. The one who makes himself master of cheating in the university in the short-term or from time to time can be more successful than his fellows, but the chance for lifelong development and its soundness is very small.

The education policy of Lifelong Education (UNESCO) primarily focuses on the widening of the meaning of education which has been unnaturally narrowed down to formal (school) learning, together with all its practical consequences. As opposed to the rapidly widespread misunderstanding it is not about that society should transform into being a school, however its reverse is also not valid, i.e. deschooling of the society. It essentially means an amendment that is the broadening of the horizon of education, which in this way will include non-formal as well as informal learning in addition to formal learning.

As a result of the broadening of the definition all the support activities of education (counselling, development, assessment and evaluation, as well as organisation, management and financing, among others) should also include all types of learning. This, on the one hand will lead to the transformation of the traditional roles in the school.

On the other hand, all other life activities should be organised in a way that they could enable and inspire everybody to learn and develop, or at least not to eliminate learning or make it superfluous. The main function of adult education is not individual therapy but to enhance the transformation and development of the human being's relationships, activities and practices as the "informal" reproduction of the individual takes place through these everyday activities. It does make a difference whether this reproduction – even of themselves and each other - occurs "in a simple way" or "in a tightened way", let it be "in an enhanced way".

It is not an easy task for the reform policy even in the case of formal learning to launch a comprehensive change in the institution system. To increase the developmental effect of both work and life seemed to be impossible or utopistic even

a few decades ago regarding the activities outside the school. Since educational policy had no impact at all on the decision makers of economic life, political arena, cultural life and media etc. Yet, today the practical everyday vocabulary consists of words like informational society, e-Europe, knowledge-based society, human resource development, knowledge management, family-friendly workplace, human and social capital, emotional intelligence, learning organisation as well as reflective practitioner, common actions and communities of practice, partnerships and the learning society and so on. These signal the actual need for learning and development being constantly present in the world of labour as well as other areas of society. Leaders of prosperous multinational companies explain with ease in the media that the ground of their stable competitiveness is their considerable and continuous investment into their human and social resources. Beside the quality improvement logo, many companies proudly wear the logo of being a human investor, too.

Lifelong Education aimed at widening the scope of social support and recognition to all types of learning activities regardless of organisation, age and place or institution. Since formal (and non-formal) learning is just the top of the iceberg whose predominating part consists of the invisible natural (informal) learning.

In reality, “non-learning activities” are activities with “non-learning purpose” at their best or they considered to be “simply” indirect learning activities since learning is an inevitable concomitant of every human activity and every natural, social and historical interaction. Learning is inseparable from human activities. Intended learning and its determined organisation, management, formalization just improves or enhances the frequency, intensity, efficiency, quality of learning, and so on. However, means-end rational kind of management and formalization of learning can be just indirectly aimed at learning as such, because learning itself is an inner process of changing. (In itself, the external behavioural change of the individual can be interpreted as a temporarily applied tactics.). The education directly can be aimed at the activity. In the case of schools it aims at activities with learning purposes. Learning is just an indirect objective, though it is to be realized in all probabilities. The indirect management of learning takes place by selecting and forming environments, contexts, activities and system of activities with presumably great learning yield.

From this point of view, the origin of higher education and moreover of the top-down system of education is the university itself which can be considered as an archetype for the academic practice. In fact, at the outset, it was rather a knowledge-producing institution than a knowledge-applying one. The English connotation – i.e. academic – still preserves this feature. In general, instructors of a new “subject” are taught by no one but they clarify the teachable knowledge and transfer it on the bases of their own practice or research. “Taught teachers” succeeding this first generation are not more than simple multipliers. Scientific disciplines, fields of education and subjects developed parallel with each other.

Nowadays, at the same time, the bottom up education system – developing from the practical educational needs – has also reached the level of higher education. In fact, the number of the years spent studying in these colleges belonging to this range is almost five years, which is an established fact in the case of universities. Therefore neither the lines of traditional academic (scientific nature) nor of the college (practical nature) should be merged – as it started on the secondary level by “bridging the gap” of vocational secondary schools to secondary grammar schools – but they both should be organized according to 3+2 division of education. This would contribute to the end of the mass-like, but at the same time illusive demand for the academic (scientific) education. However, the only motivation for this is the different level of compensation categories related to the university or college degree and the demand for earning the necessary certificates for this. On the condition that they would consider the difference between the university and college education not as a qualitative one but only as a functional difference – as it historically developed – then the universities should not be feared of the “massification” and should not compel students – who never have inclination and aptitude - for academic (theoretical) pseudo accomplishment. It is also a superstition that just the “better ones” apply for universities and the less talented attend colleges. This is just an illusion that can exist as long as the measuring criteria are academically biased. So the majority of students enter a competition that is unfamiliar from their interest and aptitude. This is akin to if allegedly all sportsmen and not just the swimmers should compete with each other at the Olympic Games.

Certainly the labels of either the “university” or “college” should not be necessarily attached to institutions - or not at all - but rather to programmes. As universities may have college faculties then colleges may offer academic programmes as well, since the research of various fields of study and the advanced stage and development of the different disciplines are similarly at different levels. Moreover, the European or global division of labour makes it unnecessary to have a department of every discipline in every small country.

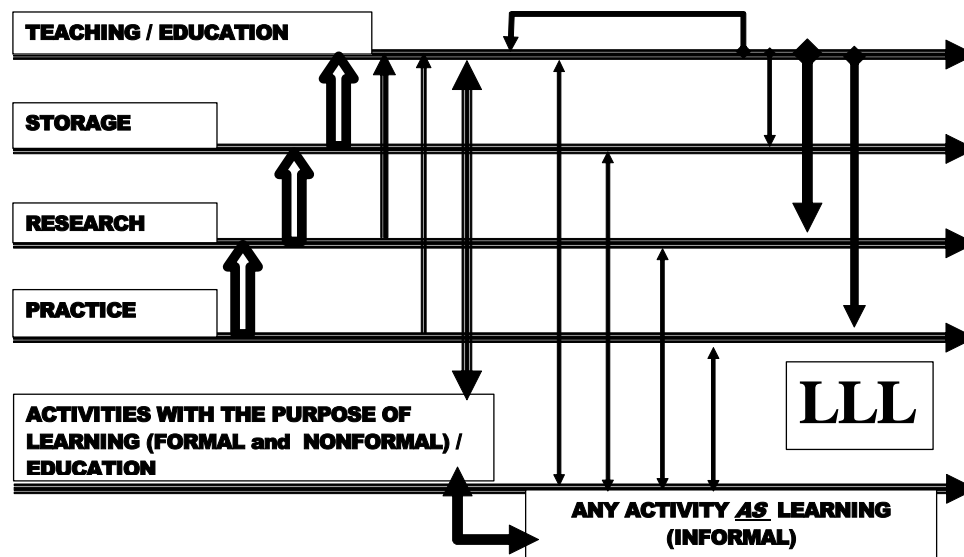
As a consequence of these and other reasons, the ambitions – whether they are ruled by everyday market demands or narrow-minded individual interests withdrawn behind the shield of institutional anatomy - leaving the nearly thousand years old history of higher education out of consideration cannot be dominant in defining the functions of higher education (university, college). To analyse the functions of higher education primarily in relation to the market demands is not just profane but also simply ridiculous. It is at least ridiculous as for example a blindfolded player who is trying to solve a jigsaw puzzle of an elephant. Nevertheless, to merchandise the free capacities seems to be logical from the side of the writing desk. However, in the real world it occurs every time that more capacity is made available than necessary in order to expand the directly profitable (well-paid) services. This only can be supported if the government subsidies are divided in a quasi-market form among the citizens, thus state-funded students appear as quasi consumers. But the task of comparative researches is to verify scientifically the actual realization of the so-called best practices. Anyone can elaborate on the functions of higher education, and then it would result in undervaluing the research made on higher education or – if it is more understandable nowadays – it would result in falling short of the profits of investments invested into the research of higher education provided the decisions are made without the scientific conversation of the researchers of higher education. Defining the institutional function of the university being widespread in time and space is not a matter of voluntary decision, but it requires scientific analysis. Even the Parliament has the right to make decisions of certain universities but it has no right to question what can be considered to be a university.

Before arriving at an academic definition of the functions of higher education we cannot define the adult educational functions of higher education either. We can only outline certain objectives and tasks. However, these are arguable if it is needed.

Even the label of target group is equally arguable, because it is not justified by any of the rational arguments that students can be divided as adults taking the adult education act into effect while others are not considered to be adults although members of both groups are of full age. To enhance further the scope of target group or rather the stakeholders, today all higher education institutions keep their would-be or potential students in their horizon besides present ones. Open University defines the scope of potential students in a broadened way in relation to the traditional definition. It does not define requirements for admission but within the Open University everybody can reach the desired level.

(How? If you are interested, for details please visit some of the B.A. lectures in andragogy of one of the higher education institutions – virtually and in English.)

If we want to define the target group of higher education in the spirit of LLL, we can say: higher education for everyone. Why? Because it is a basic human right. Or more specifically: to give sense to the twelve years spent in public education. The top-down system of education will only make sense at the lowest level if it provides access to the highest one and finally the degree and the activity whose thorough grounding is justified by the degree. The following diagram demonstrates this concept as a reminder of the conversations held about the functions of higher education and adult education:



The broad arrows signal the fairly independent activities, interaction is shown by rectangular arrows, while mutual interaction is shown by two-way arrows.

Learning (may) last lifelong, although it is not a unified process especially if we think of LLL. Learning is attached to two merely different groups of activity. On the one hand, it is divided into formal and non-formal activities with learning purposes and on the other hand, to activities with non-learning purpose and to activities with no means-end rational purpose. This second kind of learning is summarized by informal learning that also can be called as natural learning, as, in case of sufficient conditions, it is an inevitable concomitant of every activity. The activities that are being analysed as learning are either formal activities or non-formal ones. Unfortunately, if we talk about learning, teaching, and education we repeatedly realize that the vocabulary is developed with regard to the school. As for formal education we register for and participate in learning activities. Whereas informal learning take place while we – according to our intentions - take part in activities organized by different objectives. Lifelong formal learning can occur, that is we can return to the educational system more than once during our life, while informal learning begins with our birth (or perhaps even earlier) and only ends with our death, while it takes place with very inconstant intensity or it is just undetected.

The figure shows that teaching covers learning in its full length. To be more precise the variant and supplement of teaching within schools is befitting with supporting

informal learning: counselling, training, facilitating, mentorship, learning development, learning support, management, evaluation, recognition, rewarding and so on. University education extracts from the process of accumulation (retrieval, communications, informatics etc). New knowledge is accumulated onto the input of storage by research. However, looking back at the history of universities it is evident that research derived from university professions (theology, medical treatment, jurisprudence etc). Doctors and nurses even nowadays can think of both research and education that would serve the therapeutic and preventing work.

The main flow in the figure indicates how knowledge gradually flows from practice towards teaching and from teaching towards learning. The narrower lines signal all other influences, which sometimes are more effective than the mainstream influence. As for an example, everybody who teaches knows well that the teaching material is acquired the best during teaching. Many of the teachers frequently apply this as a deliberate method by the means of reviews done by students or “peer-tutoring” or “peer-review” etc.

University traditionally is a knowledge accumulative and knowledge disseminative practice. The students are our future colleagues who will take over and pass on the knowledge through generations and centuries. This is the essential meaning of university. However, there will only be a few who turn towards research, while others will be disseminators of knowledge, and others again will “only” put their knowledge into practice but at the meantime are not engaged with the enhancement and dissemination of knowledge. These three groups – bailing out from the same resource, but with different fields of interest - require three different types of adult education. In addition to these groups there are several others with different interests who turn to universities for what they can offer. They, however, do not need special treatment.

D. The model of Knowledge Triangle / The Theory of «triple helix» in the knowledge economy:

1. The new role of universities

The main issue in this topic, which the Coeur of our essay / lecture, is to show how universities are transformed from social institutions into knowledge business under

the framework of the new socioeconomic environment. As, all know, it is true that universities and especially the European ones, are moving from a nationally focused and secure environment into a global and regional, uncertain future, where the selection rules and generally environment are more difficult to predict. In this view, it is high priority for university leaders to consider seriously, by using a SWOT ANALYSIS, method, the strengths and weaknesses/positive – negative implications but also the opportunities – threats of this transformation for what each specific university does, as well as the implications for the role of societal institutions within society. In other words, we can see the whole competitive regime, as a new theater performance, or a new competitive game, with new winners and rules that the actors / players are only beginning to understand.

From the above mentioned we can extrapolate, that innovation, flexibility, strategy and responding to new opportunities are the key factors, in order European universities manage to face the difficult future and for achieving this goal they have to keep learning to compete.

In this point we have to pose a very crucial rhetoric question, which is << whether or not we want competition in the European universities that is increasingly similar to the one of the firms and in case that the answer is affirmative, what are the implications of changing from social institutions to knowledge business?

2. The challenge of implementing the Triple Helix Theory

In the past 10 years, the literature of the economics of science and innovation has emphasized the importance of interactions between the different partners in scientific and technical production. These partners are: government higher education or research institutions, firms with their own R&D capacities, and organizations involved in funding and intermediation between this different world. This articulation has been systematized and popularized by current of thinking involving scientists, managers and public authorities, known as the Triple Helix (Etzkowitz and Leyderstorff, 1997,2000, cited in Viale and Etzkowitz, 2010).). In this model, the co-production of knowledge is situated at the intersection of 3 interacting institutional spheres: a) universities and research organizations, b) industries and c) public authorities / government, specifically through their specialized agencies.

In relevance to the above, we present the theory << **triple helix**>> or **knowledge triangle**, which place the operation of the university in Knowledge – based economy, in regional environment, focusing on the cooperation between universities, enterprises and public regional schemes and trying to answer the crucial question, whether by its implementation is possible the development of technology and innovation to be promoted via the Knowledge – based economy (Leydesdorff-Meyer, 2003), (Etzkowitz-Leydesdorff 2000, Chatterton-Goddard, 2000, Danell-Persson 2003, Doutriaux, 2003, Etzkowitz, 2003, Etzkowitz-Leydesdorff, 2003, Leydesdorff-Meyer 2003, Belkhdja-Landry 2007, Glanzel-Schlemmer 2007, Leydesdorff-Meyer 2007, Papagiannidis-Li-Etzkowitz-Clouser2009).

Many studies for specific countries use the aforementioned model in order to show these interactions (Schutte, 1999, Klofsten-Jones Evans-Scharberg 1999, Kaukonen-Nieminen 1999). (see relevant figure, 1)

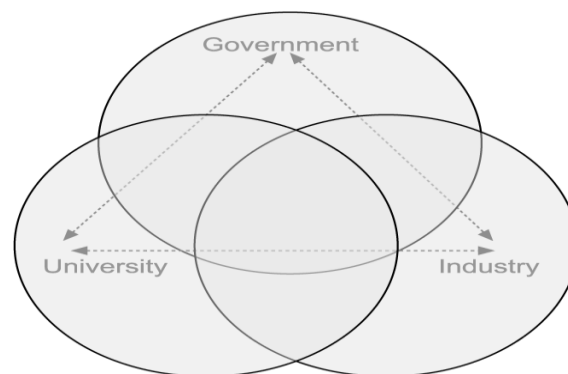
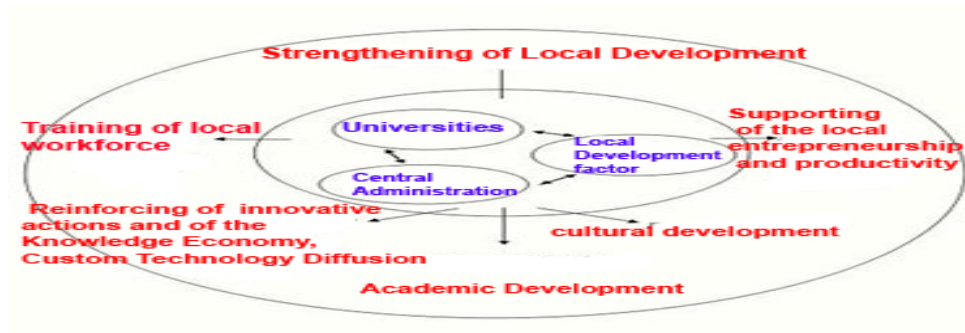


Figure 1

(Etzkowitz-Leydesdorff, 1999)

In a recent article (Konsolas, N.-Papadaskalopoulos, A., Christofakis, M., 2010), (cited in Giannopoulos, P., 2010), analysed the structure and the operation of a university and its relation in terms of effective cooperation with the regional and local development. In other words, they posed the question whether the university can play the role of the promoting activity and to positively contribute in the integrated regional development or not (see the adjustment theory of triple helix in the figure, mentioned bellow).



(Konsolas, N.-Papadaskalopoulos, A., Christofakis, M., 2010)

From the above figure, it's easy to conclude, that the public section should develop a competitive higher education system that will lead on the local development. On the other hand, companies, which have as a main purpose the development, have every reason to be helped by universities centers in order to achieve their goals. Universities providing their services to businesses, despite their role for Knowledge, they find new sources of funding. So the three factors seem to having different purposes they can achieve the development through not only cooperation but collaboration as well. In order to achieve these synergies, we can use the Academic Entrepreneurship Framework, which is shown in the Figure bellow. This Framework, as it is described in Adriano, J et al, 2013, results from an integrated view of the roles that different players in a socioeconomic system should develop, for realizing the above mentioned goal.

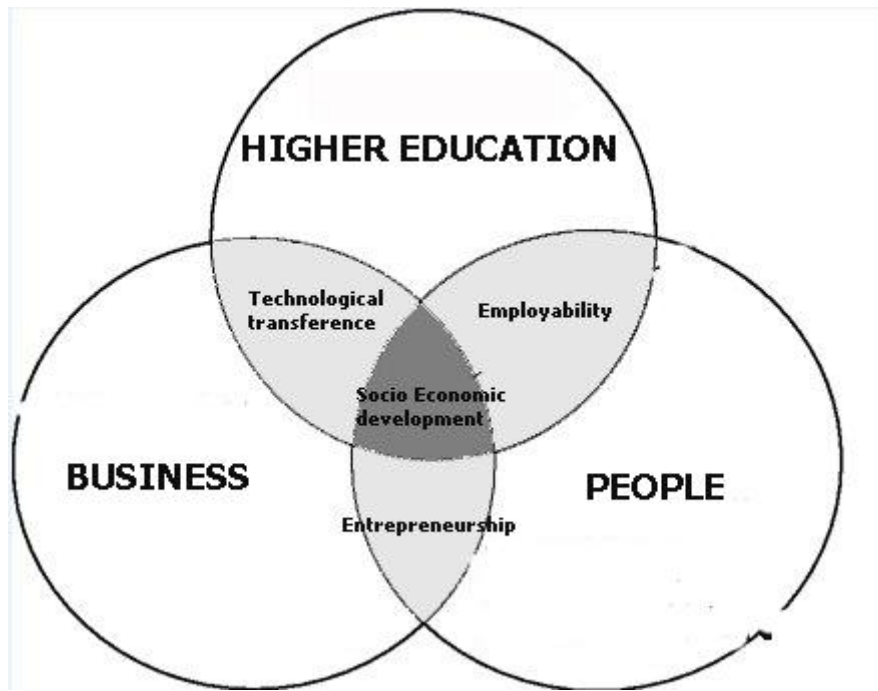


Figure 2 (Adriano, J et al, 2013)

The above mentioned figure illustrates, the academic entrepreneurship that may occur between individuals or groups of individuals, acting independently or as part of a university society, which creates new organizations or instigate renewal or innovation within the university or outside the university system, through science and technology parks, university spin offs, or research centers (Brennan & MacGowan, 2006, cited in Adriano, J et al, 2013, p.166).

3. Knowledge Networks

Triple - Helix relations involve communications among systems, that have distinctive codes and languages. According to Luna and Velasco survey, cited in Viale and Edzkowitz, 2010, there are 2 types of network performance, one functional and one organizational, respectively related to the practical results of collaboration and the conditions for the production of such results. The academy – industry relations or in other words the knowledge networks, conceived as complex problem solving structures devoted to the generation and diffusion of knowledge through the establishment of collaborative links, between academy and industry. Since the early

1990s, the network metaphor has inspired a variety of theoretical, methodological and technical development.

The project set out to reach the following aims:

- ensuring the wide dissemination of existing best practices in the field to universities, governments and stakeholders and
- Network 3: Consolidating reforms in creating a flexible and creative learning environment, making the best use of new technological opportunities.
- Network 4: Strengthening the role of universities in their regional context, by fostering, for example, more intensive university-business collaboration.

This project offered universities with different profiles and interests in continuing education an opportunity to develop and enhance their strategic CE approaches, focusing on the following priority issues:

1. Strengthening the relationship between research, teaching and innovation in a perspective of continuing education
2. Developing partnerships at local, regional, national and international level to provide attractive and relevant programs

The SIRUS activities have shown that 1/3 of the participating universities have a strategy that includes LLL, 2/3 of them consider lifelong learning an activity and they support the Trends 2010 findings.

- using the Knowledge Triangle – strengthen the relationship with employers and researchers – for building partnerships.

E. Empirical part

1. Case study Greece

Questionnaire-based Research on local Entrepreneurs & Universities – Scientific Institutions, of Greece

Methodology implementation- Descriptive statistics

Taking the occasion of the changes undertaken in Greece in the field of education, and also the economic crisis which affecting the funding of universities, we conducted two questionnaires, one for the universities and scientific institutions and the second for industries / Banks. Here we should mention that our questionnaires - research has two parts, in the first part we have quantitative questions and in the second we have qualitative questions (through interviews).

Regarding our quantitative survey we have to mention that in this paper we used only descriptive statistics due to the fact that our research is on going so correlation – convexity indicators will be presented after the completion of the research.

1. Questionnaire for Industries

Our goal is to examine how the private sector – industries, are familiar with research programs, and the view which they have for the universities in Greece. Also in the same questionnaire we ask to evaluate the current geographical distribution of universities and how that helps in the regional development – endogenous regional growth. In this way we can examine if there is a need for a revision of the higher education environment as the ATHENA project attempts to do. Here we should note that in this paper we don't make any attempt to evaluate the project “Athena” because it is not still in use.

Data

We should mention that our research is in progress and according to the findings so far we can have some useful conclusions! We send our questionnaires to 144

enterprises (including Banks) and there was wide dispersion, according the size of the enterprises, the location and the operation.

Findings - Results

1.a Industries – Quantitative Analysis

According to our findings the majority of the enterprises (85%) underline the need to cooperate with a scientific institution (Figure1). However the 31% of them they haven't cooperated with a scientific institution or a university (Figure 2) and the main reason is that they gave is that time needed for that scientific studies are usually very long and the results are doubtful.

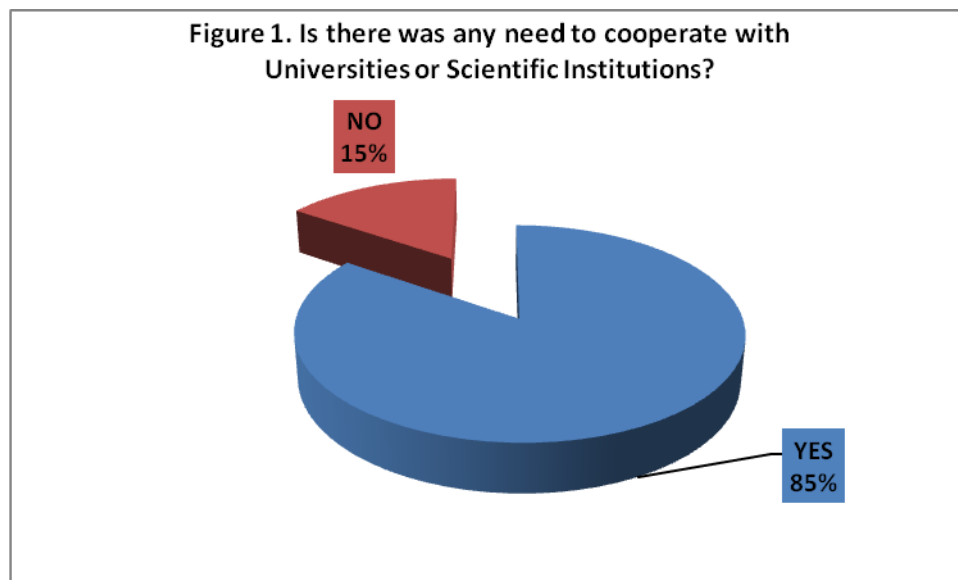
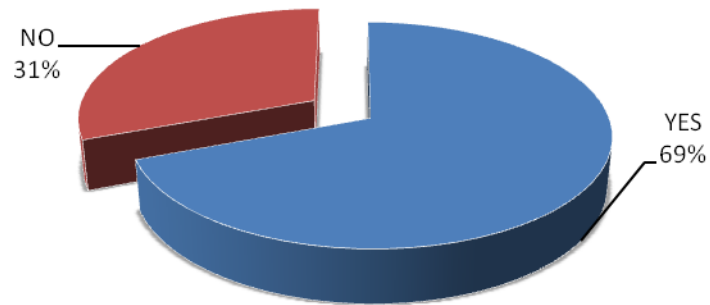
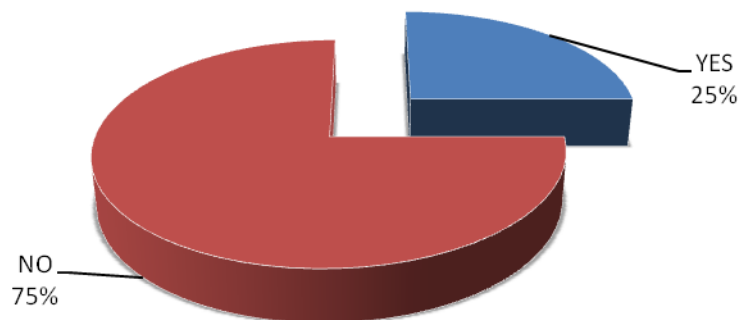


Figure 2. Have you ever cooperate with a university or Scientific Institution?

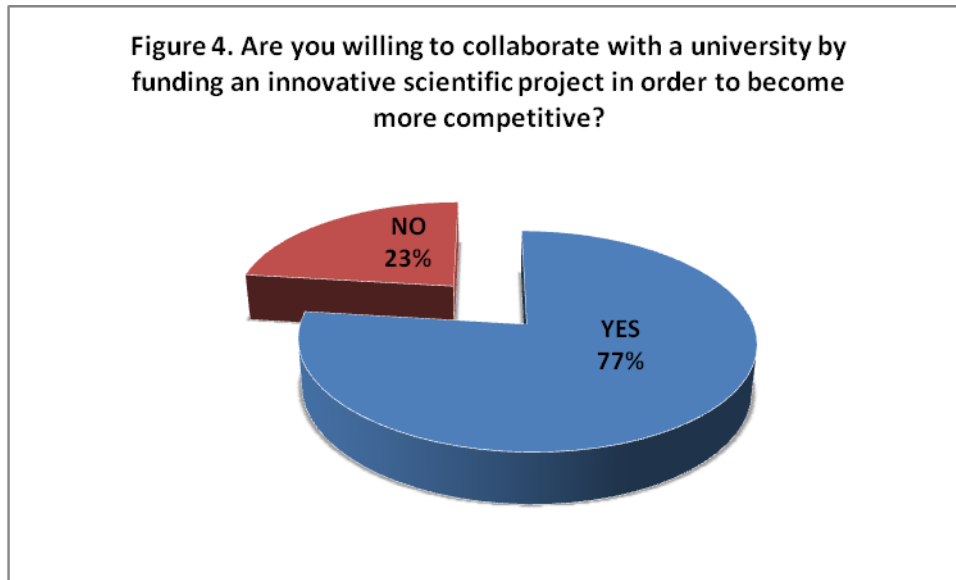


How the Greek enterprises evaluate the current higher education system in Greece? The majority of the enterprises believe that the current geographical allocation of universities in Greece isn't the appropriate one. The 75% are face positively the possibility of a new geographical reconstruction of the universities in order to contribute more effectively to the endogenous regional growth (Figure3). Regarding the new project "Athena" for the reallocation of the Greek universities we observe although is a new plan a considerable 69% of our sample, knows about it.

Figure 3. The current geographical allocation of universities in Greece is the appropriate one?



In the question if they are willing to collaborate with a university by funding an innovative scientific project in order to become more competitive, the majority of enterprises give a positive answer, almost 77% (Figure 4)



1.b Industries / Banks– Qualitative Analysis

Using “open questions” and through some interviews with the managers of some industries we receive the following qualitative results.

If we try to examine on which fields the enterprises focus their interest and the need of scientific support we will find that projects related to innovation, education/ training and researches, are the most popular. The cutoff of funds for specific scientific programs which tailored for the local needs, the lack of Knowledge and the bad construction of universities and the lack of qualified education staff are some of the reasons which make the universities don't meet the needs of local society and consequence not fulfill their purpose, which is the diffusion of the knowledge.

The main finding of our first research indicates that is highly priority for the Greek enterprises to cooperate with universities and they need their support because they are willing to implement new – innovative - methods in order to become more competitive. The universities and especially the higher education sector should become more reliable in order to gain the trust of the enterprises.

2. Questionnaire for Universities – Scientific Institutions

We send a questionnaire in Universities and Scientific Institutions in Greece, in order to find out, how universities evaluate the industry sector of the country, in which fields they have made researches and what they believe about the effort of restructuring the high education system.

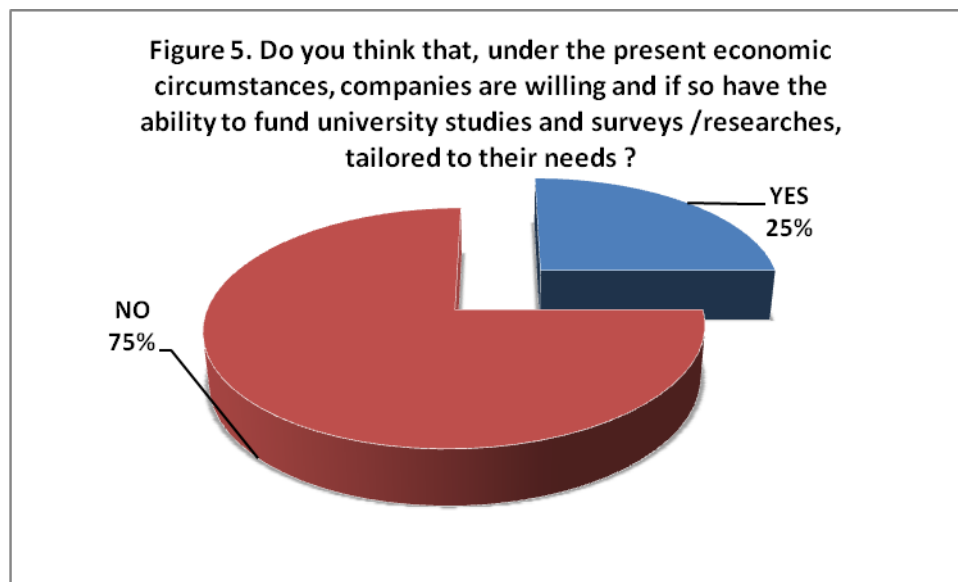
Data

As we mention above, our research is in progress, and we have sent our questionnaires in a 25 universities and scientific institutions. We try to make dispersion according to the scientific field.

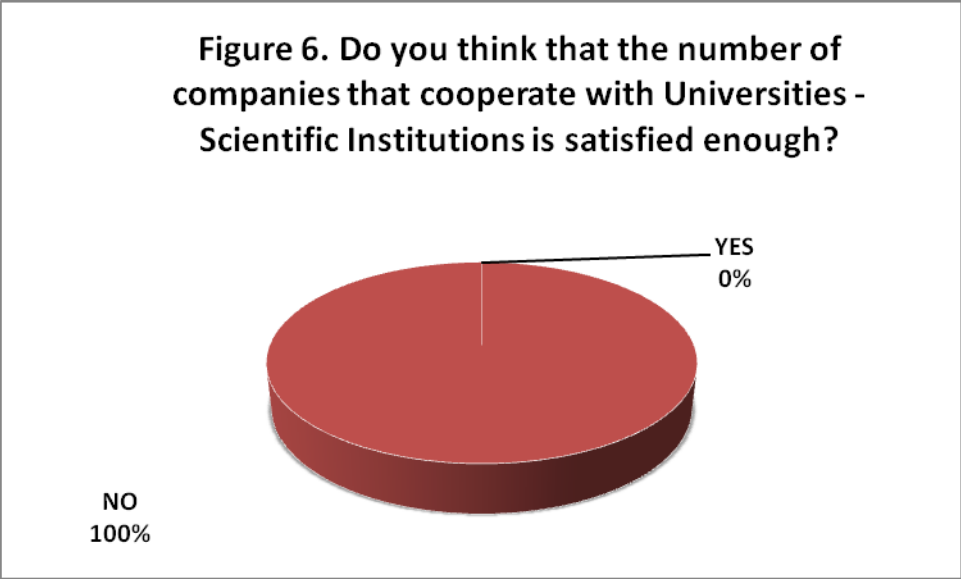
Findings – Results

2.a Universities – Quantitative Analysis

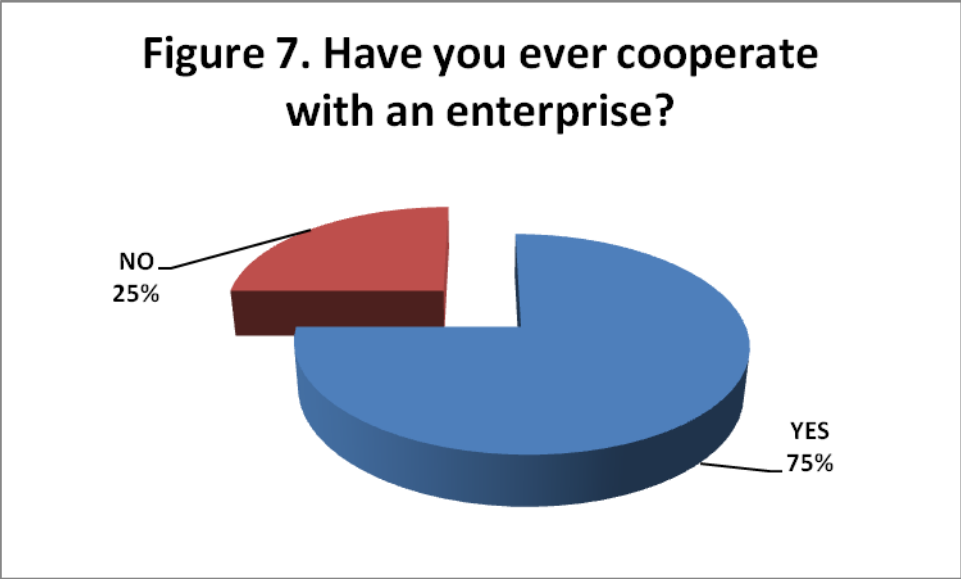
On the other hand the universities have the feeling that the current economic situation in Greece is a disincentive for companies to finance new projects / researches (Figure 5)



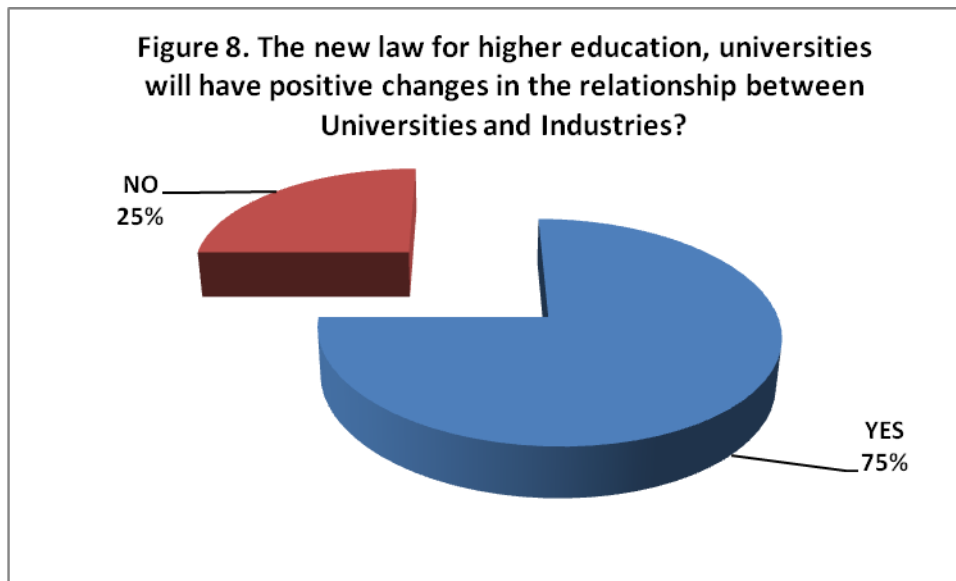
Also in the question whether the number of companies that cooperate with Universities - Scientific Institutions is satisfied enough or not, all they agree that it isn't (100%)



In the question if they have ever cooperate with an enterprise, 75% of the universities gave a positive answer (figure 7)!



Regarding the new law for higher education, universities strongly believe that the said changes will become a challenge for strengthening the collaboration among the three patterns of Triple Helix Theory.



2.b Universities – Qualitative Analysis

Taking under consideration the findings of the open questions and interviews of academic staff responsible for scientific programs of the universities we can present the following results: The answers to the question if the current geographical allocation of universities meet the local needs and mitigate the regional disparities, are almost equal (for yes or for no) despite the fact that they believe that it is of high priority to modify the existing structure of higher education (project Athena).

It is worth to mention that the academic staff who consider that the current location of the universities isn't the appropriate one they estimate that the most crucial criteria should be take under consideration for the for a establishment of a university in a region should be those of scientific necessity and local comparative advantage, in order to improve the quality of university programs - studies.

In the question if they think that the current global economic crisis will affect / influence the relationship between industries and Higher Education the answers are balanced (50% - 50%).

Generally, the majority of the universities and scientific institution believe that industries in order to become more competitive should change their current business plan and their philosophy. They should have a long term entrepreneurial goals and implement innovative ways and in production procedure as well, in training of their staff which will help them to succeed in the future.

The majority of Universities and scientific institution believe that there are some threats, regarding the autonomy of scientific research and the commercialization of knowledge form universities transformation from social institutions in knowledge based business. The role of the universities should be a multi-level management of universities

So, which are the reasons, that Greek business doesn't funding researches? The universities believe that they don't try to find new ways to improve existing products or to create innovative new products, because they don't have in their business culture long term projects but only short – terms. The lack of communication – sufficient cooperation between enterprises and universities is another reason, but for this situation both sides are responsible. The majority of businesses don't know what they can gain by cooperating with universities in order to develop their products and solve technical problems. Also another stumbling block is the lack of government incentives for research and development through private initiative.

The main fields where universities have cooperate with industries in Greece, are especially in studies – surveys and in Education / Training. However, from the interviewing of responsible academic staff its is pointed out that industries don't addressed to Universities in order to solve problems related to Human Resources management (such us: personnel rotation, restructuring of Divisions, target staff training and so on). We believe that these issues (HR) should be a high priority for an enterprise and especially the bigger ones that before proceeding in changes in this filed should addressed to the appropriate department of a university.

Generally we will dare to say, that the Universities, should be more optimistic and to organized target scientific programs to support the local entrepreneurial. In that way we believe that companies will be interested in funding researches because they don't have any other way to gain an advantage and to explore new methods or new ways in reducing costs and to becoming more competitive.

Conclusions – Greek Case

Universities – academic institutions have to examine their own systems, plans and communication technology in order to determine institutional readiness, to manage

efficiently and effectively any sort of crisis affecting the Higher Education. Innovation of cooperation among industries, universities and research institutes has played an extremely important role in the process of economic development, so countries throughout the world all attach great importance to study on models of cooperation among industries, universities and research institutes. At the present time of economic globalization, informationization and networking, traditional modes of cooperation among industries, universities and research institutes no longer adapt to requirements of development of the new situation and modes of cooperation among industries, universities and research institutes also call for continuous reform. We should select effective modes of cooperation among industries, universities and research institutes and make more contributions to the economic development.

The changes in Greek high education system are an opportunity to design a new model which will encourage the private industries to cooperate with the scientific institutions – universities. Through this collaboration the universities will found new sources of funding and the enterprises will become more competitive. Also the local society will earn from this cooperation because a growth of a local industry leads to improve the local economic level of the region.

The main conclusion of our research is that the Theory of Triple Helix, in the period of financial crisis, especially in Greece, can be implemented given that our main findings coming from our empirical analysis are strongly related to the relevant literature of Triple Helix Theory.

2. Case study Hungary

The MELLearn Association is an affiliate member of the EUA, so it strongly proposes the development of a New National LLL Strategy based on the following 10 points formulated in the EUA's Charter on Lifelong Learning¹ (EUA, 2008) issued in 2008 and accepted by rectors of European universities to oblige universities to:

- strengthen the relationship between research, teaching and innovation within the framework of lifelong learning,

¹ EUA: European Universities' Charter on Lifelong Learning, ISBN: 9789078997009, Brussels, 2008, <http://www.eua.be/publications/eua-policy-positions.aspx> Acquired: 13.11.2012.

- develop partnerships at local, regional, national and international levels to provide attractive and relevant programs and

HEIs are encouraged by the government, adult learners and employers to become more responsive to LLL, and the Hungarian Lifelong Learning Network, together with annual conferences and workshops, offer one platform to help HEIs to recognise this challenge.

The MELLearn Association acts as a catalyst between HEIs, the government and the economic field, involving stakeholders in the discussion about LLL and adult education. The Association has organised a conference annually since 2005, addressing the following topics:

higher education and lifelong learning strategy, the role of higher education in adult education, the lifelong learning networking cooperation of higher education institutions as regional knowledge centres, adult education experiences and opportunities for the renewal of higher education, lifelong learning, innovation and the creation of values, the role of the Hungarian higher education in achieving the Knowledge Triangle (education-research-innovation), the Europe 2020 and the Education-Training 2020 Strategies and competition and cooperation: the Innovative higher education.

Many HEIs in Hungary have programmes for adult part-time students, many of whom are learning while working at the same time. These are often HEIs that deal with the education and training of adult educators to promote and develop adult learning; the development of access requires a better infrastructure (such as development of library services, learning with practitioners towards more economic orientations, more scientific orientation with researchers to exchange ideas and look into ideas, models, experimental approaches to innovation methodology, practices). HEIs develop and offer several special courses based on former studies and work experiences.

In the near future, the expected decline in graduate admission will create an opportunity for using the available teaching capacity in adult courses. Nearly half of the institutions have set up a separate organizational unit for such purposes. These units have a strategic plan for their future operations.

The most important changes in society that make it relevant to place Lifelong Learning high on the HE agenda, comprise the rapidly changing labour market demands for entrepreneurship, and the fall of traditional financing tools and methods. Further, research has been extended to new dimensions to promote development and innovation towards new industries, services and social affairs to challenge learning at and with HE for growth, stability and strong identity. Societies facing global and local challenges at the same time turn towards HE to become flexible and open in some aspect of learning in adulthood and in later life, too. The ongoing changes bring about discussions over new skills for changing jobs and motivate HE institutions (HEI) to react to these demands. According to the demographic trends distinctive for the developed countries, a continually narrowing intake pool of higher education could be predicted for the next years.

Methodology implementation- Descriptive statistics

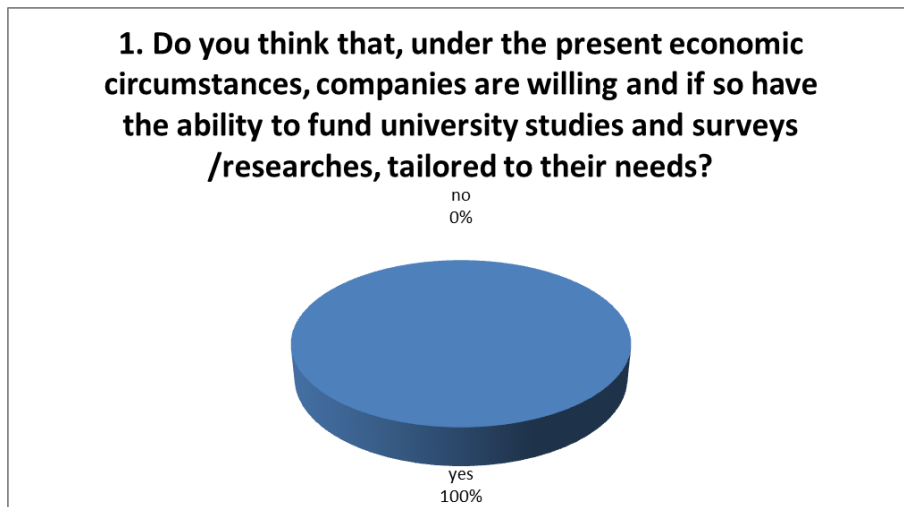
Taking the European economic crisis which affecting the funding of universities, we conducted a questionnaire, the universities in Hungary.

Regarding our survey we have to mention that in this paper we used only descriptive statistics due to the fact that our research is ongoing so correlation – convexity indicators will be presented after the completion of the research.

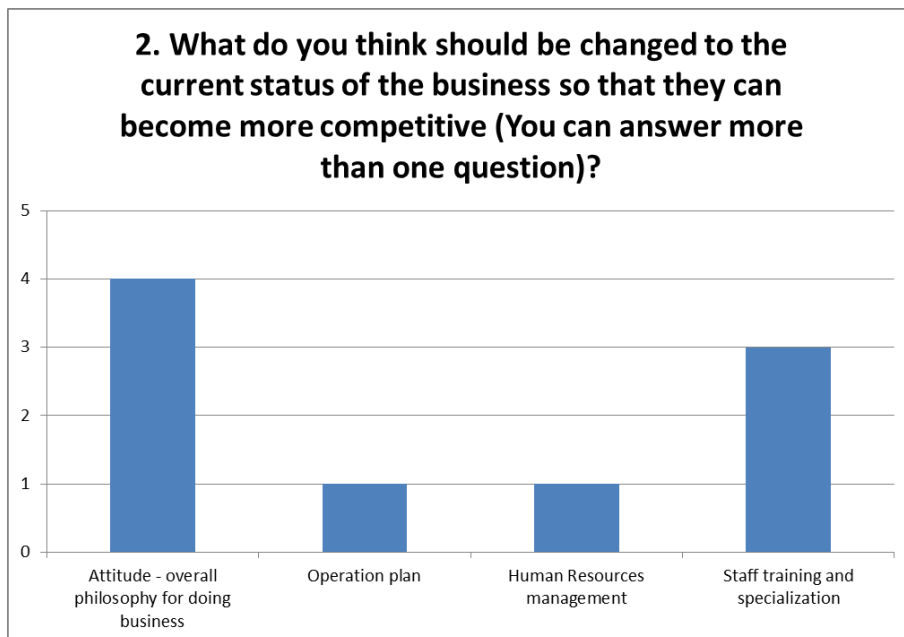
Data

We send a questionnaire in 19 Higher Educational Institutions in Hungary, in order to find out, how universities evaluate the industry sector of the country, in which fields they have made researches and what they believe about the effort of restructuring the high education system.

Universities – Analysis



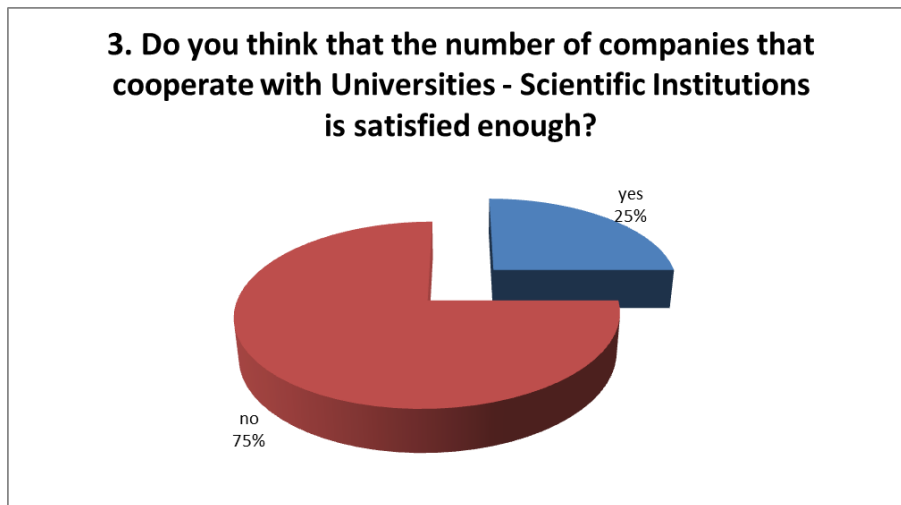
The answers for the first question clearly declare that the universities think that companies help the studies. In contrast with the Greek results, only 25% thinks the same. This could be explained with the government crisis, the current economic situation, when it disincentive for companies to finance new projects.



Other:

Ability and willingness to keep pace with the development of management methods, more pronounced inclination to innovate.

More available capital investment needed to develop product and technical environment with RDI aspect.



While the Hungarian universities are funded by the companies, they are not satisfied with the measure of it. Although the Greeks were not satisfied at all. This is parallel with their answer for the first question, and with the economic problems.

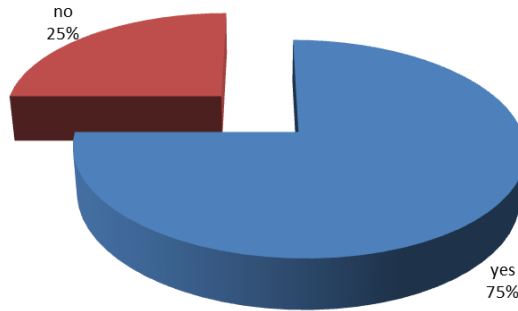
4. If NO, what are the main reasons for this?

During recent years companies had to concentrate on survival thus their short term needs dominated over long term strategies of co-operation

Small and medium sized ventures are mainly not so rich, large (mainly foreign) companies are sometimes not interested in cooperating with Hungarian institutes, moreover Hungarian legal and governmental incentives are sometimes also missing

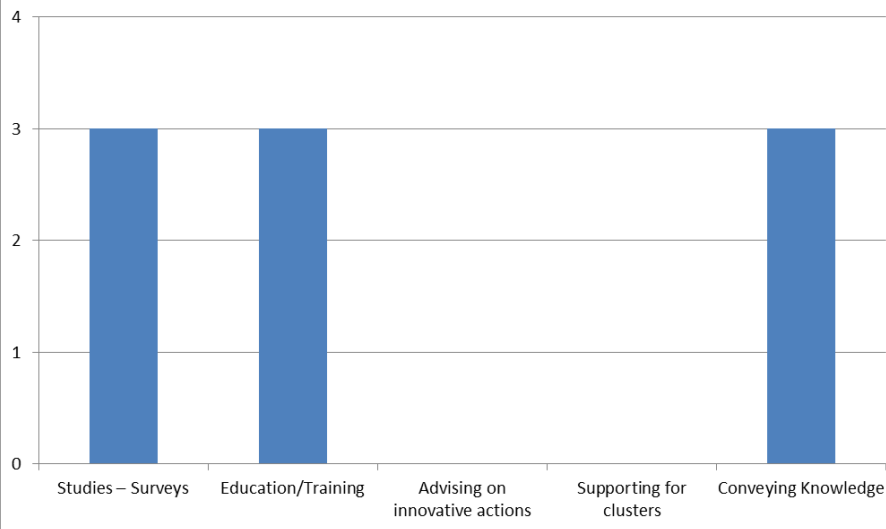
Universities are hardly able to recognize and respond to external stakeholders' to initiate and run the third-role function of higher education institutions. Reasons are: rigid approach to main functions of HEIs; underdeveloped scope to recognize new missions for HEIs; low capacities and recognition of collaboration with external stakeholders other than RDI towards business and industry related firms and ventures; limited cooperation with enterprises in the field of educ. and learning skills developments.

5. Have you ever cooperated with an enterprise?

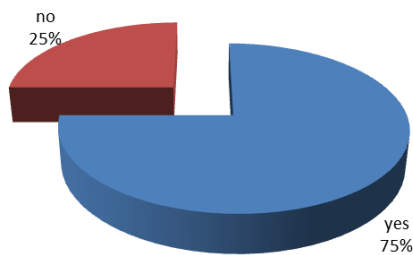


The Hungarian and Greek universities are both cooperated with enterprises greatly, 75%.

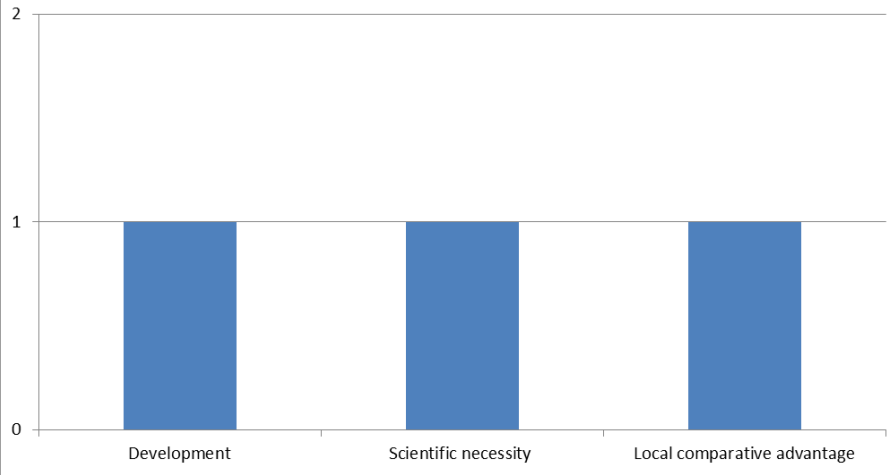
6. If YES, then in which field? (Your answers can be more the one)?



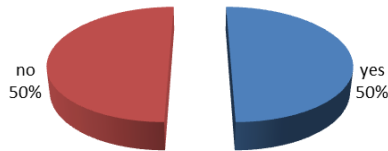
7. Do you believe that the current geographical allocation of universities meet the local needs and mitigate the regional disparities?



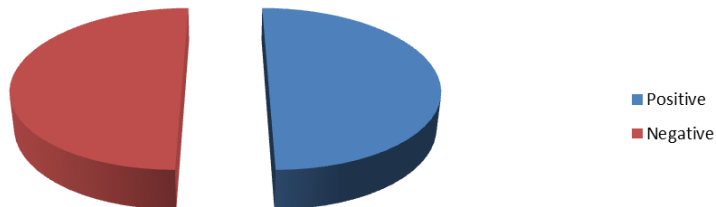
8. If NOT, what criteria do you think should be taken under consideration for the establishment / installation of a University in a region (Your answer can be more than one)?



9. Has any need of geographical restructuring/reallocation of university departments ever been identified, in your country, in order to strengthen their relations in terms of cooperation with the Market?



10. How do you believe that the current global economic crisis will affect / influence the relationship between industries and Higher Education?

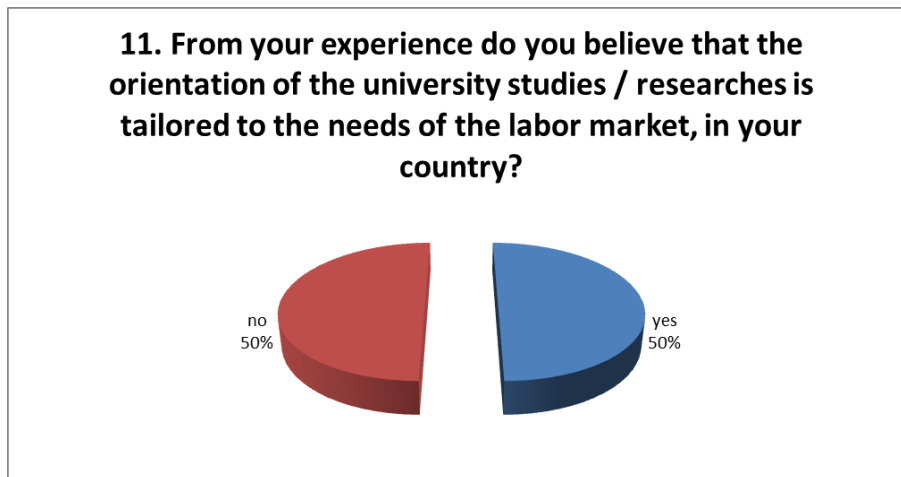


Other:

During recent years companies had to concentrate on survival thus their short term needs dominated over long term strategies of co-operation

it depends on the companies, there are some positive but mainly negative examples. Theoretically it should affect it positively

Relatively positive – yet narrow dimensions of cooperation with even narrower orientation to interdisciplinary research and innovations.

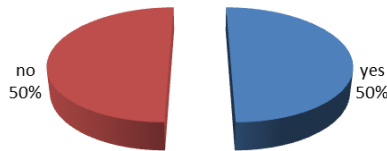


12. If YES, then give us some examples

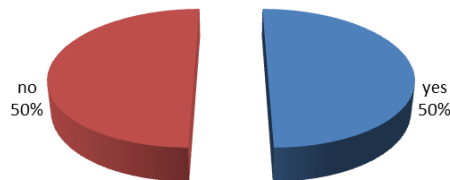
University has to specify the needs as concerning the different courses. There must be courses which are considered in social and not financial terms. The other courses must meet the needs of the business sector, with competence-based teaching and more flexible studies and learning methods. In that way business sector should also finance these courses in order it could supervise the knowledge and quality of teaching. There should be a harmony between the autonomy of the universities and the needs of the business sector.

Strong orientation to labour market driven natural science-led RDI actions, raising the number of state –funded scholarships in the sectors of natural science, medicine and information technologies. Revised structures of CVET functions and orientation of HEIs in accordance to the signals of Chamber of Commerce and Industry

13. From your experience, do you believe that the industries are addressed to Universities in order to solve problems related to Human Resources management (such us: personnel rotation, restructuring of divisions, target staff training)?



14. If YES, do you think that, under these economic circumstances, the number of industries, which cooperate with universities for such issues has been increased?

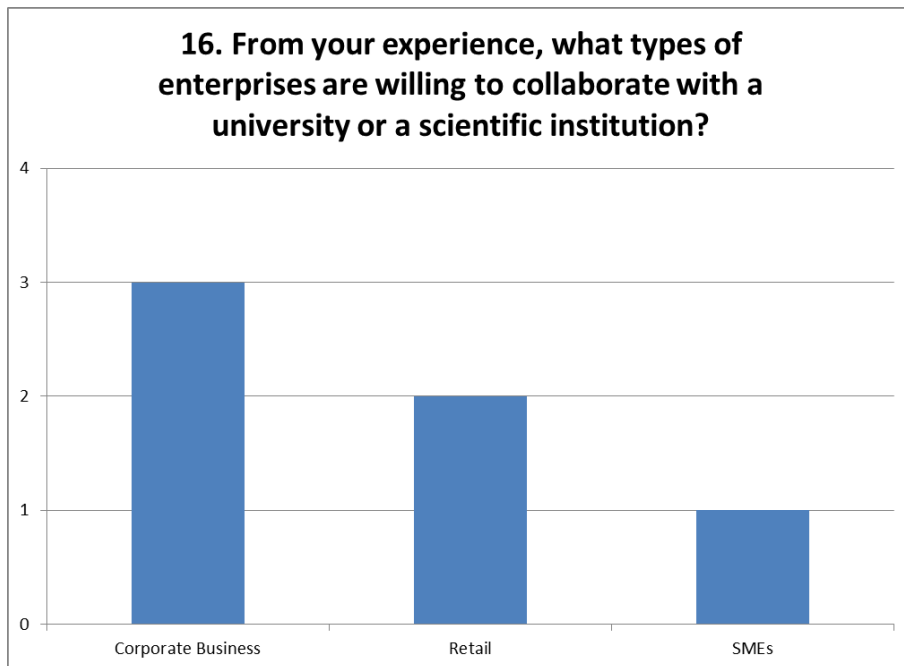


15. Generally, in case that there has been collaboration of your University with a business, how do you assess the results for both parties?

Neither too positive nor too negative. Managers of businesses participate in the education process by holding classes, hosting trainees, acting and thesis consultants and even offering scholarships

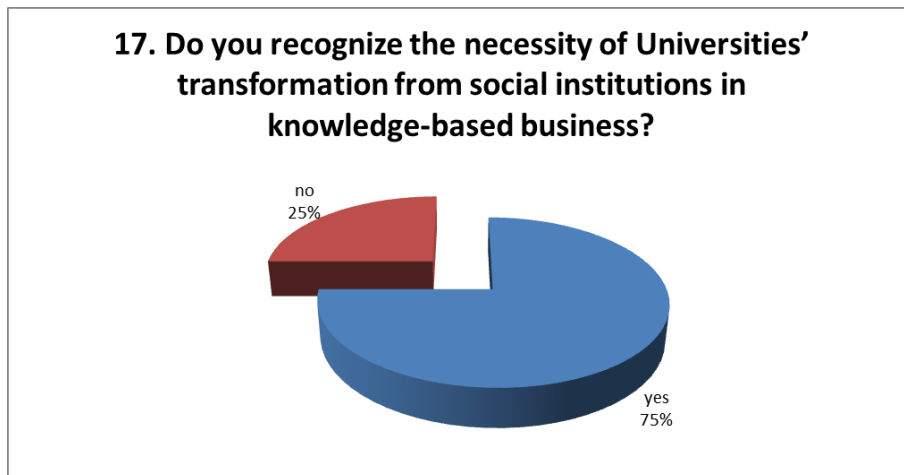
University has to specify the needs as concerning the different courses. There must be courses which are considered in social and not financial terms. The other courses must meet the needs of the business sector, with competence-based teaching and more flexible studies and learning methods. In that way business sector should also finance these courses in order it could supervise the knowledge and quality of teaching. There should be a hamony between the autonomy of the universities and the needs of the business sector.

Results have helped both sides to develop, initiate actions and innovative researches to promote either raising better services or quality production/performance.

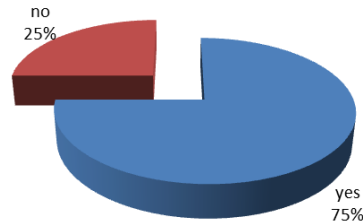


Other:

It depends on the regional cooperation. Local enterprises are more willing to cooperate with universities



18. Do you believe that there are some threats, regarding the autonomy of scientific research and the commercialization of knowledge, resulting from the above mentioned new role of the universities?



19. If YES, please specify which would be in your opinion the ideal role of an entre-preneurial university?

An entrepreneurial university has to stick to its traditional role of higher education and should not give up the pursuit of excellence. It must not give up research for its own sake – although it is clear that funding must be ensured for this kind of research.

University has to specify the needs as concerning the different courses. There must be courses which are considered in social and not financial terms. The other courses must meet the needs of the business sector, with competence-based teaching and more flexible studies and learning methods. In that way business sector should also finance these courses in order it could supervise the knowledge and quality of teaching. There should be a harmony between the autonomy of the universities and the needs of the business sector.

The ideal role is multifunctional – trying to avoid one-sidedness or narrow – limited thinking and orientation.

3. Conclusions – Hungarian Case- Comparative analysis with the Greek case study

After analysing through the questionnaire and compared with the Greek result we can say that the Hungarian universities 100 % think the companies fund the studies and surveys while the Greek universities due to the current economic situation, only 25 % think. The Hungarian universities would change the overall attitude of the business to become more competitive.

As it was mentioned, in the other answers, the Hungarian universities are not satisfied with the number of cooperative companies, despite the 100 % funds. The reasons could be the governmental incentives and stakeholder problems.

The Hungarian universities cooperated with enterprises in the fields of studies-surveys, education/training and conveying knowledge while the Greeks do not mention the conveying.

Unfortunately, in the Hungarian case study, there are a lot of 50 % -50 % answers, it can show the differences between the universities' awareness, support by companies.

The Greeks are waiting for the voting and afterwards implementing of new law for research- technological development and innovation which may help the universities with more company funding and other help, as well as the completion of the project Athena 1 which is, basically, focusing on the reduction of the operative costs of the universities and on the other hand on trying to upgrade the quality of the universities' providing services.

However, generally, we can say that the results of both situations, are almost similar given that we can observe only some slight and not so important differences in the findings of the relevant questionnaires, that mainly faced due to the different structure of the educational system of each country.

F. Conclusions

Universities – academic institutions have to examine their own systems, plans and communication technology in order to determine institutional readiness, to manage efficiently and effectively any sort of crisis affecting the Higher Education. Innovation of cooperation among industries, universities and research institutes has played an extremely important role in the process of economic development, so countries throughout the world all attach great importance to study on models of cooperation among industries, universities and research institutes. At the present time of economic globalization, informationization and networking, traditional modes of cooperation among industries, universities and research institutes no longer adapt to requirements of development of the new situation and modes of cooperation among industries, universities and research institutes also call for continuous reform. We

should select effective modes of cooperation among industries, universities and research institutes and make more contributions to the economic development.

The main conclusion of our research is that the Theory of Triple Helix, in the period of financial crisis, especially in our case studies (i.e. in Greece and Hungary), can be implemented given that our main findings coming from our empirical analysis are strongly related to the relevant literature of Triple Helix Theory.

GENERAL REMARKS – PROPOSALS FOR FURTHER RESEARCH

This theoretical – empirical approach highlights the great importance attributed by the neoliberal and the radical schools to technology, research, education and the relation between universities and scientific institutions to the production and development procedure. As it was proven, since the economy is the base for the development of a society, a reasonable conclusion would be that it influences, shapes and defines all society structures, a major perspective of which is education, and in particular academic education, and therefore it actually influences the structures, evolution and changes to education. Higher education plays an important role in capitalistic production patterns. Education is defined by said capitalistic pattern and influences the development of socio-economic relations, since education, research and technological development are especially important for the progress of a society. An examination of their historical evolution shows that said progress and development can be beneficial for a small or large part of the population; can be a source of wealth or under development for a large part of the world population.

More specifically, Higher Education is regarded as a vital element, since universities account for knowledge transfer (teaching), training of specialized staff for the market, creation of new knowledge (research), creation of relations to enterprises and integration to them of technologies produced in universities. The funding of the Universities, the impact, contribution and nature of which we examine here, consists an attempt to achieve all of the above and at the same time to lead to a regional development and convergence. The importance attributed to community funding becomes obvious from the impact of said funding to the entire production process. Arrangements about the working hours; flexible working conditions; restructuring of working procedures; intensification of labor and increase in unemployment, the latter

also due to technological development. Still, at the same time there is an increase in the needs for highly specialized scientific work; an increase of the inequalities between various groups of employees (women, young persons, immigrants). (Balomenou and Kolovos, 2013)

Over the past few years a closer relation between labor market and education has become increasingly obvious and intense. The need to increase the workforce and at the same time to offer to said workforce all qualifications needed is one of the most important reasons for the restructuring of both the education (reduction of study time, change of subjects) and the labor sector (flexible relations) in order to increase productivity and to better integrate education and technology into the production needs. Consequently, we are led to an increase in the number of students which in turn increases the knowledge of employees and delays their integration into the economically active population.

Regional policies require state intervention both at a regional and at a central level. Especially during the past few years, regional policies, affected and defined the establishment and operation of regional universities, which are regarded to be the main factor for regional development.

The predominance of ideological, political, economic and in general social theories inspired by neoliberal and neoclassical ideas in the majority of the EU countries has shaped a radically different standard of living, wealth and education for their populations, despite the high level of material, technological and intellectual wealth. It should be noted here that there is a radical loss of some major achievements, which had been won over by employees during the period of the past 20 years, after the capitalistic model of production had prevailed in almost all EU countries.

On one hand the universities, due to their special role through teaching and research, and on the other hand the various regions, are considered to be the “keys” for the establishment of a “knowledge economy” within the EU. National states are called to adopt the above goal, which would decrease the inequalities between local and regional development. Under said circumstances, EU has realized the need for “local and regional development” as well as for “interference at a local and regional level”, which would be possible through the universities.

The convergence of the various tertiary education systems of the EU member states, as described in the declarations of Bologna, Prague and Berlin, as well as the

convergence of their vocational training systems, as described in the declaration of Copenhagen, further serve the objectives of the Lisbon strategy.

More specifically, in Greece, the changes and reforms followed the accession to the EU and the EMU with community funding being the most essential “tool” for the implementation of said policies, whereas any social, cultural and educational reforms were supported as a natural consequence.

The elimination of regional inequalities is even more important, given the geographic distribution of universities. The multifragmentation of regional universities, which inevitably means that the universities are rather small-sized, along with the institutional framework of their operation did not allow them until today to turn to their respective local economies. This information reveals that a regional university cannot be considered as a region’s one and only or at least main development pole. A region can develop socially and economically within a country that also develops in the same direction; the main objectives in this case are a higher living standard, meeting the current needs and reducing regional inequalities. In the case of Greece, a strategic goal of decentralization, as said decentralization is described in the Lisbon Strategy, underlies the apparently “unregulated” and “unplanned” distribution of schools and higher education institutes.

Upon completion of this essay and having taken into account both the questions mentioned at the beginning and the processing of the information, we reached the following conclusions:

The result of the implementation of said choices can be described as follows: In Europe, given the socio-economic conditions and structures, a restructuring of the universities was considered necessary in order to facilitate an effective relation between the universities and the market economy and to utilize the universities in favor of the local and regional development.

There is no question that the strong relationship between universities and the market (i.e. industries / firms etc), is the key to open the door of survival and afterwards of endogenous growth, reinforcement for overpassing the crisis bad effects and development for both parties .

In any case, the data led us to believe that the inconsiderate relation of academic institutes to market economy, the unilateral orientation to technical subjects and the fragmentation of the inseparable nature of academic education deprive it of its social

and institutional role and diminish some scientific fields, especially the humanistic sciences.

The general evaluation of the evolution of Greek and Hungarian universities in terms of the policies followed during the last twenty-five years is a major issue, which could be further investigated in the future as regards both its qualitative and quantitative features. Still, it is highly recommended to take into account the findings of this essay.

Also it will be interesting to expand our research beyond Greece and Hungary, and to examine the other economies which are in a memorandum (Portugal, Ireland, Cyprus) or facing severe economic problems (Spain, Italy and Eastern European Countries).

To conclude, we would like to underline that our research is on progress and we hope that in the near future in another paper we will be able to analyze the relevant results!

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