Towards a Connection of Universities, Regions and Private Sector Enterprises to Achieve Regional Development: A Literature Review.

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Summary:

Universities potentially have a central role to play in the social and economic development of their regions. They are an essential "asset" of the region; even more so in less favored regions where the private sector may be weak or relatively small, with low levels of research and development activity. Successful mobilization of university resources can have a disproportionate positive effect on their regional economies and the achievement of overall regional strategies.

Although this article focuses on the connection that the region can “get” from its universities, it must be recognized that this is a two-way process and that the university also benefits from its presence in the region. Universities should appreciate and maximize the potential of the opportunity their region presents, especially as a “living laboratory” for their research for the benefit of private sector companies.

Keyword: University-Region; Private companies; connection; Research and development; Partnership.
Résumé:

Les Universités ont potentiellement un rôle central à jouer dans le développement social et économique de leurs régions. Ils sont un «atout» essentiel de la région; encore plus dans les régions moins favorisées où le secteur privé peut être faible ou relativement petit, avec de faibles niveaux d'activité de recherche et développement. Une mobilisation réussie des ressources de l'université peut avoir un effet positif disproportionné sur leurs économies régionales et la réalisation de stratégies régionales globales.

Bien que cet article se concentre sur la connexion que la région peut «obtenir» de ses universités, il faut reconnaître qu'il s'agit d’un processus à double sens et que l’université profite également de sa présence dans la région. Les universités devraient apprécier et maximiser le potentiel de l’opportunité que leur région présente, notamment en tant que «laboratoire vivant» pour leurs recherches au profit des entreprises du secteur privé.

Ainsi, cet article traite le renforcement de l'innovation régionale grâce aux activités de recherche; et Processus et mécanismes permettant aux universités, à la région et au secteur privé de travailler ensemble et parvenir par conséquent à une connexion à caractère «Gagnant –Gagnant» qui a des retombées bénéfiques sur l’attractivité de la Région en terme de la rétention de talent et de développement du secteur privé de la même région en faveur de la population de la même région.

Mot clé : Université-Région ; Entreprise privées ; connexion ; Recherche et Développement; Partenariat.
INTRODUCTION:

Universities are important for regional development at the most basic level, universities can be anchor institutions in local economies as major employers in a wide range of professions, purchasers of local goods and services and contributors to life culture and the built environment of cities. Regional investment in a university's infrastructure to support its core research and teaching activity can therefore have a significant passive regional multiplier effect even if the university does not actively support regional development.

But what about the most active contributions that universities can make? This can be broken down into four areas: business innovation which is closely, but not exclusively, linked to the research function of the university, human capital development linked to the teaching function, and community development, related to the public service role of universities. The fourth area is the contribution of the university to the institutional capacity of the region through the engagement of its management and its members in local civil society. These are the four areas covered in the OECD reviews of universities and regions (Figure 1.1, HEI acronym used for 'universities'). When these four areas are integrated, promoting the active engagement of universities in the regions has mainly focused on their contribution to regional innovation systems (RIS).

Figure 1.1 OCED analysis framework

This has acquired new importance in the context of advancing the notion of regional 'smart specialisation' as a future focus of European regional policy. According to McCann and Ortega-Argilés, smart specialization "provides that the identification of knowledge-intensive areas for potential growth and development is linked to the role of certain classes of actors (researchers, suppliers, manufacturers and service providers, entrepreneurs, users) and the links between public research and industrial science. The actors are considered to be the
agents who use the means and resources of knowledge acquisition (human capital, ideas, academic and research collaborations) to analyze the local economic and commercial opportunities available, identify the technological and commercial niches to be exploited, and thus act as the catalyst to drive the emerging transformation of the economy”. Universities can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses, academic and research collaborations) to analyze available local economic and business opportunities, identify technological and business niches to exploit, and thus act as the catalyst to drive the emerging transformation of the economy”. Universities can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses, academic and research collaborations) to analyze available local economic and business opportunities, identify technological and business niches to exploit, and thus act as the catalyst to drive the emerging transformation of the economy”.Universities can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses, academic and research collaborations) to analyze available local economic and business opportunities, identify technological and business niches to exploit, and thus act as the catalyst to drive the emerging transformation of the economy”. Universit ies can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses, academic and research collaborations) to analyze available local economic and business opportunities, identify technological and business niches to exploit, and thus act as the catalyst to drive the emerging transformation of the economy”. Universities can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses, academic and research collaborations) to analyze available local economic and business opportunities, identify technological and business niches to exploit, and thus act as the catalyst to drive the emerging transformation of the economy”.Universities can therefore play a key role in defining a regional smart specialization strategy by contributing to a rigorous assessment of the region's knowledge, capacities and skills, including those embedded in the university's own departments as well as in local businesses. Historically, public support for universities engaged in regional development has followed the US Silicon Valley experience by focusing on high-tech knowledge areas such as computing and biotechnology and encouraging the spin-off of companies to from research laboratories using science parks as a key mechanism. However, these initiatives often fail to recognize the time- and place-specific nature of the American experience, making it difficult to transfer to long-established European industrial or agricultural regions. On the other hand, the smart specialization approach recognizes the possibilities of technological diversification strategies of locally integrated major industries to which the university research base can contribute. This is not to deny the role of university spin-offs which add to the body of entrepreneurial activity in the region and the attraction/retention of global companies by the assets (physical and human) that the university has to offer. Through this article, we will try to study the possibility of achieving better collaboration and connection between the triangle: University, Regions and the private sector leading to the development of innovative regions. Thus, we must provide answers to the following question:
How to establish an effective connection between region, university and private sector?

To do this, there are mechanisms that allow universities and the private sector to actively contribute to regional development, so we will deal with them along three axes:

1. Mobilized theories
2. Strengthening regional innovation through research activities;
3. Processes and mechanisms for universities, the region and the private sector to work together.

1-Theories mobilized:

It is not traditional to classify universities as immaterial services and to study their contribution to the establishment of an accumulation regime. Nevertheless, the requests they receive to participate in regional economic development are strong enough for this project to be opened. We have about ten years, several analytical devices to model the dynamics of the relations between university, industry, and public authorities; these ranging from national systems of innovation (Lundvall 1992, Nelson, 1993), to the knowledge economy (Petit 1998, Carlsson et alii 1998), to regional systems (Gulbrandsen 1997, Gebhardt 1997, De Castro et al. 1998) or models of governance (Montbrial, 1999). These developments have led to the formalization, based on empirical observations and expert debate a “triple helix model” to describe changes in these relationships. In its third version (“triple helix III” if we follow the typology of Leydesdorff&Etzkowitz, 1998), the three institutionally separated spheres that form the university, industry and the local public are asked to assume, in addition to their traditional functions, functions traditionally devolved to the two other spheres: the American concept of "entrepreneurial university" developed at the New York conference, just like the recent requests addressed to French scientists to create start-ups testify both to the reality of the fact and to the problems it raises.

This leads to characterize an aspect of the institutional dynamics of the economic regime: Universities are called upon to play a major economic role because they are asked both to create an "industrial context", to play a role of quasi-government by indicating the scientific or technological opportunities to be exploited, to play the role of a local or regional organizer of innovative circles when it is not that of a head of a national network of innovation networks.

At the same time, firms claim a dimension of academic research, likely to lead employees to higher levels of competence, and local public authorities are called upon to intervene at an increasingly detailed level, both in the definition and management of scientific research programs, and as "public entrepreneurs" in the assembly of the public and private resources necessary to the emergence of new economic activities (Pecqueur 1997, Rallet 1998). (TRIPLE HElix MODEL AND REGIONAL CHANGE REGULATION: A CASE STUDY1 Martino Nieddu Lecturer ESSAI & LAME / Merchant Organizations and Institutions, UFR Economics and Management Sciences, Reims) and as “public entrepreneurs” in assembling
the public and private resources necessary for the emergence of new economic activities (Pecqueur 1997, Rallet 1998). (TRIPLE HELIX MODEL AND REGULATION OF REGIONAL CHANGE: A CASE STUDY Martino Nieddu Lecturer ESSAI & LAME / Merchant Organizations and Institutions, UFR Economics and Management Sciences, Reims) and as “public entrepreneurs” in assembling the public and private resources necessary for the emergence of new economic activities (Pecqueur 1997, Rallet 1998). (TRIPLE HELIX MODEL AND REGULATION OF REGIONAL CHANGE: A CASE STUDY Martino Nieddu Lecturer ESSAI & LAME / Merchant Organizations and Institutions, UFR Economics and Management Sciences, Reims)

There are more and more theories and practices on the role of universities in regional development. This was summarized by the OECD in its 2007 report Higher Education in the Regions: Competing Globally, Engaging Locally. This helped to identify the reasons why regional authorities in OECD countries seek to mobilize universities to support their regional development strategies and why, for their part, many universities engage in the development of their regions. (engines). One of the main messages from the OECD is that the success of partnerships depends on the mutual understanding of the drivers of universities and regional authorities. Too often, partnerships fail because university leaders do not understand the challenges of regional development and regional authorities do not understand the fundamental mission of universities and the constraints within which they work. However, once mutual understanding is achieved, it is possible to put in place structures and procedures that overcome barriers to collaboration. This mutual understanding can come from an appreciation of some of the general principles of why universities in a region have the potential to contribute to its development and from case studies of how these principles have been translated into practice. Understanding the principles as well as the practice is important because it reveals that there are universal mechanisms that can be adopted across the EU in this area, what is actually effective depends heavily on regional and national circumstances, including the industrial structure of the region, governance, and how universities are funded and regulated within their national higher education system.

Moreover, there are three business models of the university

- The entrepreneurial university model with a strengthened steering core, improved development periphery, a diversified funding base and stimulated university core (Burton Clark 1998);

- The university capitalist model with faculty directly engaging in competitive behavior akin to that of state-subsidized entrepreneurs, blurring the distinction between public and private (Slaughter and Leslie 1993);

- The triple helix model of universities, business and government with centers for interface with the external environment supported by specialized internal units (e.g. technology transfer offices) and external intermediaries (e.g. technology and innovation) (Etzkowitz et. al. 2000).
1. STRENGTHENING REGIONAL INNOVATION THROUGH RESEARCH ACTIVITIES:

Research and development activities play a key role in regional development by providing the knowledge base that can underpin innovation. One of the most important ways for a university to contribute to its region is to “translate” its research (and that of others) into a form that can be taken up by regional actors in the private and public sectors. The word “translation” is associated with what is sometimes called the “linear assisted model” of innovation that begins with research.

The word “translation” is associated with what is sometimes called the “linear assisted model” of innovation that begins with research. However, it is important in designing interventions to recognize that academic research can be drawn into the regional innovation process by regional public and private sector demand for expertise relevant to business and household activities. It is in this area that the skills of business schools and social sciences and humanities can be mobilized - for example with regard to organizational innovation, social innovation and the public policy environment in which regional actors operate. In short, the contribution of university research to the

![Figure 2.1 Strengthening regional innovation through research activities](image)

**Source:** Connecting Universities to Regional Growth: A Practical Guide September 2011.

**Figure 2.1** offers a range of mechanisms by which the translation process can take place, ranging from simple ones, such as the provision of consultancy services, to more complex links with strategic research centers at the national level.
Starting with advisory services and innovation vouchers, it's about unleashing the knowledge and expertise of the university for the benefit of local businesses. Consulting services are generally provided in response to a company's request for assistance with a specific project. The service will be provided under clear terms of reference and will be time-bound with clear milestones and deadlines. Innovation checks are a little more complex as they aim to stimulate demand for university research rather than to meet existing demand. Innovation vouchers help SMEs to buy services whose results and process will be less clear. This can range from solving problems in business operations to help unlock innovations in products or services.

There have been a number of reviews of voucher schemes within the EU and beyond that can help deepen the understanding of this mechanism, such as the Availability and Focus report on innovation voucher schemes in the European regions as an example.

Knowledge Transfer Partnerships (KTPs) aim to encourage the mobility of human capital between the university and local businesses. Post-graduate (often post-doctoral) staff at the university work on relatively long-term (usually 1-3 years) research projects within a local company and are supervised by business and academic managers. Apart from the obvious benefits of disseminating research to commercial arenas, KTPs are also important tools for developing 'boundary spanning' skills among those involved in the project, which leads to better relationships between the university and local businesses and creates greater opportunities for future collaborations.

Science parks and research and technology centers require large capital investments, but it is what happens within them that has the potential to have a transformational impact. Science parks are usually created to house new and existing companies in a "cluster", often closely linked to research centers and universities. They aim to support the exploitation of research that has already proven to have commercial applications. In contrast, research and technology centers typically support technologies at a much earlier stage of development or technology “readiness”. They provide direction for the downstream investment in new technologies emerging from the research base in universities in order to bring them closer to market commercialization and to bridge the gap between research and its application. Universities are therefore more likely to be involved in activities of research and technology centers than science parks. There will generally be a high level of public investment in the activities of these centres, as they are seen as important players in supporting the development of innovation and national competitiveness and may also be assigned a regional role. Of note is the Smart Guide to Innovation-Based Incubators (IBI) published by DG REGIO in February 2010 as a useful supporting document in this area.

The mastery and deployment of Key Enabling Technologies (KET) in the European Union is essential to strengthen Europe's capacity for industrial innovation and the development of new products and services necessary to ensure smart, sustainable European growth and inclusive.

The final report of the High Level Expert Group on KETs17 is a useful source of additional information. From this brief description, it will be seen that these types of intervention vary in their depth, complexity and the time it takes to establish and maintain them, and so it may be
necessary for the region to think in terms of an evolutionary process that is moving towards transformation.

When designing interventions, it should also be recognized that regional innovation systems are not closed, but operate within a broader national and even international context. So, in addition to promoting a bottom-up process of developing partnerships and relationships, it is also important to be aware of the top-down strategic influence of national and regional innovation policy.

2- PROCESS AND MECHANISM TO LINK UNIVERSITIES, THE REGION AND THE PRIVATE SECTOR TO WORK TOGETHER

Universities can play a key role in helping public authorities to develop strategies by improving the qualifications and skills of their staff working in the field of economic development through consultancy services and the training of graduates. This would involve university departments of economics, geography, planning, public administration and business management as well as those dealing with specific policy areas such as health, agriculture, environment and culture. A dedicated unit may be needed to bring together these academic skills.

The mechanisms through which universities can and do contribute to regional development, as highlighted earlier, universities can and do contribute in various ways to regional development and smart specialization. However, within each of these roles there is a range of mechanisms that can be used, either as individual projects or collectively as part of a larger program or strategy to support a regional development agenda.

The figure below illustrates the four key areas in which universities most often engage in regional development. As shown in Figure 1.2:

![Diagram showing four key areas: Research and Innovation, Enterprise and business development, Human capital development, Enhancing social equality, Mobilising the resources of the university for the benefit of regional development]

Establishing a regional partnership for higher education This section describes a process by which public authorities, businesses and universities can come together to better understand regional barriers to university demand and supply and put in place appropriate mechanisms to overcome barriers through the design and implementation of programs that interconnect the three partners.

At the heart of this process must be a critical assessment of the capacity of public institutions and private companies in the region to express a demand for and capacity to absorb academic expertise. If this capacity is not in place, public investment in academic research for supposed regional benefit and higher level skills for the regional labor market will have limited impact, and may well escape the region.

The process of strengthening this three-way working capacity proposed here is an elaboration of that used by the OECD for its reviews of higher education and regional development in 24 regions of 18 countries - a process which, for example, largely contributed to building and maintaining the partnership between Värmland (Sweden) and Karlstad University, for example, the OECD process was not explicitly linked to public intervention as articulated by the requirements of the European Structural Funds. It will have to be decided to what extent the different European regions wish to launch a process of involving universities in regional development in parallel or within the framework of the preparation of strategies for the next programming period. Article 11 "Partnership" of the general regulation on cohesion policy [Council Regulation (EC) No 1083/2006, OJ L 210 of 31.07.2006, p. 25] requires program managing authorities to include “…the most representative partners at national, regional and local level…in accordance with national rules and practices…”. Certainly, representatives of the higher education sector must be taken into consideration. However, a process with a specific partnership structure to link universities to regional growth may be necessary if there is a risk of crowding out universities by the large number of other actors involved in the development of the operational programme. Given the resources required for the process steps outlined below,

According to Jean Goddard, The mechanisms by which universities can and do contribute to development and growth are:

- Improve innovation through their research activities
- Promote business, business development and growth
- Contribute to the development of human capital and skills
- To improve social equality through regeneration and cultural development.
CONCLUSION:

It is important that a partnership is established in the region to specifically address issues of engagement between universities, regions and private sector companies and particular attention should be paid to the sustainability of longer-term partnerships, regardless of funding cycles. Such as the establishment of a Business/Region/University Interface Office (BIERU) responsible for linking the University with the social and economic world, as a liaison body and promoting collaboration between the University and its partners. outside (“Region” public authorities, companies, etc.) in terms of training, research and development, advice and participation in regional, national and international development. The BIERU fulfills both a function of impetus and coordination of the activities concerned, and an advisory and support function for universities, teacher-researchers and their external partners. This office is involved in prospecting for partnership contracts whose purpose is the provision of services. Service provision takes several forms, namely:

- Contract research activities,
- continuing education activities,
- The search for internships in companies for the benefit of students of the University
- Support for business creation.

Thus, science and technology parks (STPs), innovation cities or innovation hubs constitute regional innovation ecosystems, where actors from the public, private, financial and academic sectors coexist (sometimes called the quadruple helices) synergistically, benefiting from shared infrastructures and physical proximity. If properly governed and managed, STPs can serve as a platform for the generation and transfer of knowledge, the design of new innovative products, technologies and services and, subsequently, the conquest of local and international markets, resulting in job creation and economic development, many countries have invested in STPs as part of their innovation and industrial competition policies. In practice, however, we find that STPs are not only challenged by the complexity of STPs and by orchestrating STPs across different stakeholders (e.g., universities, industrial residents, government agencies and financial actors, such as banks, business angels or venture capital firms). STPs also require adequate structures for ancillary entities, such as 'incubators' and 'accelerators', to support the commercialization of new ideas and business start-ups. Likewise, the public and private sectors must have on-site research laboratories and technology centres, the results of which should be disseminated and enhanced by “technology transfer offices”. we find that STPs are not only challenged by the complexity of STPs and by orchestrating STPs across different stakeholders (e.g., universities, industrial residents, government agencies, and financial actors, such as banks, business Angels or venture capitalists). STPs also require adequate structures for ancillary entities, such as 'incubators' and 'accelerators', to support the commercialization of new ideas and business start-ups. Likewise, the public and private sectors must have on-site research laboratories and technology centres, the results of which should be disseminated and enhanced by “technology transfer offices”. we find that STPs are not only challenged by the complexity of STPs and by orchestrating STPs across different stakeholders (e.g., universities, industrial residents, government agencies, and financial actors,
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And finally academia and industry or the private sector have a lot to learn from each other and partnerships between the two can be mutually beneficial while being particularly at the service of university students in entrepreneurship (JaciEinsenberg / David Gann / Samoon Y).
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