

The role of Tunisian universities in regional development

Sub theme: University in regional innovation and social development

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INTRODUCTION

Universities have long been recognised as providers of basic scientific knowledge for industrial innovation through their research and related activities. The emergence of the national systems of innovation approach (Freeman, 1991; Lundvall, 1992) shifted this conceptualisation of universities' role in economic production, bringing universities 'inside the tent' (Gunasekara, 2006a). Academic research has become endogenised and integrated into the economic cycle of innovation and growth. The university has been considered as a key contributor to wealth generation and economic development. Within the current knowledge based economy, the university acts as both "a human capital provider and a seed-bed for new firms" and innovation (Dooley and Kirk, 2007).

In Tunisia, developing education and training, higher education and scientific research is considered as vital building blocks of the knowledge-based society and a crucial factor in reducing unemployment as the economy opens up (Eleventh Tunisian Development Plan 2007-2011). The Tunisian higher education faces more and more the challenge of interacting positively with economic, social and technological transformations (Zghal, 2005).

This paper aims to explore the main mechanisms implemented by Tunisian University in order to contribute to the social -economic development and their characteristics (mimetic or innovative)?

The paper is structured in two sections. First, the paper presents the literature review of the main mechanisms implemented by University in order to contribute to the social -economic development. In the second section we will present methodology, results and discussion of our case study related to a Tunisian university: Sfax University.

I. ROLE OF UNIVERSITY IN REGIONAL DEVELOPMENT

As the economy changed and regional innovation systems emerged, universities have become important components of a regional economy (Mayer, 2006). In order to identify the main mechanisms implemented by universities to contribute to regional development, two bodies of literature are being mobilized: the triple helix model of university, industry, government relations (Etzkowitz and Leydesdorff, 1999; Etzkowitz, 2001) and the literature on university engagement (Holland, 1999; Chatterton and Goddard, 2000). These approaches have conceptualised the third role of universities in regional economic development (Gunasekara, 2006a). The triple helix of university–industry– government relationships examines primarily the university and its response to regional economic development opportunities. Many studies have focused on the entrepreneurial role of universities as 'regional innovation organisers' (Etzkowitz, 2001; Mayer, 2006). The triple helix model takes a generative orientation, arguing that, as primary institutional spheres, universities are key drivers of economic development through a range of boundary-spanning and knowledge capitalisation mechanisms. The university engagement literature, while acknowledging the importance of academic entrepreneurial activities in enabling technology transfer and economic growth, points to a broader, developmental role performed by universities through adapting their traditional roles in teaching and research to better support regional knowledge needs (Gunasekara, 2006a; Gunasekara, 2006b).

1. A triple helix model: knowledge capitalisation and other boundary spanning mechanisms

A university-industry-government triple helix based upon independent institutional spheres in which each can interact freely and "take the role of the other" has been identified as form of social organization that is highly conducive to innovation (Zhou, 2008). Triadic interactions are a method of creating or renewing innovation systems in both advanced industrial and developing societies. The construction of a triple helix includes the creation of institutions for the production and transmission of knowledge; a consensus building process through which potential partners come together to collectively identify niches and design organizational mechanisms to realize an innovation strategy (Etzkowitz, 2003).

Furthermore, a triple helix model emphasizes the university's role in knowledge-based economies and the rise of the entrepreneurial university. An entrepreneurial university has three missions: teaching, research, and service for the economy through its entrepreneurship activities at one time (Etzkowitz, 2003; Zhou, 2008). As the university becomes more closely involved in the transfer of technology and the founding of new firms, it attains a new entrepreneurial identity (Etzkowitz, 2001).

Continually participating in society's technological innovation, it has four primary characteristics that can be used as criteria of entrepreneurial university capacity:

- (1) Undergoing technology transfer and entrepreneurship based on high-tech development.
- (2) Sufficient resources of S&T research and spin-over of knowledge innovation to the located regions; as well as having strong influence on the regional industries and economy.
- (3) Entrepreneurship are widely accepted in ideology and supported systematically. There are considerable numbers of staff to join firm formation for "high-tech innovation" . . . And spin-offs or University-run enterprises (UREs) influence the regional industries strongly to form its leading industries.

(4) There are organizational mechanisms in university-industry interface, e.g. technology-transfer office, or office of technology license, and industry-university collaboration committee (Zhou, 2008).

The triple helix approach suggests that the entrepreneurial university is a response to the increasing importance of knowledge as a production factor in any innovation system and the recognition that the university has an undisputable leadership in the creation of new knowledge and its transfer to the broader society (Suzanne, et al., 2009). As the university takes up a new role in promoting innovation, its educational and research missions are also transformed and its relationship to industry and government is enhanced (Etzkowitz, 2008). Universities are increasingly playing an entrepreneurial role as the source of future industrial development, both by establishing organizational mechanisms to transfer knowledge and technology and by playing a strategic role in regional development (Etzkowitz, 2003).

On the one hand, the entrepreneurial university adds the capitalization of knowledge to the university's traditional roles in the production and dissemination of knowledge. Originating as a conservator and reproducer of knowledge; the university became a producer of knowledge (the first academic revolution) and more recently a generator of knowledge-based enterprises (the second academic revolution) (Etzkowitz and Dzisah, 2006).

The creation, dissemination and utilization of knowledge have become more directly involved in industrial production and governance. The more explicit utilization of knowledge in industry and government, exemplified by the invention of the discipline of "knowledge management" and the growth of "intelligence" give knowledge producing institutions, that have the organizational capacity to recombine old ideas, synthesize and conceive new ones, a greater importance (Etzkowitz, 2003).

On the other hand, as the entrepreneurial paradigm takes hold, interface capabilities spread throughout the university. Within academic departments and centres, faculty members and other technical personnel are assigned special responsibility to assess the commercial salience of research findings and encourage interaction with external partners. Centralized interface capabilities play a leading role initially but their role declines as decentralization typically follows success (Etzkowitz, 2008).

In the heart of the overall university innovation system lies the "entrepreneurial university" that generates technology advances and facilitates the technology diffusion process through intermediaries such as technology transfer offices and the creation of incubators or science parks that spawn new (Rothaermel et al., 2007).

Also, spin-offs form represents an important mechanism of commercialization of academic knowledge. Spin-offs tend to locate in proximity to the parent organization, resulting in a geographical concentration of these firms around universities and research institutes. Furthermore, by moving from one organization to another, mobile employees transfer the knowledge embodied in them. Informal social networks and formal networks of research collaboration also form a knowledge capitalisation and other boundary spanning mechanisms (Ponds et al., 2010).

Therefore, the triple helix approach asserts that universities generate economic development mainly through **knowledge capitalisation and other boundary spanning mechanisms** like business incubation, spin-off formation, scientific parks, technology transfer, advanced training programs to support firm formation and cross-institutional mobility by organisations and people, university-industry cooperation, etc. (Gunasekara, 2006a; Gunasekara 2006b; Etzkowitz, 2001).

2. The literature on the engaged university: mechanisms by which universities engage with their regions

The literature on the engaged university (OECD, 1999; Chatterton and Goddard, 2000; Holland, 1999) also focuses on the third role of universities in regional development, but it differs from the triple helix model in its emphasis on, adaptive responses by universities, which embed a stronger regional focus in their teaching and research missions. This approach does not eschew the development of hybrid, boundary-spanning mechanisms for external engagement; rather, it takes a broader, developmental focus that includes a range of **mechanisms by which universities engage with their regions**.

In fact, the engaged university works in partnership with local people to facilitate the broad range of community interaction that fosters individual and social well-being. It happens through "direct interaction with external constituencies and communities through mutually beneficial exchange, exploration, and application of knowledge, expertise and information. These interactions enrich and expand the learning and discovery functions of the academic institution while also enhancing community capacity" (Holland 2001, 10 (Bridger and Alter, 2006). Engaged universities are driven by and accountable for their partnerships with the public. Being an engaged university thus means working with government, businesses, and nonprofit agencies to respond to community needs (Cherwitz and, Hartelius, ...).

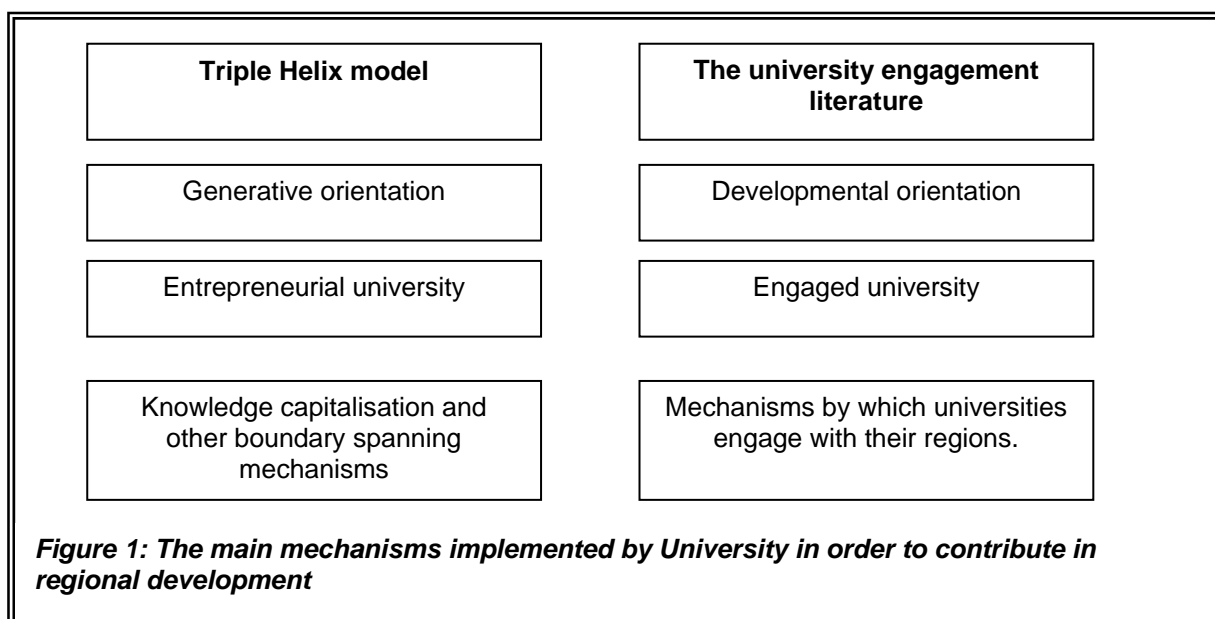
If the concept of engagement is to retain a critical force and address concerns about the social responsibility of the university, it must be firmly tied to the issues and problems that affect people in the places they live (Bridger and Alter, 2006).

The engaged university designates an institution embracing and acting on the assumption of enormous value of intellectual capital. In this case, intellectual capital refers to faculty expertise and creativity, which largely stems from a university's capacity to harness, integrate, and leverage knowledge for social good. To be engaged means

recognizing that a university's collective knowledge is among its most precious assets—anchored to, but not in competition with, basic research and disciplinary knowledge. Cherwitz et Hartelius, ...).

The university engagement approach, therefore, points to a developmental role performed by universities in regional economic and social development that centres on the intersection of learning economies and the regionalisation of production and regulation (Gunasekara, 2006a; Gunasekara, 2006b). Developmental approach suggests that universities contribute to the economic development of a region by promoting new forms of education and mechanisms of communication in a complex system of interactions (Leydesdorff and Meyer, 2008).

These mechanisms include stronger regional focus on student recruitment and graduate retention, research and education programs developed adapted to meet regional skills needs, shaping regional networking and institutional capacity, entrepreneurial activities, as well as regionally focused teaching and research, etc. (Gunasekara, 2006a).



The value of this conceptual framework is determined by empirical research. The next section will describe our research method and approach, results and discussions.

II. ROLE OF SFAX UNIVERSITY IN REGIONAL DEVELOPMENT

After independence, higher education in Tunisia lived three major structural reforms. The first one (1958) marked the birth of the Tunisian modern education system. Its principles and founders choices allowed Tunisia to make considerable progresses in economic and social development. Thirty years later, confronted with new problems, the Tunisian higher education was restructured through a second reform. This update brought new visions and paradigms by opening the system on the international standards and the accreditation processes (Khefacha and Belkacem, 2009).

Higher education in Tunisia is currently confronted with the explosion of students' number. This significant growth represents at the same time a veritable chance for Tunisia, but also an important challenge to take up: it is a question of accommodating the flows envisaged by offering them a solid formation and ensuring their employability (European communities Report, 2006). This trend calls into question the capacity of higher education and vocational training systems to cope with increased demand by improving the quality of education and its relevance to the labour market and maintaining expenditure at current levels (European communities Report, 2006; Eleventh Tunisian Development Plan 2007-2011)

As considered as a place of acquisition and creation of new knowledge, Tunisian university plays an increased role in the "longlife learning". The investment in formation and research, which are the mission of the university, represents nowadays a central source of creation of potential value (Khefacha and Belkacem, 2009). Tunisian university plays so a key role in the organization of foray on skills and human resource requirements for the modern economy (European communities Report, 2006).

1. Methodology

In order to study the contribution of Tunisian university to the social-economic development, we are adopted a qualitative approach related to Sfax University (located in south Tunisia). Qualitative research is of specific relevance to the study of social relations. In fact, rapid social change and the resulting diversification of life worlds are increasingly confronting social researchers with new social contexts and perspectives (Flick, 2009).

This choice is justified by the features of Sfax as an economic, higher education and research (20 institutions) and (42 000 students) pole in Tunisia (Sfax University web site, 2010).

In other hand, Sfax University is designed by the Tunisian ministry of higher education since 2004 as a “pilot site for application of management per objectives”. Its strategic vision is characterized by a partnership with the social and economic environment and the promotion of the entrepreneurial culture. It is axed on four dimensions. The two firsts dimensions are related to the improvement of the formation and R&D quality. The third axe is the improvement of the management processes quality. The fourth axe is related to the promotion of “piloting culture” rather than “control culture” through improving the internal and external evaluation processes quality. In consequence, the quality improvement is the principal challenge for the Sfax University in order to satisfy the stockholders’ expectations (Maalej and Damak Chaabouni, 2007).

The data have been collected between 2007 and 2010, using participant observation (attend a meetings, a conferences and a formation circles, teach entrepreneurial culture unit, etc.), universities’ institutional web-sites and documentation methods. The data are analyzed by using coding and categorizing method.

2. Results and discussions

Sfax University was created in 1986. Sfax University has lived since its inception a change in the number of students, the number of teachers and quality education in these institutions. It living today a new era of development and restructuring (Sfax University web site, 2010).

Tableau 1: Statistics of Sfax University

Number of institutions:	20
Number of research institutions	108
Students	41746
Distribution of students by nationality	
Tunisians:	41463
Foreign	283
LMD System	
Institutions	16
Licenses	89

Source: Sfax University Web site, (2010)

Sfax University has implemented some mechanisms in order to realise its strategic orientations aimed to improve its participation in regional development. These mechanisms can be classified in two categories:

2.1 Knowledge capitalization and hybrid, boundary-spanning mechanisms

Our findings show that some knowledge capitalization and hybrid, boundary-spanning mechanisms are implemented by Tunisian government in order to improve Sfax university capacity in social-economic development: eg.

- encouraging the mobility of researchers between research centres and production firms, (full or partial time)
- setting-up of Sfax technopark in order to provide the appropriate environment for the transfer and diffusion of the technological know-how. Specialised in information technologies and multimedia, Sfax technopark is composed by a research centre of IT and multimedia, three high institutions, firms incubator, technological resources centre and business area.
- setting-up of incubators and business incubators as a receiving platform for providing the counselling, support and initial accommodation to young researchers
- LMD reforms (Licence, Master, Doctorate) with an aim of modernizing the system of university diplomas and to harmonize the courses of formation on the level of the higher education with the international standards and systems (Mkadmi and Ben Romdhane, 2007).

By introducing a multidisciplinary approach, new pedagogical methods (concept of learning outcomes, evaluation and monitoring processes), and developing links with business and society (placements, internships, external lecturers, team-projects.... Co-Constructed Licences), the challenges and priorities of the LMD system are:

- Improving the employability of graduates (adaptation to the need and access to the labour market)
- Finding the right balance between 3 main components: (1) acquisition of knowledge, (2) key competences (creativity, critical mind, communication, etc.), (3) professional experience (know-how) (Programme for Regional QA, 2008).

2.2 Mechanisms by which Sfax University engages with its region

In addition to the knowledge capitalization and hybrid, boundary-spanning mechanisms, specific mechanisms related to the opportunities and threats of the region are created by Sfax University. These mechanisms engage Sfax University with the regional needs and development.

The main mechanisms are:

2.2.1 The creation of scientific association, interface between Sfax university and its social- economic environment

In order to reinforce the exchanges of Sfax university with its economic, social and cultural environment, a scientific association “l’association l’université et l’environnement AUNE” was created in 2000. Adherents to this association are composed by academics and industrialists.

The objectives of this association are:

- Encourage and support the dynamics of University research and enhances the expertise of the University and put at the disposal of the social-economic environment
- Participate in joint activities and projects with external partners and build relationships with the components of the economic environment,
- Serve as an interface between the needs of the environment and the potential of the University
- Participate in the creation and management of training and research centres in consultation with external demand,
- Facilitate the transfer of academic knowledge to the productive sectors.

2.2.2 Organisation of an annual Sfax University fair: Univ’expo

The Univexpo is the annually exhibition organized by Sfax University. Participation in Univ’expo is open to all Tunisian academic institutions, research centres, laboratories and the national and international academic and industrial partners of Sfax University

This event aims to consolidate the integration of Sfax University in its socio-economic environment allowing to present the skills and potential human and material resources that the University could put at the disposal of the enterprise to stimulate efficient cooperation and synergy between the world of knowledge and business.

The components of the Univ’expo are:

- Research space: allows presenting the recent research results undertaken by researchers in the Tunisian universities’ laboratories
- Projects Space: this space presents the best graduation projects of students in different courses and generally conducted in collaboration with private industry.
- University orientation space: allows accommodating the new graduates that will be provided all details and information related to orientation, programs of education provided by academic institutions, academic backgrounds and professional qualifications issued and all information that could properly guide their choices.

2.2.3 Creation of an Entrepreneurship and Placement University Centre (EPUC)

In 2006, Sfax University has created an Entrepreneurship and Placement University Centre (EPUC) in order to improve the entrepreneurial dynamic of the region. EPUC has three main missions:

- Promote employment of the university graduates
- Promote entrepreneurship culture
- Promote the valorisation of research efforts and Results

In order to realise its objectives, the actions of EPUC are based on three pillars: **before university** (promotion of entrepreneurial culture in scholar environment), **in university** (promotion of entrepreneurial culture and firm creation) and **after university** (accompanying university graduates’ projects and research results commercialisation) (Mezghani, 2008). These actions are based on formation, networking (national and international universities, financial institutions, experts, support organisms, private enterprises, etc.), flexibility, decentralisation, involvement of different stockholders from the region, data bases (statistics, diagnostic, prospective studies, communication, etc.) and regional focus on student recruitment.

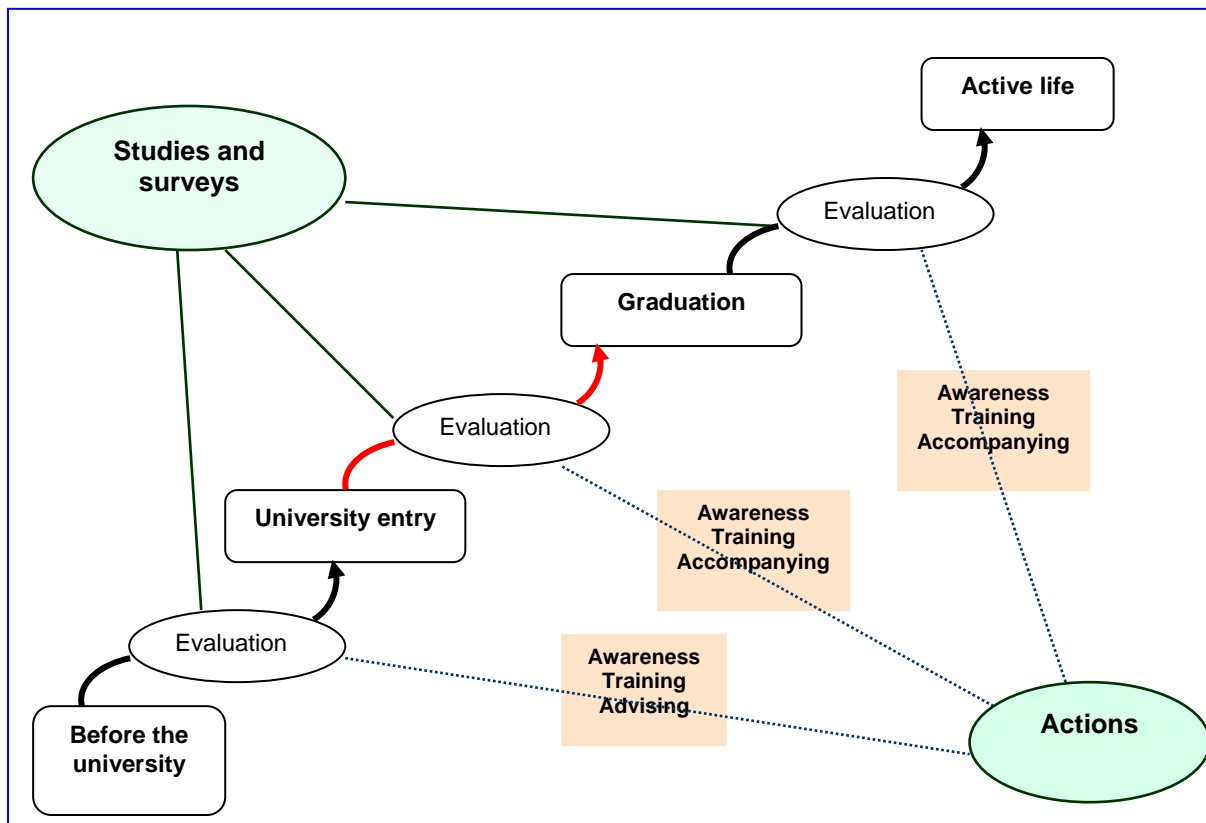


Figure 2: The main actions of EPUC
Source: Mezghani, (2010)

□ Before University: Entrepreneurial Culture in Schools

In collaboration with regional direction of education, EPUC has realised a project aimed to promote entrepreneurial culture in school. The main actions introduced are:

- Seminars and meetings of awareness with teachers and professors
- Design and production of didactic materials for the benefit of 10 primary schools (pilot project)
- Presentation of technological projects at the Univ'Expo 2007 & 2008 by students of Primary Schools
- Identify entrepreneurial activities in primary schools.
- Accompanying projects in 20 primary schools

□ In University: Entrepreneurial Culture and Firm Creation

In order to stimulate an entrepreneurial dynamic and to facilitate student recruitment, EPUC has implemented some mechanisms engaging Sfax University with the region:

• Pedagogical materials development

In order to harmonise the curriculum of entrepreneurial culture and entrepreneurship within Sfax University, a work team composed of specialists has been mobilized to develop the Teaching Toolkit (syllabus, Pedagogical material, software simulation, case studies, Auto-diagnostic Grid, Business Plan development guide, etc.). This teaching toolkit is composed by 3 modules: awareness module: "**Entrepreneurial Culture**", training module: "**Firm Creation (process)**" and accompanying module: "**Business Plan**".

In 2008, EPUC has also organised an international conference "**culture entrepreneuriale et création d'entreprise**" to develop pedagogical materials for teaching entrepreneurship at university. Participants in the conference are from Tunisia, France, UK, Canada, USA, Morocco, Finland, etc.

• Entrepreneurship Village

Since 2007, the EPUC organizes each year the village of entrepreneurship. This annual event aims to aware, train and accompany participants who are students pursuing their education, graduates or projects holders. The first week is devoted to the training of trainers. The second week targets students during their training and aims to raise awareness about the entrepreneurial culture. The third and final week is dedicated to university graduates and projects holders that can benefit from specific accompanying and initiate practical activities for entrepreneurship such as developing a business plan.

- Units of employability

In order to collect continuous information related to the needs of the labour market, EPUC has established several units of employability in every academic institution under the authority of Sfax University.

Missions of the units of employability are as follows:

First part: insertion

-Inform, update and track job postings for employment offices.

-Coordinate with the University Observatory and update information on students and graduates of higher education and in a regular manner.

-Participate in the conduct of studies on one hand the employability of graduates and the other on the exploration of their intentions.

Second part: firm creation

-Inform about the mechanisms and incentives for business creation and support structures in providing the necessary documentation and ensuring the updating of data.

-Serve as a bridge between academic institutions and economic and industrial establishments both locally and regionally.

-Organize regular meetings between students, graduates, businessmen and economic institutions.

-Work towards the development of leadership and to anchor the model of self-employment among students by organizing training seminars for teachers and individual experts in the field of entrepreneurial culture.

- University Observatory

It serves as an interface between Sfax university and business enterprises to ensure better adequacy between training and employment.

Many missions of the observatory:

-To collect, analyze and disseminate statistics relating to students in training, graduates, teachers, training domains and institutions.

-Contribute to the development Sfax University strategy and the evaluation of its results.

-Provide information relevant to strengthen the strategy of the University to ensure a better adequacy between training and employment.

-Conduct studies on the employability of graduates of the University.

- Research results valorisation

EPUC identify the skills of teachers and researchers who may be involved in business and public organisation beyond their pure research. The centre has identified approximately 270 project ideas at Sfax University. It has also organized an international meeting of scientific research development and the creation of innovative companies in June 2009. It intends to organize the first fair of innovation and creation of innovative companies.

- Entrepreneurial associations and clubs

The emergence of entrepreneurial associations and clubs in all academic institutions is a strategic choice of Sfax University.

□ **After University: Accompanying University Graduates' Projects and Research Results Commercialisation**

After the university, the actions of EPUC are related to accompanying project holders. The centre has accompanied three promotions project leaders by experts and academics:

- Promotion 1: 30 projects (April 2006)

- Promotion 2: 50 projects (April 2007)

- Promotion 3: 40 projects (April 2008)

The EPUC has also organised awareness seminars for project holders (industrial, young entrepreneurs, experts, etc.) and has proposed training on "firm creation" provided by experts.

In addition, a **listening and assistance unit** has been created. This unit has been established by EPUC. Its objectives are the diagnostic of the difficulties that can meet entrepreneurs at start-up and the assistance of the entrepreneur through the entrepreneurship process and after firm creation.

Tableau 2: Mechanisms implemented by Sfax University in order to contribute to regional development

Mechanisms	
Knowledge capitalization and hybrid, boundary-spanning mechanisms	-Encouraging the mobility of researchers between research centres and production firms -setting-up of Sfax technopark -setting-up of incubators and business incubators -LMD reforms (Licence, Master, Doctorate)
Mechanisms by which Sfax University engages with its region	-The creation of scientific association, interface between Sfax university and its social- economic environment -Organisation of an annual Sfax University fair: Univ'expo -Creation of an Entrepreneurship and Placement University Centre (EPUC). Its actions are based in three pillars: Before university: promotion of entrepreneurial culture in scholar environment, In university : promotion of entrepreneurial culture and firm creation After university: accompanying university graduates' projects and research results commercialisation.

The contribution of this empirical research is to show that Sfax University is influenced by international experiences (in particular French and European experiences) and has implemented some mimetic mechanisms; however it has adopted other innovative mechanisms related to its national and regional context. The relationship between university and different stakeholder community of Sfax (a first oil producer, first fishing port, second industrial pole, energy producer, and petroleum and gas producer (Sfax chamber of commerce and industry web site, 2010), is more and more active. This takes a variety of forms including: consultancy, education and training, research and technology transfer, creation of specialized organizational units, etc. The enhanced contribution of Sfax University in regional development permits an evolution of graduate entrepreneurial intention (figure 2).

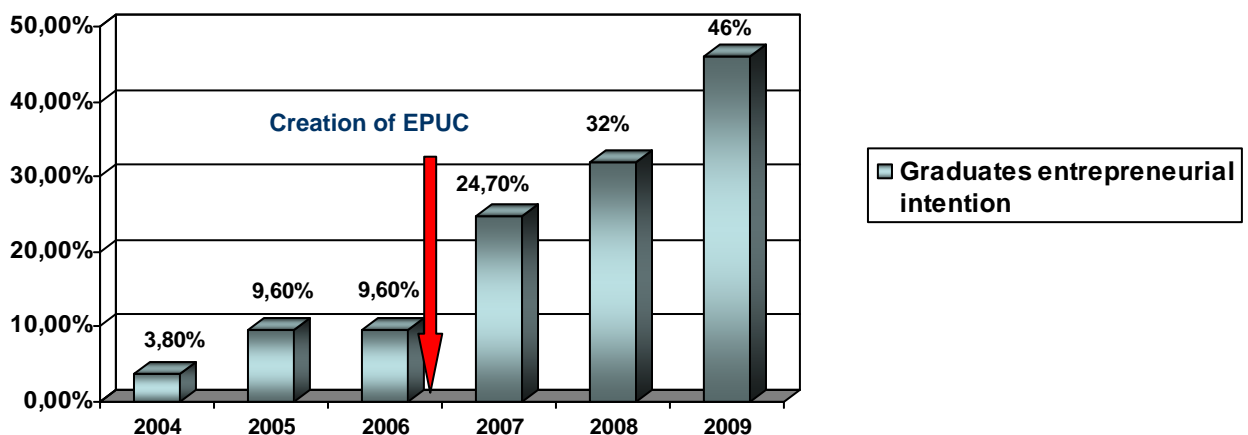


Figure 2: University graduates entrepreneurial intention
Source: Mezghani, (2010)

The experience of Sfax University in regional development has been evaluated

- by some national and international experts (eg. European Training Foundation);
- in some international conferences (eg. Fostering Entrepreneurial Spirit in Higher Education: Conference on the European Charter for Small Enterprises in June 2008, Bled, Slovenia)
- in Handbook of Research in International Entrepreneurship Education: Educating Entrepreneurs for the World (Third Volume, end 2009) (Mezghani, 2008).

As a representative of Tunisia, Sfax University participates also, with others universities from 16 countries in an international project related to the development of entrepreneurial university indicators. It participates, as well in a project proposed by European committee related to the evaluation and accreditation of best practices and entrepreneurial universities networking.

As a result, the roles performed by Sfax University are path-dependant. Recognising the path-dependent nature of routines highlights the importance of feedback effects (Argyrous and Sethi, 1996). The evaluation about

outcomes has influenced not only the future strategic orientation and actions of Sfax University but also the political actions. In fact, the Sfax University experience has impacts on national higher education structure and national programs. This is concretised by the generalization of EPUC (Decree n° 2008-2716 - 4 August 2008) and the generalization of Entrepreneurship Modules (Decree n° 2008-3123 - 22 September 2008 and Ministerial note n°103 - 29 November 2008). Rothaermel et al., (2007) argue that the feedback from the external environment, including policy decisions, continuously influences the way the universities participate in entrepreneurial activities. In recent years, policy and culture have also shifted to become more favourable toward university entrepreneurship. In turn, interactions both within the university system itself and between the system, government and industry continue to renew the role of the university system, affect significant societal influences from academia to society, and vice versa, as captured by the feedback.

This empirical result confirms the triple helix thesis related to the interdependence between the institutional spheres. The interaction among institutional spheres of university, industry and government, playing both their traditional roles and new roles, in various combinations is the basis of creative reconstruction, the synthesizing of new formats to foster organizational and technological innovation (Etzkowitz and Dzisah, 2006).

CONCLUSION

The relevance of this paper is to explore through a qualitative study, the main mechanisms implemented by Sfax University in order to contribute to the social-economic development. Two theoretical approaches are mobilised: the triple helix model identifying knowledge capitalisation and other boundary spanning mechanisms and the literature on engaged university identifying mechanisms by which universities engage with their region.

The findings results show that some knowledge capitalization and hybrid, boundary-spanning mechanisms are implemented by Tunisian government in order to improve Sfax university capacity in social-economic development: eg. encouraging the mobility of researchers between research centres and production firms, setting-up of Sfax technopark in order to provide the appropriate environment for the transfer and diffusion of the technological know-how, setting-up of incubators and business incubators as a receiving platform for providing the counselling, support and initial accommodation to young researchers, LMD reforms, etc...

In addition, specific mechanisms related to the opportunities and threats of the region are created by Sfax University: creation of scientific association, interface between Sfax university and its social- economic environment, organisation of an annual Sfax University fair: Univ'expo and creation of an Entrepreneurship and Placement University Centre (EPUC). The actions of EPUC are based on three pillars: before university (promotion of entrepreneurial culture in scholar environment), in university (promotion of entrepreneurial culture and firm creation) and after university (accompanying university graduates' projects and research results commercialisation). These actions are based on formation, networking, flexibility, decentralisation, involvement of different stockholders from the region, data bases (statistics, diagnostic, prospective studies, communication, etc.) and regional focus on student recruitment.

Although Sfax University is influenced by international experiences and has implemented some mimetic mechanisms, it has adopted other innovative mechanisms related to the features of the region. Future research can explore the experience of other Tunisian universities in different regions (urban, rural, etc.) and compares the role of each University in regional development. In fact, Gunasekara, (2006a) studies three Australian Universities and shows that political and economic conditions had a differential impact in the different regions and their universities.

References

- Argyrous, G. and R. Sethi. 1996. 'The Theory of Evolution and the Evolution of Theory: Veblen's Methodology in Contemporary Perspective'. Cambridge Journal of Economics, 20, 475-495.
- Bridger, J. C. and T.R. Alter. 2006. The Engaged University, Community Development, and Public Scholarship. Journal of Higher Education Outreach and Engagement, 11(1), 163.
- Chatterton, P. and J. Goddard. 2000. 'The Response of Higher Education Institutions to Regional Needs'. European Journal of Education, 35 (4), 475-496.
- Cherwitz, R.A. and E.J. Hartelius. 2010. Making a "Great 'Engaged' University" Requires Rhetoric, Retrieved January 2010, from site <https://webpace.utexas.edu/cherwitz/www/articles/chapter11.pdf>
- Dooley, L.. and D. Kirk. 2007. University-industry collaboration: Grafting the entrepreneurial paradigm onto academic structures. European Journal of Innovation Management, 10 (3), 316-332.
- Eleventh Tunisian Development Plan 2007-2011
- Etzkowitz, H. 2008. The Bi-Evolution of the University in the Triple Helix Era. Retrieved September 2008, from site www.ie.ufrj.br/.../a_universidade_e_o_desenvolvimento_regional.pdf,
- Etzkowitz, H. 2001. The Second Academic Revolution and the Rise of the Entrepreneurial University. IEEE Technology and Society Magazine, Summer.

- Etzkowitz, H. 2003. Innovation in Innovation: The Triple Helix of University-Industry-Government Relation. *Social Science Information*, 42(3), 293-338.
- Etzkowitz, H. and J. Dzisah. 2006. The Triple Helix in Development: Circulation of Elites among University-Industry-Government. Conference on The Triple Helix Paradigm for development: Strategies for Cooperation and Exchange of Good Practice, Bristol, 17-19 September.
- Etzkowitz, H., and L. Leydesdorff. 1999. 'The Future Location of Research and Technology Transfer'. *Journal of Technology Transfer*, 24, 111–123.
- European communities Report. (2006). Scenarios for future scientific and technological development in developing countries 2005-2015. European communities
- Flick, W. 2009. An introduction to qualitative research. London: Sage.
- Freeman, C. 1991. Networks of innovators: a synthesis of research issues. *Research Policy*, 20, 499–514.
- Goddard, J. and P. Chatterton. 1999. Regional development agencies and the knowledge economy: harnessing the potential of universities. *Environment and Planning C Government and Policy*, 17, 685–699.
- Gunasekara, C. 2006. Reframing the Role of Universities in the Development of Regional Innovation Systems. *Journal of Technology Transfer*, 31, 101–113.
- Gunasekara, C. (2006). The generative and developmental roles of universities in regional innovation systems. *Science and Public Policy*, 33 (2), 137–150.
- Holland B A. 1999. From murky to meaningful: the role of mission in institutional change. In *Colleges and Universities as Citizens*, eds. R G Bringle, R Games and E A Malloy, pp. 48 73. Boston: Allyn & Bacon.
- Holland, B. 2001. Exploring the challenge of documenting and measuring civic engagement endeavors of colleges and universities. Paper presented at the Campus Compact, Advanced Institute on Classifications For Civic Engagement, 23 March. Available at <http://www.compact.org/advancedtoolkit/measuring.html>
- Khefacha, I. and L. Belkacem. 2009. Tunisian higher education in the twenty-first century. Retrieved January, 2009, from site www.ct-wcongress.de/ifsam/download/track_5/pan00759.pdf
- Leydesdorff, L. and M. Mayer. 2008. The triple helix model and the knowledge-based economy. *Scientometrics*, forthcoming. Retrieved November 20, 2008, from site http://users.fmg.uva.nl/lleydesdorff/th_kbe/th_kbe.pdf
- Lundvall B. 1992. Introduction. *National Systems of Innovation: Towards a Theory of Innovation and Interactive Learning/ ed. B Lundvall*. London: Pinter.
- Maalej, M. and H. Damak Chaabouni. 2007. Université et nouveaux contextes d'action : vers une articulation des processus budgétaire, stratégique et organisationnel. X Congreso Internacional de Costos, Lyon.
- Mayer, M. 2006. 'What is the Role of Universities in High-tech Economic Development? The Case of Portland, Oregon, and Washington, DC'. *Local Economy*, 21(3), 292–315.
- Mezghani, L. 2008. Incubateurs universitaires, aide à la création d'entreprises Expérience du Centre Universitaire d'Insertion et d'Essaimage de l'Université de Sfax : Valorisation, Incubation et Création d'Entreprises. Presented in Sfax University, 12 december 2008, available at www.bntus.rnu.tn/.../CE2%20intégré%20-%20L%20Mezghani%2012-12-08.ppt
- Mezghani, L. 2010. Entrepreneurship in Higher Education National Policy and Institutional Case-study. conference on High Level Reflection Panel on Entrepreneurship Education Zagreb, 18-19 March 2010.
- Mkadmi, A. and M. Ben Romdhane. 2007. L'Institut Supérieur de Documentation de Tunis entre les défis des TIC et les besoins de la formation à l'ère du numérique. *Revue des sciences de l'information*, Rabat, décembre 2007.
- OECD, Organisation for Economic Cooperation and Development. 1999. *Boosting Innovation: The Cluster Approach*. Paris: OECD.
- Ponds, R., F. van Oort and K. Frenken. 2010. Innovation, spillovers and university–industry collaboration: an extended knowledge production function approach. *Journal of Economic Geography*. 10 (2): 231-255
- Programme for Regional QA, 2008. *HE Curricula Reform & Evaluation in Tunisia: Challenges, Approaches and Tools*. CAIRO, 21 and 23 June 2008.
- Rothermae, I F.T., S.D. Agung and L. Jian. 2007. University entrepreneurship: a taxonomy of the literature. *Industrial and Corporate Change*. 16(4):691–792.
- Site of Sfax chamber of commerce and industry: www.ccis.org.tn/english/historique_economique.php
- Suzanne, P. A., A.L. González and G. E. Dabós. 2009. The "Third Mission" of universities in emerging countries: Generative and developmental roles to support knowledge based regional development. 7th Triple Helix Conference, Glasgow, 17-19 June 2009.
- Site of Sfax University: www.uss.rnu.tn
- Zghal, R. 2005. L'enseignement supérieur créateur de la valeur et objet des valeurs. Retrieved March, 2009, from site : www.universites.tn
- Zhou, C. 2008. Emergence of the entrepreneurial university in evolution of the triple helix: The case of Northeastern University in China. *Journal of Technology Management in China*, 3(1), 109-126.