

Chapter 4

Entrepreneurship and University: How to Create Entrepreneurs from University Institutions

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Abstract At a time of economic uncertainty, it is necessary to find new alternatives to improve the employment situation. One of the solutions is to foster entrepreneurship from the institutions of higher education (IHE). The IHE do not only have the function of training students. Their work goes beyond, insofar as they have a very important role in the transfer of knowledge to society. While entrepreneurship is something not too extended in the University classroom, past experiences promoted by the IHE, highlight an important interest in such initiatives. The main objective of this chapter is to point out the essential role of the IHE in the field of entrepreneurship, based on different actions that can be applied. Among other elements, the results of initiatives such as university business incubators, university spin-offs, mentoring (expert advice), business angels (agents that bring money or experience to future entrepreneurs), etc., will be discussed. This study will be done both from a national perspective, and compared with the perspective at European level, to determine the main results of the different alternatives. Together with the above, a set of best practices for university entrepreneurship (networks of entrepreneurship, studies focused on the creation of new enterprises, updating and recycling business courses, university aids to entrepreneurship, etc.), will also be dealt with. The methodology applied, based on case studies, will allow us to know the development of university entrepreneurial activities, in order to extrapolate the experiences to the Spanish reality.

Keywords Applied research • Basic research • Basic Technology Company • Business Angels • Coaching • Economic and social integration • Entrepreneurial culture • Entrepreneurial university • Entrepreneurship program • Knowledge transfer • Learning by doing • Networks of entrepreneurship • Office transfer and research • Pre-incubator of business • Spin-off • Start-ups • Technologies of information and knowledge • Third mission • Units of support and self-employment • University entrepreneurship

4.1 Introduction

The institutions of higher education (IHE) of the twenty-first century are immersed in a process of profound changes. Their traditional responsibilities revolved around teaching and research (first and second mission, respectively of the IHE). However, it is necessary to add the transfer of knowledge and innovation for the promotion of entrepreneurship. These new activities are necessary to develop the social sustainability or third mission (Casani, Pérez Esparrells, & Rodríguez-Pomeda, 2010). This change is known as the “second academic revolution” (Martin & Etzkowitz, 2000).

To ensure this objective, it is essential to improve the transfer of knowledge from the IHE to society. However, this is not only accomplished by the transmission of concepts to students, but also, and this is something really new, through the work developed by University research teams that will be useful for the economic and social environment.

At least two effects of this activity can be mentioned: basic research and applied research, which will enable advances in the scientific and transfer field. In this sense, Ortín, Salas, Trujillo and Vendrell (2007); Ortín and Salas (2008) point out that an additional element to consider in the transmission of knowledge from IHE to society is its commercialisation, through new business initiatives. However, the promotion of entrepreneurship from the IHE should have another purpose, which is to contribute to adequate job placement of the students. The high figures of unemployment, underemployment and labour over-qualifications shown in the Spanish economy, to which must be added important current emigration of graduates who seek employment outside Spain, must make us consider the matter.

Thus, at present, many students and graduates, given their reduced job opportunities, as a result of the general unemployment rate (in 2014) of 24.1 %, amounting to

53.8 % for people under the age of 25, increasingly consider self-employment as an alternative to wage employment. Precisely for this reason, students and university graduates should receive adequate training, which promotes entrepreneurship in order to launch their business initiatives and the IHE have an obligation to provide these capabilities (Ministry of Education, 2010). If the IHE promote entrepreneurship, they enable young people to have adequate training and motivation in order to face the business challenge creation.

The European Union (EU) is no stranger to this phenomenon. In the “Action Plan on Entrepreneurship 2020”, the strategy indicated to be followed by European countries is to offer practical opportunities to those who are willing to take the risk of creating a company. Precisely, following the experiences of the Erasmus mobility program for teachers and students, the EU created “Erasmus for Young Entrepreneurs”, whose objective is to promote transnational exchanges for new entrepreneurs, so they can learn from entrepreneurs in the same sector and from other countries.

The EU is aware that knowledge is the basic component for economic and social development. This is only viable in a joint work scenario, between the IHE and the company, being necessary to reinforce education and research, encourage the transfer of research results and promote relations between the IHE and the productive fabric (Comisión Europea, 2013). For this reason, the initiatives that are being carried out from the IHE, aimed at improving the levels of entrepreneurship should be noted, and precisely this is the main objective of the chapter.

To achieve this, the following work outline is presented. After this introduction, the second chapter is a study, from a general perspective, of the role of IHE in the field of entrepreneurship. The third chapter describes some of the initiatives of European IHE in the field of entrepreneurship. The fourth chapter identifies some of the actions in the field of entrepreneurship of IHE in Spain. Some recommendations for the promotion of entrepreneurship in the IHE are given in Chap. 5. This chapter ends with a series of conclusions from those stated in the preceding paragraphs.

4.2 An Overview of the IHE and Entrepreneurship

The IHE should have a key role in the field of entrepreneurship. In order for the higher education system to be of quality, it is necessary to respond to society demands, so as to meet students' expectations, including their future employment situation, and it should be consistent with the needs of the business sector.

The IHE should encourage students in the learning and practice of entrepreneurship, in order to create new innovative business initiatives, and at the same time they should convey the need for business success by taking risks. In addition, the IHE should ensure adequate training, to give solution to the problems to which the students will be faced by in the market. By achieving all the above, the creation of employment and wealth will be made possible.

The study of entrepreneurship in the IHE at international level is not something new (Clark, 1998, 2004; Etzkowitz, 2004; Gibb, 2005; Maskell & Robinson, 2002; Röpke, 1998). Thus, for the IHE to be entrepreneurial, they should maximize the potential for commercialization of their ideas and create value in society, without being a threat to academic values (Clark, 2004). These investigations are based on the study by Etzkowitz and Leydesdorff (1997), where a triple helix model was used, in which public administrations, companies and universities or research entities work together on initiatives of interest for these three agents. In this way, business projects closely linked to technology are carried out, contributing to the economic and social development of the economy. Salas, Aguilar, and Susunaga (2000) point out that the agents that form part of innovation systems (universities, entrepreneurs, local government and funding entities), in addition to those elements of the economic environment (productive structure, labour market, infrastructure and community features), can influence entrepreneurs' capacity for innovation.

Bailetti (2011) states that those companies created by university students are vital for the future of IHE, especially those that opt for research and teaching programs in entrepreneurial initiatives. Etzkowitz (1998, 2004) points out that the entrepreneurial IHE must have a proactive approach to knowledge and implementation of results. Clark (2004) indicates that the entrepreneurial IHE must have an administration that is capable of responding flexibly and strategically to the needs and opportunities of the environment. According to this same author, university educational programs must contain the entrepreneurial spirit. Thus, it is possible to mention that among the obligations of the IHE, besides transmitting knowledge, is also to boost the commitment and capacity of students and researchers to develop entrepreneurial initiatives (Fernández, 2004; Rodeiro, 2008).

The promotion of the entrepreneurial spirit is a key factor for universities that deeply commit themselves to economic and social development (Gibb, 2005). It is also mentioned that the IHE

should promote the lifelong learning process; boost recruitment of entrepreneurial personnel, the promotion of entrepreneurial leaders. For Röpke (1998), an entrepreneurial IHE requires a self-transformation process to entrepreneurship. There is no point in an institution that seeks the promotion of entrepreneurship, if then the management is bureaucratic. To do this, it is essential for all the university community to strengthen its links with the business sector.

To achieve this, it is necessary for the IHE to create jobs for Teaching and Research Faculty and Administrative and Service Staff, especially as close to the field where the IHE carries out its activity (Gibb, 2012). This would involve applying a financial compensation and teaching allowance system that goes beyond the usual criteria of research, publications and teaching. The IHE must commit themselves much more to society, through initiatives such as the creation of business incubators, Offices of Technology Transfer (OTT), patents, which are useful for the business fabric. An entrepreneurial IHE is one that is capable of developing mechanisms of technology transfer which enable the transmission of all their knowledge to society (Huanca-Lopez, 2004). That is why it is necessary for an IHE to have a number of key areas, with the objective of adding value and innovation (Gibb, 2012). Figure 4.1 summarizes the key areas for the creation of an entrepreneurial University.

Consequently, the entrepreneurial spirit and the creation of enterprises are configured as key elements for growth and competitiveness. The IHE may improve the aspirations of students in the creation of companies. Thus, it is possible for the IHE

Fig. 4.1 Key areas of university entrepreneurial potential. **Source:** Gibb (2012)

Fig. 4.2 The potential contribution of an entrepreneurial university review to key strategic goals.

Source: Gibb (2012)

to design policies and programs to improve the entrepreneurial capacity of students and graduates (Clark, 2004; Gibb, 2005; Napolitano & Riviezzo, 2008). Bailetti (2011) indicates that companies generated in the University environment are a tangible proof that students have acquired training which is correct and tailored to business demands. The IHE entrepreneurs become a social and economic engine of the environment where they operate (Etzkowitz & Klofsten, 2005). The benefits that an entrepreneurial orientation have for IHE are summarized in Fig. 4.2.

However, there are also objections to IHE strongly supporting entrepreneurship (Banja, 2000; Hayes & Wynyard, 2002; Roberts, 2002; Slaughter & Leslie, 1997). Among the ideas that are mentioned are that fostering entrepreneurship may decapitalize the IHE, as the Teaching and Research Faculty is engaged in the creation of companies, as well as there being a loss of income due to research contracts, as less effort is devoted to this objective and even possible management conflicts in the transfer of technology to spin-offs. However, it is expected that the same that happened with research at the time, which was integrated into teaching, the third function of the IHE will also be part of the IHE (Etzkowitz, 2004). Evidence shows how IHE are increasingly integrating economic development to University tasks (Hoskinsson, Covin, Volverda, & Johnson, 2011; Rothaermel, Shanti, & Lin, 2007). For this purpose, it is necessary for public managers to include the promotion of entrepreneurship in university governance programs.

4.3 Entrepreneurial Initiatives of the IHE at European Level

At international level there are a significant number of initiatives in the field of entrepreneurship. From the monograph “Educación emprendedora: Buenas prácticas internacionales” of the Fundación Universidad-Empresa (2012) for the European case, the following can be mentioned.

The Centre for Entrepreneurial Learning of the University of Cambridge (United Kingdom) has created a training program that seeks the promotion and improvement of the entrepreneurial capacity of students, responding to the needs of the University community in the field of entrepreneurship, and which makes it possible to share the best practices of entrepreneurship through networks and partnerships.

Among other activities, the following are established: (1) a postgraduate degree in entrepreneurship, with a duration of 12 months, compatible with another activity, where students are trained in entrepreneurial perception and skills, opportunity detection and evaluation of ideas for new business activities, as well as facilitating the creation of a business plan and the management of business initiatives; (2) *Enterprise Tuesday*, which is one of the most successful training programmes in entrepreneurship at the University of Cambridge, being reference for other IHE of the United Kingdom; (3) *Ignite*, an intensive 1-week program for potential entrepreneurs and established entrepreneurs, with the aim of establishing business ideas for the commercial world; (4) *Enterprisers: what are you waiting for?*, where business tasks are simulated, interaction with entrepreneurs and practical training in the field of entrepreneurship is ensured and (5) *EnterpriseWISE*, which is a course aimed at master and doctorate students in the field of science and technology, to develop skills in the field of entrepreneurship.

An entrepreneurship program was created at the *Team Academy* of the Polytechnic University of Jamk (Finland). From the start of the training stage, working groups are established to share ideas, thoughts, tasks and proposals. Students manage their own company cooperatively, receiving training in production of goods and services, marketing, finance, planning, leadership, international projects, etc. What really differentiates this training program from the rest is that the students work on real projects, which at the same time work as educational environments and practical business experiences. The education system is also innovative, because it is based on *coaching, learning by doing* and collaborative team learning.

The results of this program are very positive. Since 1993 a turnover of 1.5 million euros has been achieved by the enterprises generated. 91 % of graduates have a job at the end of their training, 37 % of graduates have created their own company in the 6-month period after finishing their studies, and 47 % of graduates continue to be entrepreneurs after 2 years of completing their training.¹

The *Finpin* is a network consisting of 14 Finnish universities of applied sciences, which makes up one of the most important European IHE entrepreneurship networks. Through this initiative, the aim is to promote technologically-based entrepreneurship, by working together with the main Finnish Polytechnic Universities. Through the “Innocentre” network, the aim is to innovate in regional development through university entrepreneurship. The main objectives include: (1) to highlight good practices of entrepreneurship at regional level, to share them and see how they

work; (2) to exchange good practices for further development in the network of partners and (3) to cooperate, at regional level, in strategic actions for the development of University entrepreneurship.

At the *International Center for Entrepreneurial Studies* of the University of Osijek (Croatia) research, training and documentation in the field of entrepreneurship are promoted. Among the main objectives of this initiative, which concludes with obtaining a 3-year degree in entrepreneurship, is the creation of an international reference in this matter, to ensure instruments for the development of best entrepreneurial practices for small and medium-sized enterprises (SMEs) and to improve the image of entrepreneurs. In addition to the mentioned degree, there is a master's degree in economics and entrepreneurship and an international and inter-university doctoral program in entrepreneurship and innovation. To complete the training programs, there are a large number of seminars and workshops aimed at managers of SMEs in the field of entrepreneurship.

With the *Kaospilots* initiative, which is applied in Denmark, a 3-year University degree is offered, with an integrative and innovative approach, consisting of training students in the creative design of business, leadership, processes and projects. The method of learning is very innovative, as the students must each create their own training plan based on their curriculum, and must take responsibility for their learning. All this is done with the support of specialized tutors, who will guide students, both individually and in group. During their training period, the students will have to work on a set of projects and initiatives, some of their own creation, developing a portfolio of entrepreneurial initiatives.

The *Tut Innovation and Business Center* of the technological University of Tallinn (Croatia) develops initiatives to promote entrepreneurship, among which are two: (1) empowerment of *spin-offs* and (2) *mektory*. The first one focuses on offering support for the creation of companies founded in the university world, counting on the Technological Park of Tallinn-Tehnopol and the University of Tartu. The second one is to help companies and students in innovative creation, the development of prototypes and start-ups and the creation of interdisciplinary work teams and collaboration networks at a global scale. In both cases, the aim is to give scientific and physical support to new Technology-Based Companies (TBCs).

The *Tumentrepreneurship*, of the University of Munich (Germany) offers complete and extensive counselling, as well as research and training for entrepreneurship, with the possibility of using the vast network of contacts of the institution. The support focuses on four fields of science with great potential for future growth: information, technology and communications (ITC), medical technologies, clean technologies and life sciences. Thus, it focuses on the creation of efficient spin-off enterprises, networks of entrepreneurs, determination of best practices for the development and promotion of entrepreneurial culture.

With the *Yes! Delft* of the technological University of Delft (the Netherlands), professionals and researchers who wish to create a technology-based start-up and/ or develop an already existing one are educated, advised and supported. There are other activities: (1) a development center, where students are given lectures, visits to business incubators for students, scientists, and professionals interested in entrepreneurship; (2) specific training in entrepreneurship both for

graduates and post- graduates; (3) a university business incubator and (4) a business growth center, which supports companies after entering the market.

The *Zentrum Für Entrepreneurship* of the Technological University of Berlin (Germany) offers in the field of entrepreneurship: (1) training (seminars, series of conferences, workshops, etc.) to improve the entrepreneurial capacity of new entrepreneurs; (2) specific support for entrepreneurs in business pre-incubators, use of rooms and equipment, etc.; and (3) provides funding to carry out new activities, at the same time as being a meeting point for investors interested in new business ideas.

Finally, with the *Phd in Technological Change and Entrepreneurship, of the Center for Innovation, Technology and Policy Research IN+*, which is a joint program between the Heinz School of Business, Carnegie Mellon University and the Tepper School of Pittsburgh (USA), with three partners in Portugal: the Higher Technical Institute, the Technical University (both in Lisbon) and the Portuguese Catholic University (in Lisbon, Beiras, Braga and Porto). It is a multidisciplinary programme, focusing on policies and entrepreneurial strategies and marketing of new products, especially in the field of ITC. Table 4.1 summarizes these initiatives.

Table 4.1 Initiatives that foster entrepreneurship from the IHE in EU

Centre for Entrepreneurial Learning of the University of Cambridge (United Kingdom). It is a programme for the development of educational activities designed to encourage and enhance the entrepreneurial skills of the students

Team Academy of the Polytechnic University of Jamk (Finland). In this entrepreneurship programme, working groups are formed to share ideas, thoughts, tasks and proposals among all members of the team, facilitating learning among all of them

Finpin. It is a network composed of 14 Finnish Politechnic Universities, which aims to promote technology-based entrepreneurship

International Center for Entrepreneurial Studies of the University of Osijek (Croatia). It promotes research, training and documentation in the field of entrepreneurial education

Kaospilots (Denmark). A University degree with an integrative and innovative approach is offered, which consists of training students in the creative design of business, leadership, processes and projects

Tut Innovation and Business Center of the Technological University of Tallinn (Croatia). Several initiatives are developed to foster entrepreneurship, among which are the empowerment of spin-offs and to help companies and students in the creation of new business initiatives

Tum entrepreneurship of the Technological University of Munich (Germany). It offers complete and extensive counselling, as well as research and training for entrepreneurship

Yes! Delft, of the Technological University of Delft (the Netherlands). Professionals and researchers who wish to create a technology-based start-up and/or develop an already existing one are trained and supported

Zentrum für Entrepreneurship of the Technological University of Berlin (Germany). Training aimed at improving entrepreneurial capacity, specific support to entrepreneurs by means of business pre-incubators and financing of new activities is offered

Phd in Technological Change and Entrepreneurship of the Center for Innovation, Technology and Policy Research IN+ (with partners in Portugal). It is a multidisciplinary programme, focusing on policies and entrepreneurial strategies, marketing of new products, especially in the ITC field

Source: Fundación Fundación Universidad-Empresa (2012)

4.4 Entrepreneurship and IHE in Spain

Despite being a topic which has hardly been analysed, the economic literature on the field of University entrepreneurship in Spain already has some references that are worth noting. In Cano, García, and Gea (2003), entrepreneurial attitudes and predisposition towards the creation of enterprises by university students are identified. Bretones (2009) examines the entrepreneurial behaviour at University level. In Ortín and Salas (2008) and Rodeiro, Fernández, Otero, and Rodríguez (2009), the determinant factors of the creation of spin-offs in the Spanish University are mentioned.

Although we cannot consider that entrepreneurship is limited to IHE, there is no doubt that this framework is one of the most favourable. 67 % of scientific production in Spain takes place in IHE, which reaches 97 % if we consider public IHE (CRUE, 2010a, b; CRUE, 2011).

In the BBVA-IVIE report “Universidad, Universitarios y productividad en España”, it is noted that among the proposals for the promotion of entrepreneurial culture in the IHE, is the need to promote entrepreneurship from the very beginning in the University classroom (Pérez García & Serrano Martínez, 2012). This same conclusion was noted in the annual GEM reports. (Global Entrepreneurship Monitor, Several Years)

So, and as consequence of the adaptation of our higher education system to the guidelines of the EHEA (European Higher Education Area), we have changed from informative teaching (know), to teaching based on know how (acquisition of skills and abilities), which involves the development of the capacity to perform, being essential for entrepreneurship.

When studying the situation in Spain in the field of University entrepreneurship, we can see a multiplicity of initiatives.

The University Entrepreneur Program is taught by the Escuela de Organización Industrial (EOI) to postgraduate students of 47 Spanish universities. Its objective is to stimulate entrepreneurship and enhance self-employment, enabling students to know about business performance and helping them to create a business plan. In addition, this program also pursues knowledge transfer from the IHE to enterprises, while the creation of technology-based enterprises (TBCs) is encouraged. The University Miguel Hernández (Elche) through the University entrepreneurship program counsels and guides students on entrepreneurship. Thus, students who wish to carry out their business ideas are advised and trained. The University of Las Palmas de Gran Canaria, through the Centre for University Entrepreneurs,² offers support programs for the creation and development of innovative enterprises. The program puts students, researchers and teachers interested in entrepreneurship together.

University enterprise networks are configured as another instrument, where several universities are co-ordinated to organize entrepreneurial promotion activities, seeking entrepreneurial talent and developing ideas with growth potential. The aim is to get sufficient motivation for the promotion of entrepreneurship, the creation and the promotion of new projects from the University classroom, consolidation of new business initiatives and generation of knowledge transfer from the IHE to the socio-economic fabric.

From the [Redemprendia](#) network, formed by several universities, with the support of the Foundation of Banco Santander, innovation and entrepreneurship is promoted. This program is

integrated by more than twenty Ibero-American universities, and also two public Spanish universities: the University of Valencia and The Polytechnic University of Valencia.

Professorships of entrepreneurs. Among others, the University of Sevilla,³ La Rioja,⁴ Salamanca and Zaragoza are committed to teaching, research and the analysis of the entrepreneurial activity. In these professorships, students can develop their creative and innovative spirit and can collaborate with institutions and companies.

The IHE in collaboration with business entities organize entrepreneurship programs so that students contribute their ideas towards the creation of projects and promote their business development: stimulation workshops and business advice, clubs of entrepreneurs, research projects, training courses or contests for ideas. In such forums, seminars for the development of a business plan are given, specialized counselling is provided, conferences and seminars with entrepreneurs are organized, where their experience is transmitted to young entrepreneurs, enabling access to finance and risk capital, ensuring a space for the development of their activity, etc. This is what happens, for example, at the Polytechnic University of Madrid with the Business Creation Contest UPM, *Actuaupm*.⁵

Other IHEs, like for example, the Universities of Valencia, Córdoba, Valladolid and La Laguna have been focusing for some years on summer schools for their Faculty of Teaching and Research in the field of entrepreneurship.⁶ In this case, it is the RE4 project, which comprises the Spanish Network of Motivation for students with an entrepreneurial spirit. In these activities, University entrepreneurship experiences are analysed and teachers and researchers are trained on this subject.

Another possibility is the creation of multidisciplinary teams in the field of entrepreneurship. This is the case of the "Innogestiona" programme of the University of Cádiz,⁷ which pursues the strengthening and growth of University enterprises, in order to promote entrepreneurial culture, to focus group activities and research institutes towards the economic and social environment and at the same time, enhance the generation of companies by research groups.

There is also official training in the field of entrepreneurship. The University of Mondragón (Guipúzcoa) offers a specific degree in the field of entrepreneurship,⁸ which is the degree in Entrepreneurial Leadership and Innovation. This program is based on teamwork, where the professor acts as a coach, rather than a traditional instructor.

This educational model is based on the Finnish model, which is very successful world-wide, based on four aspects: dialogue, reading, action and self-management. In this degree, the students must create their own businesses, either individually or in group, in order to achieve real interaction with the business world. Moreover, all the students must carry out 2-month training at the Academy Team of Finland, in addition to training periods in the United States, China, India, Brazil or Mexico. There are also postgraduate courses in the field of entrepreneurship at the Rovira i Virgili University.⁹

Another option is University *mentoring*, which consists of successful entrepreneurs with recognised experience guiding and inspiring young university students who have just started their entrepreneurial activity. One of these examples is the *mentoring* program of the University of Valencia.¹⁰ Closely linked with the previous case are the University *business angels*, which focus on funding innovative projects, but with a high risk level, especially in the technological

field. An example of this initiative is the Forum of investment R+D+i network of the Network of Universities of Valencia (RUVID).

In recent years, the IHE have supported initiatives for entrepreneurship, such as business incubators,¹¹ units in support of entrepreneurship and self-employment, professorships and permissions for the promotion of entrepreneurship, incorporation of specialists into staff, recruitment of employment and local development agents, etc. These initiatives are integrated in the Offices for Transfer of Research Results (OTRIs) of Universities, which have become the main aspects for the promotion and exploitation of the innovative capabilities of research personnel of the IHE.

University spin-offs are another alternative to university entrepreneurship, which are a recent phenomenon (Rodeiro et al., 2009). As they are enterprises which are created based on University knowledge and in geographical areas close to the campus, they provide not only the transmission of knowledge, but also the growth of local economies. The incorporation of graduates and doctors to the enterprises promotes the university-company link in both directions. Ortín and Salas (2008) point out how technological parks, business incubators and business centers try to create an enabling environment for the development of technology-based companies. In addition, it can be seen how the number of spin-offs in Spain has continued growing in the years of crisis, which is a counter-cyclical behaviour, as expected in the case of these companies, since they are alternatives to the traditional labour market for researchers whose job placement gets complicated in these phases of the cycle.¹²

Finally, it should be noted that IHE back start-ups. Such businesses are those that, despite their youth and lack of economic capacity, can easily get good results in the market as they are stimulated by other investors. Table 4.2 summarizes the basic entrepreneurship initiatives in the IHE in Spain

Table 4.2 Initiatives that foster entrepreneurship from the IHE in Spain

Entrepreneurs program. The University entrepreneur program is taught by the Escuela de Organización Industrial (EOI) to graduate students of 47 Spanish universities. Its objective is to stimulate entrepreneurship and enhance self-employment, enabling students to meet business performance and help them to create a business plan

Entrepreneurial networks. Through the University entrepreneurship network of Catalan public universities, the aim is for IHE to promote and give support to students' entrepreneurial initiatives. This activity is coordinated by the University of Barcelona

The network Redemprendia, formed by several universities, with the support of the Foundation of Banco Santander, promotes innovation and entrepreneurship

Professorships of entrepreneurs. In these professorships, students can develop their creative and innovative spirit and can collaborate with institutions and companies

Clubs of entrepreneurs. The University of Navarra has set up an ongoing training platform, which offers students tools for their future career. The students are put in contact with the business world, providing them professional experience. Thus, among other activities organised are business lunches, contests for entrepreneurs, etc.

Workshops for entrepreneurs. They are activities held regularly in the IHE, which give information on the basics of entrepreneurship

Contests of university student entrepreneurs. The aim is for students and Faculty of Teaching and Research to promote their business projects, promoting the spirit and the culture of entrepreneurship, enhancing the implementation of business ideas and strengthening the relationship between entrepreneurs and business support agencies. The objective is to promote the entrepreneurial spirit and boost innovative capacity, by even awarding prizes to the best business plans

Summer schools for lecturers and researchers in entrepreneurship. It aims at training lecturers and researchers in entrepreneurship, with the aim of getting them to encourage entrepreneurship among students in the university classrooms and laboratories

Creation of multidisciplinary teams in entrepreneurship. It promotes the entrepreneurial culture through multidisciplinary teams from different areas of knowledge

Degree and postgraduate programs in entrepreneurship. The University of Mondragón offers degrees in entrepreneurial leadership and innovation. The University Rovira i Virgili offers a Master in entrepreneurship and innovation

Mentoring. Program for university entrepreneurs, where successful company representatives tell the students their own experiences. It involves entrepreneurs with a long career and experience helping young entrepreneurs with their ideas and tips

Business Angels. It aims at closer links between University entrepreneurs and entities or people who want to invest in new initiatives, despite the risk involved. It is an innovative initiative. This is the case of the RUVID

Business incubators. These are places where the installation of a company is possible during the first years

Spin-offs. They are business initiatives promoted by the University community, based on the knowledge gained and work results achieved in the University. This alternative allows the transfer of knowledge from the IHE to the business fabric, while providing an additional income to the university institution with spin-offs

Start-ups. They are business projects associated with technologically-based initiatives and an intensive use of business innovation

Source: Red Emprendia and compiled by authors

4.5 Recommendations

On the basis of the above throughout this chapter, it is clear that the IHE have the responsibility of focusing their training capacity towards the needs of the economic and social fabric. This must always be the main goal, with a greater need in situations with a serious problem of adjustment between labour supply and demand. If today's companies are not able to absorb university graduates, it is time to support new business initiatives linked to the academic world. Failure to do so would mean the assumption of public and private costs of our students' which does not generate any return.

Therefore, the IHE should offer quality training that meets the market needs and reorient their lines and research projects in order for companies to use part of their funds for university activities. Therefore, the aim is for the IHE to achieve useful knowledge which is demanded by the market, and in addition generate entrepreneurs.

In Spain, some steps have already been taken in this regard, but we are at a level of development far below the experiences that are observed at European level. The transfer of technology from the Spanish IHE is a fact, but it is on a small scale and some mistakes have been made. Thus, entrepreneurial activities only focus on technical and business degrees and post-degrees, as if the graduates and students that do them, are the only ones who can be entrepreneurs. Nothing could be further from the truth. Entrepreneurship must be present, to a greater or lesser extent, in all degrees, in the most technical degrees as in the humanistic ones.

In Spain, entrepreneurial culture is unsuccessful. Our country is an example of clear examples of people who after completing their university education have opted for entrepreneurship and have been successful, but there are just a few examples. Certainly, lack of entrepreneurial training is, at least in part, to blame for this situation.

Much has been said about the importance of entrepreneurship, of the need for young people to be entrepreneurial (European Union, 2014), but the truth is that many times these good wishes

do not come true. Six years have had to pass for there to be a law that promotes entrepreneurship, [Law 14/2013](#), of 27 September, supporting entrepreneurs and their internationalization, but the results to date, must be qualified, in the best of cases, as very discrete. Continuous cutbacks in higher education, both by the Central Executive, and regional Governments, which have an impact on the budgets of the IHE in Spain, do not help to promote entrepreneurship. From 2008 to 2012 (which is the latest data released by the Ministry of Education, Culture and Sport), public expenditure on higher education in Spain has been reduced by 1.169 million Euros. In terms of GDP, Spain has gone from spending

0.93 % of public expenditure on higher education in 2008 to 0.87 % in 2012. If you really want to support entrepreneurship in the IHE, this cannot be achieved, by cutting public funds in education, research and transfer.

A change in the learning model regarding entrepreneurship in Spain is required. Thus, there is still a sharp polarization of these activities using traditional teaching. It is difficult to foster innovation and entrepreneurship by examining students using the traditional model of learning and assessment. If you want to teach how to be entrepreneurial, it is necessary for the student, with appropriate guidelines, to establish his/her own "route sheet" in the entrepreneurial field. Therefore, it is essential to use in greater profusion, techniques such as coaching, learning by doing and collaborative team learning, which work very well. Only then will it be possible to make true entrepreneurs. Greater collaboration of the IHE with the business fabric is essential. Of course, University researchers must continue seeking excellence in their scientific production, by achieving publications of high impact at international level, getting funds through public tenders, increasing their number of 6-year periods. However, the above is perfectly compatible with a research and transfer strategy more focused on reality. There is an increasing need to opt for passing on knowledge to the socio-economic fabric. It is not a question of supporting a scientific or entrepreneurial University, as both performances are perfectly compatible and necessary.

Not only will more resources be achieved this way, but also the citizens will realize that public funds given to the IHE are well used. The IHE must be capable of generating many and good entrepreneurs, and this is the responsibility of all those that are part of the University community.

It is advisable for the IHE to take advantage of the synergies derived from multiple instruments for the promotion of entrepreneurship. There are already public and private institutions that offer business incubators, *business angels*, advice, international entrepreneurship programs, being necessary for the IHE to be integrated into these regional, national and international networks, which even though they are not yet exclusive to university graduates, can help them to be entrepreneurial.

4.6 Conclusions

As noted in this chapter, the economic and social progress is a consequence of innovation boosted by entrepreneurs, being the IHE one of the appropriate frameworks for the development of this activity.

The process of change in the IHE of promotion of entrepreneurship is increasingly more present, especially in some European countries, though to a lesser extent in Spain.

All those involved in the University community have responsibility in the change of model, based on entrepreneurship and focused on innovation and applied research, the so-called third function of the IHE.

Within this new framework the IHE should keep in mind that the creation of employment and wealth is necessary if you want to emerge from the economic crisis the best way. This should not mean a breakage of the traditional role of the IHE, but a complement to its multiple activities. Therefore, knowledge transfer is increasingly more important, which requires a joint effort of all those involved in the IHE, in collaboration with the business sector.

It should not be ignored that the IHE are a key element for the economic recovery. The IHE have the human and material resources to innovate, improve productivity, and promote entrepreneurship. The fact that over 40 % of entrepreneurship is carried out by graduates of the IHE, is sufficient for educational managers support this activity. The enterprise should be a tool for the development of innovation, which enables its practical application to the business fabric, making a change in the exhausted Spanish production model possible, which results in increased competitiveness and internationalisation.

Although there is still a long way to go, we have to admit that fortunately, something is changing. Far are those years when entrepreneurship and innovation were out of the actions of the IHE. Proof of this is that in Spain there are increasingly more actions for the promotion of entrepreneurship: training programs, networks, Professorships, clubs, *mentoring*, business incubators, *spin-offs*, etc.

The Spanish position on entrepreneurship is far from the achievements already consolidated in most European countries. However, entrepreneurship is increasingly something more natural day by day in the IHE. It is true that university entrepreneurship is a relatively new field in Spain, but the reality shows us the need to further deepen its study. It should take the example of other countries and apply these experiences properly in Spain. It is not necessary to invent anything, we must learn to adapt to what has worked in other countries, especially in the EU.

For all of the above, the IHE should understand that entrepreneurship is part of their mission and that their contribution is necessary for the change of the economic model and the generation of wealth and employment. To achieve this, it is necessary for university governance programs to include this third feature of IHE, so demanded by society.

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