Instituto Superior de Ciências do Trabalho e da Empresa

THE STATE OF ENTREPRENEURSHIP EDUCATION IN PORTUGAL – AN EMPIRICAL STUDY ON A NASCENT SYSTEM IN THE EUROPEAN UNION POLICY FRAMEWORK

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DEDICATION

To *a Doutora*, without you, both my research and my life would not have been as rich during these past years. Thank you.

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ABBREVIATIONS / ACRONYMS

Abbreviations of countries:
A: Austria
B: Belgium
DK: Denmark
D: Germany
EL: Greece
ES: Spain
F: France
FI: Finland
IE: Ireland
I: Italy
L: Luxembourg
NL: Netherlands
PT: Portugal
SE: Sweden
UK: United Kingdom
US/USA: United States of America

AEP: Associação Empresarial de Portugal – Portuguese Entrepreneur Association (Porto, Portugal)

AIP: Associação Industrial Portuguesa – Portuguese Industrial Assocation (Lisbon, Portugal)

ANJE: Associação Nacional de Jovens Empresários – Young Entrepreneurs Association (Porto, Portugal)

APESP: Associação Portuguesa de Ensino Superior Privado – Portuguese Association of Private Higher Education (Lisbon, Portugal)

ASR: Adjusted Standardized Residual

CIPES: Centro de Investigação de Políticas do Ensino Superior – Centre for Research in Higher Education Policies (Matosinhos, Portugal)

CMU: Carnegie Mellon University

DF: Degrees of Freedom

DG-Enterprise: Director General Enterprise (European Union, Brussels, Belgium)

DGIDC: Direcção-Geral de Inovação e Desenvolvimento Curricular – Director General of Circular Innovation and Development (Lisbon, Portugal)

EC: European Commission (Brussels, Belgium)

EFMD: European Foundation for Management Development (Brussels, Belgium)

EQUIS: European Quality Improvement System (from EFMD)
EU: European Union

EUROSTAT: Statistical Office in the European Community (Luxembourg, Luxembourg)

EURYDICE: Information Network on Education in Europe / Réseau d'Information sur l'Éducation en Europe (Eurydice Office: Brussels, Belgium)

EU-15: Europe of Fifteen Member States

EU-27: Europe of Twenty-Seven Member States

FTE: Fulltime equivalent

GDP: Gross Domestic Product

GEM: Global Entrepreneurship Monitor (Babson College, USA & London Business School, UK comparative global study)

HEIs: Higher Education Institutions

IAPMEI: Instituto de Apoio às Pequenas e Médias Empresas e à Inovação – Portuguese Institute for SME and Innovation Promotion Part of MEI (Lisbon, Portugal)

ICTs: Information and Communication Technologies

IEFP: Instituto do Emprego e Formação Profissional – Institute of Work and Professional Training part of MTSS (Lisbon, Portugal)

INE: Instituto Nacional de Estatistica – National Stastistics Institute (Lisbon, Portugal)

MAOTDR: Ministério do Ambiente, do Ordenamento do Território e do Desenvolvimento Regional – Ministry for Environment, Territorial Planning and Regional Development (Lisbon, Portugal)

MCTES: Ministério da Ciência, Tecnologia e Ensino Superior – Ministry of Science,Technology and Higher Education (Lisbon, Portugal)

ME: Ministério da Educação – Ministry of Education – responsible for primary and secondary school (Lisbon, Portugal)

MEI: Ministério da Economia e da Inovação – Ministry of Economy and Innovation (Lisbon, Portugal)

MIT: Massachusetts Institute of Technology

MSTI: Main Science and Technology Indicators, OECD

MTSS: Ministério do Trabalho e da Solidariedade Social – Ministry of Work and Social Solidarity (Lisbon, Portugal)

OCES: Observatório da Ciência e do Ensino Superior – Observatory of Science and Higher Education (Lisbon, Portugal)

OECD/OCDE: Organization for Economic Cooperation and Development / Organisation de Coopération et de Développement Économiques (Paris, France)

UNESCO: United Nations Educational, Scientific and Cultural Organization / Organisations des Nations Unies pour l'Education, la Science et la Culture / Organizacion de las Naciones Unidas para la Educacion, la Ciencia y la Cultura (Paris, France)

PCM: Presidência do Conselho de Ministros – Presidency of the Council of Ministers which includes the Ministro da Presidência – Minister of the Presidency – which is also responsible for youth activities among others (Lisbon, Portugal)

QREN: Quadro de Referência Estratégico Nacional – National Strategic Reference Framework (NSRF) (European Community's policy for economic and social cohesion in Portugal for 2007 to 2013)

R&D: Research and Development

SBA: Small Business Administration (Washington, DC, USA)

SME/SMEs: Small Medium Size Enterprise(s)

UT-Austin: University of Texas at Austin

UTEN: University Technology Enterprise Network (UT-Austin Program)

ABSTRACT

Portugal has a nascent entrepreneurship education system at the post-secondary level that aims to address several areas within the European Union policy context. This research finds that Portugal is more than 20 years behind the United States in the development of educational offerings in this area. During the academic year 2005/2006 only 826, or 0.2%, of students at the post-secondary level in Portugal participated in an entrepreneurship class.

Currently only 14.8% of students believe that the Portuguese educational system develops a state of mind that encourages the creation of new firms. In developing policy in this area findings highlight regional differences, gender considerations as well as the prominence of the "public sector" mindset or predisposition of post-secondary students relating to their first job experience are important factors to consider.

The few courses in Portugal that do exist focus too heavily on teaching business plan development and are almost exclusively located in the area of management. The reliance on lecture formats instead of experiential learning techniques needs to evolve if this area is to move from being teacher-centered to learner-centered. Of the universities that offer courses, 33% also have centers for entrepreneurship and several more (23.8%) plan to develop one on their campus.

Portuguese professors believe that entrepreneurship education will positively evolve in quality and quantity in the future. This is good news, as it was found that 63.7% of post-secondary students believed in the possibility of owning their own business in the future.

Keywords: Entrepreneurship Education, Post-Secondary, European Union, Portugal
JEL Classiciations: L26 - Entrepreneurship; J48 - Public Policy

RESUMO

O ensino do empreendedorismo em Portugal começa a evidenciar-se ao nível do ensino pós-secundário, como resposta a áreas de necessidade identificadas no contexto das políticas da União Europeia.

Este estudo revela um atraso de Portugal de mais de 20 anos em relação aos E.U.A. no que toca à educação do empreendedorismo. Em Portugal, no ano lectivo de 2005/2006, apenas 826 (0,2%) alunos do ensino pós-secundário participaram em aulas de empreendedorismo e apenas 14,8% destes alunos crê que o sistema educativo actual promove uma mentalidade que encoraja a criação de empresas.

Este estudo evidencia importantes factores que devem ser considerados quando se desenvolvem políticas na área do empreendedorismo, nomeadamente o género, a predominância de uma certa mentalidade do "sector público" e a primeira experiência dos alunos no mercado de trabalho.

A parca oferta de ensino do empreendedorismo em Portugal encontra-se no campo da Gestão de Empresas e foca-se predominantemente no ensino do desenvolvimento de planos de negócio. Os cursos oferecidos seguem linhas teóricas e não utilizam técnicas de ensino prático, o que terá de evoluir de forma a se focarem na experiência do aluno, potenciando deste modo a aprendizagem. Em Portugal, das universidades que oferecem cursos nesta área, 33% também providencia Centros de Empreendedorismo e 23,8% planeia desenvolver um centro no seu campo universitário.

No entanto, o panorama apresenta-se positivo já que os professores acreditam que a educação de empreendedorismo em Portugal irá evoluir, quer em quantidade como na qualidade dos cursos oferecidos. Este é um cenário positivo, já que 63,7% dos alunos Portugueses do ensino pós-secundário ponderam ter o seu próprio negócio.

I. INTRODUCTION

This thesis is on entrepreneurship education in the European Union member state of Portugal. The research of this thesis aims at revealing the state of entrepreneurship education at post-secondary institutions in Portugal. The investigation started when little was known about this subject in the national Portuguese context. It illustrates a nascent entrepreneurship education system developed within a European Union policy framework. A portion of the conclusions were drawn from the findings of three national surveys. Two of the studies are on professors who taught entrepreneurship in academic years 2004/2005 and 2005/2006. The third study relates to a national representative sample of undergraduate students in Portuguese higher education institutions during the academic year 2004/2005. This research can serve as a baseline from which future studies in the area of entrepreneurship promotion and education in the European context, and Portugal in particular, can be developed. It draws on number of conclusions based on student attitudes, beliefs and demographic characteristics as well as on the backgrounds of professors and students involved in entrepreneurship courses and the pedagogies used in entrepreneurship education in Portugal.

1.1. Research Background

Promoting entrepreneurship and facilitating the rapid growth of innovative Small and Medium-Size Enterprises (SMEs), are increasingly recognized by governments as an effective means for creating jobs, increasing productivity, fostering competitiveness and alleviating unemployment and poverty (OECD, 1997). "The challenge for the European Union is to identify the key factors for building a climate in which entrepreneurial initiative and business activities can thrive. Policy measures should seek to boost the Union's levels of entrepreneurship, adopting the most appropriate approach for producing more entrepreneurs and for getting more firms to grow." (European Commission, 2003, p.9)

According to IAPMEI, the Portuguese Institute for SME and Innovation Promotion, in 2003 SMEs represented 99.6% of the 275,000 companies operating in Portugal. These companies were responsible for 76% of employment and 58% of annual turnover. From 2000 to 2003, the number of SMEs increased at an average annual rate of 8.8%, with real term employment growth of 5.6% per year and a turnover growth of 4.3%. (IAPMEI, 2006, p.5) Other European Union countries also demonstrated similar patterns. As Günter Verheugen, Vice President of the European Commission,

stated, "SMEs represent the backbone of the European Economy and the largest potential source of employment and growth." This is why the European Commission gave a new stimulus to the policy on SMEs by focusing its action on tackling the SMEs' "needs and improving their financial and regulatory environment." (IAPMEI, 2006, p.5) Research has shown that increases in the rate of business ownership as a percentage of the labor force have led to lower unemployment rates (Audretsch & Thurik, 1999) and are correlated to higher economic growth (Bosma *et al.*, 2008; Carreea & Thurika, 2005; Reynolds *et al.*, 2004).

There are various ways in which the European Commission encourages the promotion of SMEs with Member States. Some of these are reflected by: developing initiatives in areas that help encourage the promotion of the entrepreneurial spirit; reducing government red-tape; introducing improved ways of investing, encouraging the involvement of economically disadvantaged groups (such as woman and ethnic minorities); and fostering social entrepreneurship. These, among others, are supported within the European Union framework (Commission, 2008b). In 2006, Vice President Verheugen stated that the Union needed "to create a more favorable societal climate for entrepreneurship, in particular to encourage young Europeans to become the entrepreneurs of tomorrow. We need a systematic approach to entrepreneurship education at all levels, from the primary school to university" (Commission, 2006c). It is the Commission's conviction that, "combining entrepreneurial mindsets and competences with excellences in scientific and technical studies should enable students and researchers to better commercialize their ideas and new technologies developed." (Commission, 2006b, p.9)

Virtually all developed countries have some form of entrepreneurship education available at post-secondary institutions. One indication of a truly dynamic and engaged system is when the agency or ministry responsible for SMEs, entrepreneurship or innovation has links/incentives for universities to broaden these programs. Seven out of thirteen countries surveyed, including Denmark, Finland, Ireland, the Netherlands, Norway, Sweden and the UK all had earmarked funding to help higher educational institutions extend their programs (Lundström & Stevenson, 2005, p.77).

In one of the most rigorous, systematic and referenced studies on entrepreneurship education at the tertiary level, Charney and Libecap (2000) found that the 2,500 graduates from the Berger Entrepreneurship Program, offered at the University of Arizona Business School, were three times more likely to start a new venture and be self-employed; on average had incomes that were 27% higher; owned 62% more assets; and were more satisfied with their jobs than other graduates from the University's Business School. The study also found that SMEs that employed entrepreneurship

graduates had greater sales and growth than those that employed non-entrepreneurship graduates, thus demonstrating the benefits of an entrepreneurship education course for not only the individual but also the companies that hire them.

Kuratko (2003) found that there were over 2,200 courses at more than 1,600 universities, 277 endowed chairs in entrepreneurship and over 100 established and funded entrepreneurship centers in the United States. In-spite of these remarkable statistics the Kauffman Foundation (2001) believes that there is "still untapped opportunity for integrating entrepreneurship in non-business school programs such as engineering, science and the arts" (p.17). In line with their belief, the Kauffman Foundation has given matching-grants to eight US universities which have dedicated themselves to providing access to entrepreneurship courses for all of their undergraduate students. To make entrepreneurship education accessible to all students in Portuguese universities the credit system needed to be adjusted so that students are allowed to take a course from other schools, or even departments. In early 2008, the Ministy of Science, Technology and Higher Education announced that students would soon be allowed to take multiple degrees and courses in different departments and schools. As of the beginning of the 2008/2009 academic year the "formula" for how this will occur had not been agreed upon because the funding of publicly-funded post-secondary institutions is based on a per student basis (headcount). For example, in contrast, in US universities an arts and science major could take courses from a business school. Thus, access to entrepreneurship education for all students in Portugal has had additional barriers to overcome even if there was an outside funding source such as the Kauffman Foundation or even a government initiative that would provide support for this sort of reform effort.

Even in the United States, according to the Kauffman Foundation, the field of entrepreneurship research is yet to achieve full legitimacy as a distinct discipline. The Foundation sees a necessity for developing further theories and adopting more quantitative and scientific methods. Kuratko (2003) outlines many obstacles to the broad-based inclusion of entrepreneurship in the educational offerings of higher education in the United States and stresses the following:

- The continued "war" to gain full respectability for entrepreneurship as a discipline (not withstanding the acknowledgment that entrepreneurship has come a long way and is now seen as a legitimate discipline);
- The lack of qualified faculty to teach entrepreneurship at every academic level;
- The need for more universities to develop strong PhD programs in entrepreneurship;
- The need to use more innovative instructional techniques in teaching entrepreneurship (e.g. streaming media/video, web/video conferencing, online coaching, etc.);

- The need for leading entrepreneurship researchers to publish in leading mainstream journals.

This characterization of entrepreneurship education at the post-secondary level in the United States is also valid in the European context and more specifically in Portugal, as this research indicates. In the Portuguese context, entrepreneurship is a nascent field, as indicated by the level of seniority of the professors that teach and research in the area. As we will see later in this study, Portugal is 20 years behind the United States in the development of entrepreneurship courses. It also reveals that in the 2005/2006 academic year fewer than 0.02% of students enrolled in Portuguese post-secondary system were enrolled in an entrepreneurship course.

1.2. Research Problem & Objective

This research started with a critical assessment of the entrepreneurship infrastructure in Portugal based on a model that was developed through observational research (see section 1.5). After an extensive literature review of academic sources that espouse the development of entrepreneurial mindsets and skill sets through education as well as European Commission policy documentation, it was decided that entrepreneurship education would be the focus of this thesis. When field research was initiated in 2004 there were very few studies in the area of entrepreneurship education in Portugal (see section 3.1). Specifically, the following information was unknown at the time when the field research was started: 1) the number and types of students who were taking entrepreneurship courses; 2) the backgrounds of professors who taught those courses and the impetus behind new course creation; 3) the pedagogic methodologies employed; 4) the use of parallel initiatives and technology in promoting and teaching these courses; and 5) the future trends in entrepreneurship education.

The views, beliefs and perspectives of a representative sample of Portuguese undergraduate students were also unknown. In the development of entrepreneurship education their views on specific areas were seen as critical in forming a better understanding of their: 1) future career expectations in relationship to entrepreneurship; 2) perceived risks and obstacles in creating a business; 3) entrepreneurship education; 4) building of social networks/partnerships; and 5) immediacy of returns on investment. The development of knowledge in these areas was intended to give the investigator and his reader an overall understanding of the state of entrepreneurship education at post-secondary institutions in Portugal.

With the acknowledgment that this area of public policy is at its infancy in Portugal (Commission, 2002) and, as noted above, is as much as 20 years behind the US (see section 4.1) the information gathered about the state of entrepreneurship education was designed to produce data, analysis and reflection that would not only assist future research but also the development of public policy.

1.3. Significance of the Study & Research Question

Entrepreneurship education is a relatively new area for Portuguese higher education and an even more recent addition to primary and secondary schools. As late as 2002, the European Commission reported that Portugal was the only EU country where no program in entrepreneurship education existed at the primary and secondary school levels (Commission, 2002). This study attempts to serve the development of knowledge in the area of entrepreneurship education at the post-secondary level. It aims not only to contribute to future academic research but also to inform policymakers, university/school administrators, professors/teachers, researchers and the general public of the current development of entrepreneurship education in the European Union and specifically in Portugal.

Indeed, to be effective, entrepreneurship education will need to greatly expand in Portugal if it is to fulfill its mission of assisting in the country's economic growth through the development of entrepreneurial mindset and skill set in its youth. Entrepreneurship education has grown significantly in the world (Charney & Libecap, 2000) and it is predicted that Portugal will continue to catch up as greater numbers of courses and programs are offered. As Kent (1990) states, "If entrepreneurship is to become a full-fledged discipline, capable of standing on its own merits rather than as an adjunct to existing majors in the business school, then a more broad-based approach to the collegiate entrepreneurship curriculum must be pursued." (p.115) Kent's argument in the North American context of 1990 is true of post-secondary entrepreneurship education in today's Portugal, where the majority of courses only started in 2002 (see section 1.4). For entrepreneurship education to succeed in Portugal it needs to be developed in the perspective of life-long learning (Commission, 2006b) and be integrated quickly into the mainstream of primary and secondary education. In addition, to achieve growth in post-secondary entrepreneurship education, tracking and benchmarking this area is necessary to more effectively develop public policy. Academic research can help fill the knowledge gaps in this area, and therefore the following research question was developed as the central focus of this thesis.

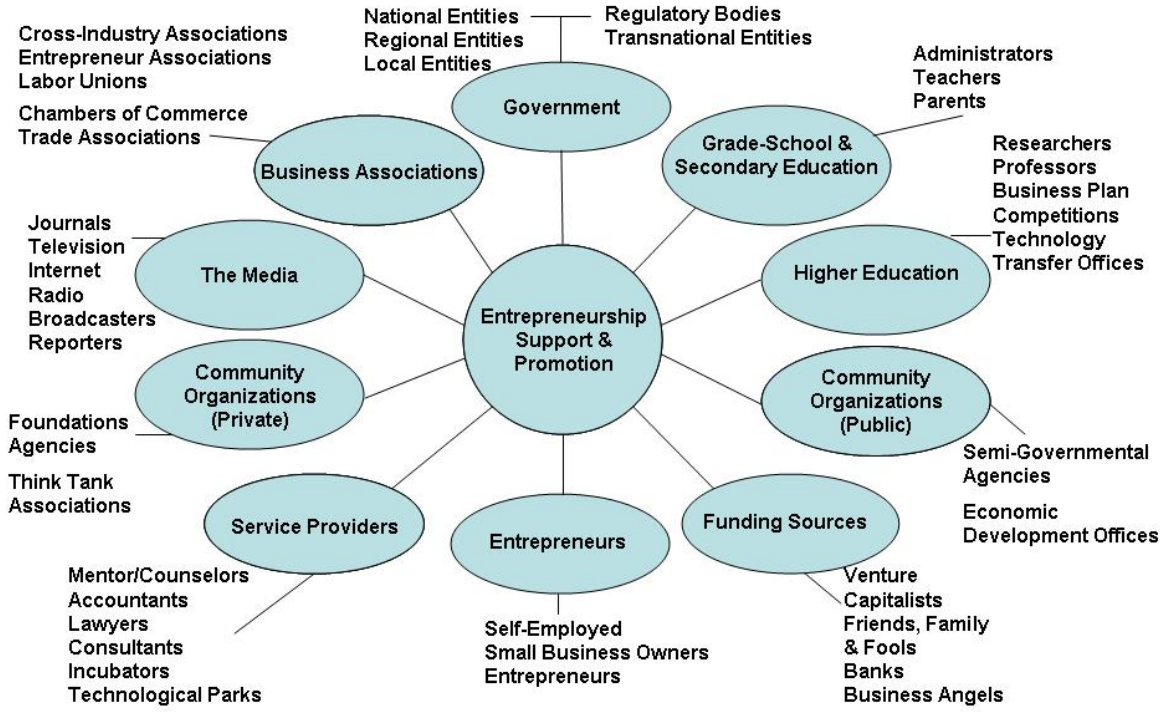
Research Question

What is the current state of entrepreneurship education at Portuguese post-secondary institutions?

1.4. Theoretical Orientation & Underlying Model of the Research

Figure 1 is a conceptual depiction of the total "universe" of actors in the area of entrepreneurship promotion as conceived by the author during the exploratory phase of the research. The promotion of entrepreneurship can be seen, for the most part, as the workings of a loose system with distinctive parts and actors. The various parts of this model are referred to in this study as the "entrepreneurship infrastructure".

Figure 1 - "Universe" of Entrepreneurship Support & Promotion Actors/Entities



As can be seen in the figure above there are many entities that make up an entrepreneurship infrastructure. To map how each grouping interacts with other groupings would be very complex, as most connect with the others in some way. Many of these actors are also involved in other activities, but all are involved with the promotion and/or support of entrepreneurship. A further discussion on the use of this model in the preliminary phases of the research as applied to the specific case of Portugal is described in the Research Methods and Strategy (see section 3.4). To

better comprehend the research it is necessary to also clearly state some of the definitions of the common terminology used throughout this thesis.

1.5. Definitions

The information and analysis presented in the thesis is intended to further academic research but also to inform the policymaking process in the area of entrepreneurship and specifically in the area of education policy. It is acknowledged that others, who may not have responsibility for the development of public policy, such as university/school administrators, professors/teachers, researchers, etc. might also find value in this thesis. This section reviews the concept of policy as well as providing background on other important considerations related to the policymaking process.

The following definitions are also fundamental to helping the reader better understand what part of the policymaking process this study informs within the model developed by Hogwood and Gunn (1984), discussed in the next section (see section 1.7).

Entrepreneurship

This thesis has been developed within the European Union framework and thus the definition of entrepreneurship that is used is adopted from the European Commission (2006b), "Entrepreneurship refers to an individual's ability to turn ideas into action. It includes creativity, innovation and risk taking, as well as the ability to plan and manage projects in order to achieve objectives. This supports everyone in day-to-day life at home and in society, makes employees more aware of the context of their work and better able to seize opportunities, and provides a foundation for entrepreneurs establishing a social or commercial activity." (p.20) In short, entrepreneurship is a mindset and a skill set that entrepreneurship education seeks to promote, nurture and inform. The development of entrepreneurship as an intellectual and academic concept is further discussed in the literature review (see sections 2.1, 2.2 & 2.3).

What is Policy?

The term *policy* generally refers to a purposive course of action that an individual or group consistently pursues to deal with a given issue. "Public policy is what public officials within

government, and by extension the citizens they represent, choose to do or not to do about public problems. Public problems refer to conditions the public widely perceives to be unacceptable and therefore requiring intervention." (Kraft & Scott, 2006, p.4). Dye (1978) simplified the whole issue with his statement, "Public policy is whatever governments choose to do or not to do" (p.3). Policy is a "standing decision characterized by behavioral consistency and repetitiveness on the part of both those who make it and those who abide by it." (Eulau & Prewitt, 1973, p.465)

However, before the development of policy, Easton (1965) believes there must first exist political systems. These political systems can be uniquely identified and differ from all other kinds of systems because they are, "predominantly oriented towards the authoritative allocation of values for a society" (p.50). In contrast to the political system, "*government* refers to the institutions and political processes through which public policy choices are made. These institutions and processes represent the legal authority to govern or rule a group of people." (Kraft & Scott, 2006, p.6)

The Politics of Policy

Politics, Harold Lasswell (1958) famously stated, is about "who gets what, when and how." It refers to the practice through which public policies are devised and adopted, by an elected official, organized interest groups, and political parties. As Thomas (1978) affirmed, ". . . the focus of political science is shifting to public policy - to the description and explanation of the causes and consequences of government activity." (p.15). In understanding and analyzing policy it is necessary to make a distinction between the formal actions that a government takes to pursue its goals (policy outputs) and the effects these actions actually have on a society (Kraft & Scott, 2006).

The policies that a government enacts can have consequences for personal conduct in society. Laws relating to road safety, for example, protect lives, prevent injury, and/or property damage to promote the public good while limiting freedom of action. These policies and laws instruct how public services that are there to promote public good, such as public hygiene, national defense or public education shall be provided. Direct payments from the government such as social security or research grants are another form of public policy that are created to sustain long-term individual and collective well-being (Kraft & Scott, 2006).

Developing public policy can also be viewed as "a set of interrelated decisions taken by a political actor or group of actors concerning the selection of goals and the means of achieving them within a

specified situation where those decisions should, in principle, be within the power of those actors to achieve." (Jenkins, 1978, p.15)

Formulating the Policy

The evolution that a given subject matter must go through, from an amorphous state to a fully articulated, distinguishable issue is the essence of public policy progress. Once this is accomplished, the issue must be formulated in problematic terms so that the discussion of a possible solution can begin. In establishing public policy a variety of aspects must be incorporated including: 1) the purpose of government action (intention); 2) the means under which the goal is pursued (program); 3) specific actions that are taken to set objectives, develop plans and implement programs (decisions or choices) (Jones, 1984).

Of course, there are many other inputs in the policymaking process that must be acknowledged beyond solely debating the issue itself. The institutional rational choice approach (Shepsle, 1989; Scharpf, 1997) emphasizes: 1) focusing on the leader of important institutions that hold formal decision-making authority; 2) assuming material self-interest (e.g. power, income, security, etc.) is being pursued by agents involved in the process; and, 3) grouping those involved in the process into several institutional categories (e.g. elected representatives, administrative agencies, interest groups, etc.) "In short, understanding the policy process requires knowledge of the goals and perceptions of hundreds of actors throughout the country involving possibly very technical scientific and legal issues over periods of a decade or more while most of those actors are actively seeking to propagate their specific 'spin' on events." (Sabatier, 2007, p.4)

The various self-interests of policymakers, practitioners and others are acknowledged in the general understanding of the development of entrepreneurship education in Portugal. However, the major part of this study focuses on the issues within the policy discussion. The acknowledgement of the actor self-interests is tacitly understood and incorporated in the advocacy of a policy process for the further development of entrepreneurship education within the entrepreneurship infrastructure of Portugal. Entrepreneurship policy is a multifaceted area which is characterized by the interconnectivity which the actors share and complexity of this area of policymaking.

Complexity

Elusiveness may be "a fundamental defining element" of public policy (Steinberger, 1980, p.187). The difficulties associated with systematically examining this elusive phenomenon have been elaborated by many. As with entrepreneurship and other areas of scholarly study, there is the absence of a "grand theory" and thus various lenses can be used to evaluate policy (e.g. rational, political, etc.)

The majority of public policy issues are defined by complexity and the challenges inheirent in directing change. Commonly, issues are interlocked and it is difficult to isolate a problem such as those that affect the impoverished inner city or environmental pollution. The expertise and experience necessary to fill knowledge gaps related to complex problems may not be easily obtainable, which may in turn lead to the need for lengthy pilot programs or evaluation periods. A bias towards excessive caution and risk avoidance may also lead to an emphasis on process rather than action and outcome. Frequently in government an issue will touch many different ministries, agencies and departments. These entities are limited in their ability to respond because of legal constraints, limited resources and even delays in the political agenda caused by an overly bureaucratic decision-making process.

An *agenda* is conceived as a "list of subjects or problems to which governmental officials, and people outside government closely associated with those officials, are paying some serious attention at any given time….Apart from the set of subjects or problems that are on the agenda, a set of *alternatives* for governmental action is seriously considered by government officials and those closely associated with them" (Kraft & Scott, 2006, pp.3-4). One of the bases for the development of entrepreneurship policy in the European Union and in the Member State Portugal is the Lisbon Agenda or Lisbon Strategy (see section 2.6) which sets progress in this area as a priority.

As the nature of entrepreneurship is complex, so too is the development of policy that is related to it. There are many ways that entrepreneurs and potential entrepreneurs interact with the system. To better understand how this complexity is dealt with in the area of entrepreneurship policymaking, it is important to use a framework and to look towards transnational entities to assist in defining the area and best practices that have been developed by different nations. Thus, this study refers to European Union and OECD comparisons and best practices that are useful in putting the Portuguese experience into a larger context. The United States has a longstanding tradition of entrepreneurship education and is commonly used by the European Commission as a benchmark and thus is also used as a main benchmark in this thesis. To better understand where the information and analysis

presented in this study fits within the policymaking process it is necessary to delineate what part of study of public policy this thesis approaches.

1.6. Delimitations of the Research

Hogwood and Gunn (1984, pp.26-28) suggest a possible classification of approaches to the analysis of public policy with the following categories:

1. Studies of policy content;
2. Studies of policy process;
3. Studies of policy outputs;
4. Evaluation studies;
5. Information for policy-making;
6. Process advocacy, concerned with improving the policy process;
7. Policy advocacy;
8. The analysis of the analysis: the critical appraisal of the assumptions, methodology, etc.

This framework ranges from what is essentially a descriptive analysis (even if theoretically informed) in categories 1 through 4 to prescriptive analysis in categories 5 through 7. Category 4, "evaluation studies," can offer a description of factors that shape policy, as well as aiding future policy-making by providing further information. Thus, the two groups of categories overlap with 1 through 4 involving the knowledge *of* policy and the policy process, and 4 through 7 concerned with the use of knowledge *in* the policy process. Hogwood and Gunn's (1984) model is represented in the figure below.

Figure 2 - Types of Study of Public Policy-making

Hogwood & Gunn, 1981

This study primarily aims at contributing to the knowledge *in* the policy process that provides information for policymakers. In this study, policy development of entrepreneurship education in Portugal is viewed within a perspective of life-long learning in accordance with the European Union (Commission, 2007).

In a recent Commission (2008a) report, "The important role of education in promoting more entrepreneurial attitudes and behaviors, starting even at primary school, is now widely recognized." (p.10) And that, "Universities and technical institutes should integrate entrepreneurship as an important part of the curriculum, spread across different subjects, and require or encourage students to take entrepreneurship courses." (Commission, 2006b, p.9) This thesis assumes that entrepreneurship can be taught. In the words of the late management guru Peter Drucker (1985): "The entrepreneurial mystique? It's not magic, it's not mysterious, and it has nothing to do with the genes. It's a discipline. And, like any discipline, it can be learned." (p.143). It is generally now accepted that, "the question of whether entrepreneurship can be taught is *obsolete*." (Kuratko, 2005, p.580)

1.7. Outline of the Thesis

This thesis is laid out in five main sections: 1) Introduction; 2) Literature Review; 3) Research Strategy and Methods; 4) Research Findings; and 5) Conclusions and Recommendations.

The Introduction section delivers to the reader the background needed to understand the study. It describes the research problem, objectives and questions. The significance of the study as well as the theoretical orientation and some basic definitions are outlined for clarity. In the Literature Review the reader is introduced to the theoretical discussion surrounding entrepreneurship as well as entrepreneurship promotion and public policy. A historic background of the post-secondary education system in Portugal gives the conditions from which current reforms are being developed. The European Union framework and entrepreneurship education are then discussed. The Research Strategy and Methods section discusses the approach to the research and specific studies in this area in Portugal. It then outlines the methods used in the three studies included in the findings section. The Findings section presents the results of the three primary studies that make up this thesis and

includes various tables and figures as well as separate sections that discuss the results of the findings. Finally, the conclusions and recommendations section puts in context what the results of the studies means for entrepreneurship education in Portugal.

II. LITERATURE REVIEW

The review of literature is divided into three main sections so that the reader is provided with a clear understanding of the background of different areas related to post-secondary entrepreneurship education in Portugal. The first section of the review entitled Entrepreneurship and Entrepreneurship Promotion (sections 2.1 – 2.8) begins with a theoretical discussion of entrepreneurship and entrepreneurship and public policy. The section then elaborates on how entrepreneurship is being promoted in the European Union and specifically in Member State Portugal. The second main section, Historical Development and Current State of Higher Education in Portugal (sections 2.9 & 2.10), presents the reader with a better understanding of post-secondary education and its development in Portugal during the 20th century and the early part of the 21st century. The last section, Post-Secondary Entrepreneurship Education in the European Union and Portugal (see sections 2.11 - 2.14), builds on the previous two sections by bringing together entrepreneurship promotion and post-secondary education and discusses the development, content and pedagogy of entrepreneurship education.

ENTREPRENEURSHIP & ENTREPRENEURSHIP PROMOTION

2.1 What is "Entrepreneurship" & Why is it Important?

Entrepreneurship is a mindset and skill-set that individuals use to create value for a society and for themselves. Many times entrepreneurship is associated with the practice of starting new firms, particularly new businesses involving the exploitation of opportunities that exist in a given market. "Entrepreneurial behavior involves the activities of individuals who are associated with creating new organizations rather than the activities of individuals who are involved with maintaining or changing the operations of on-going established organizations" (Gartner & Carter, 2003, p.195). This definition is consistent with the conventional scholarly tradition of management research in this area. This viewpoint, however, is limited, as entrepreneurship also occurs within on-going organizations where innovation and change agents can use entrepreneurial techniques and initiatives (usually referred to as intrapreneurship) (Hornsby, *et al.*, 1993). Entrepreneurship can happen in the nonprofit sector, large corporate structures or even civil services. Entrepreneurs are usually considered the bearers of risk in the pursuit of opportunities and commonly employ creative and innovative actions to reach their goals (Stevenson & Gumpert, 2008). Their endeavors therefore involve three dimensions: innovation, risk-taking and pro-activity (Ireland, *et al.*, 2006) .

The creation and development of new ventures as well as the introduction of new products and ways of doing business have been recognized by many authors as critical elements in the economic and social development of nations (Schumpeter, 1934, 1942; Harbison, 1956; Young, 1971; Drucker, 1985). Without the dynamism that entrepreneurial endeavors bring to an economy, the widespread adoption of structural change in industry would be all but impossible. Encouraging entrepreneurship is a vitally important process that makes it possible to take full advantage of the opportunities an economy can provide.

Since the 1980s entrepreneurship has played a key role in economic strategy and development (Storey, 1994). Governments throughout the world are making efforts to increase entrepreneurial vitality in their countries through the development of specific policies to facilitate higher levels of entrepreneurial activity. These policies are commonly measured in terms of business start-ups and the ease with which firms can enter and exit the marketplace and this "burn/churn" as part of what makes an economy dynamic. A significant amount of research has been done recently to try to better understand the importance of entrepreneurial activity in economic development and growth (Acs, *et al.*, 1999; Audretsch & Thurik, 2001a, 2001b, Kirchhoff, 1994; Reynolds *et al*., 2000,

2004; Wennekers & Thurik, 1999). Nonetheless, the strategic design and implementation of effective entrepreneurship policies and measures that have impact is an inexact science at best (Stevenson & Lundstrom, 2001). The subject of entrepreneurship policy in the European Union context is the framework through which this study attempts to advance knowledge in this area. To understand this context it is necessary to first approach the mean, value and development of the conceptualization of entrepreneurship in both its theoretical and practical application.

2.2 Origins of the Concept of Entrepreneurship

The concept of entrepreneurship has a complex intellectual tradition in economic theory. Formulating a succinct definition is extremely difficult, and any attempt to do so will inevitably exclude a valuable element of the history and evolution of thought on this subject. Table 1 outlines the development of the term entrepreneur and will help to illustrate this point.

Table 1 - History of Thought: Concept of the Entrepreneur

Dates	Authors	The Role of the Entrepreneur
1725	Richard Cantillon	assumption of risk, speculation
1814	Jean-Baptiste Say	coordination of productive services
1871	Carl Menger	future needs anticipation
1921	Frank Knight	Capacity to deal with uncertainty
1934	Joseph Schumpeter	Innovation
1949	Ludvig von Mises	Decision-making
1973	Israel Kirsner	identification and exploitation of disequilibrium
1980	T. W. Schultz	in entrepreneurial capacity resides economic value
1982	Mark Casson	decision-maker follows criterion about the coordination of scare resources

English Translation of: The role of the entrepreneur in the history of economic thought (Trigo, 2003, table 2.1 p.36)

Within the evolution of economic thought regarding the role of the entrepreneur it is possible to identify three phases: "(1) an increasing awareness of the entrepreneur's role in the economic growth; (2) an initial interest in linking risk and decision-making in uncertain conditions with the characteristics of the entrepreneur's behavior; (3) the recognition of the psychological and behavior characteristics that distinguish the entrepreneur from other economic agents, in particular the capitalist and the manager." (Trigo, 2003, pp.36-37)

Long (1983) provides a historic account of the development and uses of the term entrepreneur. The root of the word can be traced back 800 years, to the French verb *entreprendre*, "to do something" or "to undertake." Approximately 300 years later, the noun form of the term appeared in the French language, and soon thereafter both the verb and noun entered the English language (Long, 1983).

Around 1730, Richard Cantillon used entrepreneur to mean a self-employed person who buys at a current certain price to later sell at uncertain prices with a strategy of arbitrage. The entrepreneur tolerates risk and uncertainty believing it is inherent in these kinds of transactions.

The French businessman turned economist Jean-Baptiste Say, in his 1803 work *Traité d' économie politique*, described the entrepreneur as an individual who creates value in an economy by moving resources out of areas of low productivity and into areas of higher productivity and greater yield. He describes the entrepreneur as an agent who, "unites all means of production and who finds in the value of the products… the re-establishment of the entire capital he employs, and the value of the wages, the interest, and the rent which he pays, as well as the profits belonging to himself." (Say, 1825, pp.28-29)

The term entrepreneur came into much wider use after the British economist, John Stuart Mill, popularized it in his 1848 classic, *Principles of Political Economy*. The term entrepreneur subsequently became commonly used as a description of the business founder. Mill felt that the French term, entrepreneur, was richer than any English equivalent, and is credited with popularizing the term.

Frank Knight (1921) distinguished between the concepts of risk and uncertainty as entrepreneurs perform managerial functions such as control and direction of the firm. He also further emphasized the entrepreneur's role in bearing the uncertainty of market dynamics.

Joseph Schumpeter is widely thought to be and referenced as the founder of modern entrepreneurship theory. In 1911 Schumpeter wrote, the *Theorie der wirtschaftlichen Entwicklungen* (Theory of Economic Development). In this seminal work, Schumpeter proposed a theory where new firms displace older, less innovative firms through their entrepreneurial spirit. In *Capitalism and Democracy* (1942), he argued that large, entrenched corporations tend to resist change, thus compelling entrepreneurs to create new firms in order to pursue innovative activities. He proposed that this "creative destruction" would eventually lead to a higher degree of economic growth and the new products that entrepreneurs created would displace old products in the act of

"creative destruction" (Schumpeter, 1942). "The function of entrepreneurs is to reform or revolutionize the pattern of production by exploiting an invention, or more generally, an untried technological possibility for producing a new commodity or producing an old one in a new way…To undertake such new things is difficult and constitutes a distinct economic function, first because they lie outside of the routine tasks which everybody understands, and secondly, because the environment resists in many ways." (Schumpeter, 1942, p.13) Schumpeter viewed entrepreneurial venture as "the fundamental engine that sets and keeps the capitalist engine in motion" (Schumpeter 1942, p.83) through inventing new products and introducing new methods of production and business models, as well as opening new markets.

Despite the widespread acceptance of the Schumpeterian economic tradition that emphasizes the process of starting a new enterprise, which includes innovation as the defining entrepreneurial activity, there is still no commonly accepted definition of entrepreneurship among the developed countries of the OECD to this day (OECD, 1998).

2.3 Modern Concepts of Entrepreneurship

Entrepreneurship researchers are hampered by the lack of a commonly accepted conceptual framework for entrepreneurship, according to Bygrave and Hofer (1991). The lack of consensus means it is imperative that researchers provide a clear statement of their meaning when they use the term entrepreneurship or refer to the entrepreneur. The notion of the entrepreneur has evolved over time and incorporated ideas from motivational theory to behavioral concepts (Trigo, 2003) as the table below demonstrates.

Table 2 - Development of Thought Regarding the Concept of the Entrepreneur

Dates	Authors	Characteristic of the Entrepreneur
1961	D.C. McClelland	need of success
1966	J.B. Rotter	internal focus of control
1985	J.A. Timmons	Taking calculated risks
	Peter Drucker	
1985	Sexton & Bowman	tolerance of ambiguity (uncertainty)
1985	A Bandura	self-efficacy

English Translation of: Main individual characteristics attributed to the entrepreneur (Trigo, 2003, p.40)

Many scholars, such as Bygrave and Hofer (1991), describe entrepreneurship as a process that "involves all the functions, activities, and actions associated with the perceiving of opportunities

and the creation of organizations to pursue them" (p.14). Policymaking entities such as the European Commission describe entrepreneurship as, "…the mindset and process to create and develop economic activity by blending risk-taking, creativity and/or innovation with sound management, within a new or an existing organization" (Commission, 2003, p.7), while the OECD definition states that "Entrepreneurs are agents of change and growth in a market economy and they can act to accelerate the generation, dissemination and application of innovative ideas….Entrepreneurs not only seek out and identify potentially profitable economic opportunities but are also willing to take risks to see if their hunches are right" (OECD, 1998, p.11). Beyond concepts and definitions, it is what entrepreneurship can do for an economy that is of most concern to politicians and members of the public who wish to see it further promoted and fostered.

2.4 Entrepreneurship & Economic Growth

It has been recognized that entrepreneurship is of fundamental importance for an economy (Bruyat & Julien, 2000) due to the considerable macro-level and micro-level effects (Henry *et al.*, 2003). It is fairly well accepted that the Schumpeterian concept of "creative destruction" has positive economic effects on an economy (Aghion & Howit, 1992; Kirchloff, 1994).

Promoting entrepreneurship and facilitating the rapid growth of innovative SMEs are increasingly recognized by governments as an effective means for creating jobs, increasing productivity, creating competitiveness and alleviating unemployment and poverty. "A reliance on private initiative as a source of employment creation is also very clearly attractive in a context both of restricted public expenditures and a preference among policymakers for supply-side solutions to unemployment. Promoting entrepreneurship is thus viewed as part of a formula that will reconcile economic success with social cohesion" (OECD, 1997, p.34) and identifying the factors and implementing policies that can achieve these goals are of high priority for many governments. Entrepreneurial small to medium size companies are vital because of their productivity contributions to the growth and development of national and regional economies over time (Wennekers & Thurik, 2001). Audretsch and Thurik (1999) demonstrated that increases in the rate of business owners as a percentage of the labor force between 1984 and 1994 led to lower unemployment rates in 23 OECD countries.

Baumol (1968) states that entrepreneurship is critical to economic development, however, economic theory is limited in putting a calculus equation to the function of the entrepreneur,is too

focused on the "inputs" and tells us "…little about where they come from" (p.69). This being stated, significant research has been achieved since the late 1960s that has established the importance of entrepreneurial activity in economic development and growth (Acs, *et al.*, 1999; Audretsch & Thurik, 2001a, 2001b, Kirchhoff, 1994; Reynolds *et al.*, 2000, 2004; Wennekers & Thurik, 1999).

Garavan and O'Cinneide (1994) state that, "In recent years, many industrialized countries have suffered from economic recession, high unemployment rates and fluctuation in international trade cycles to a degree not experienced since World War II. This situation has tended to increase the attention paid by policy and political decision makers to the potential role of entrepreneurs as a possible solution to rising unemployment rates and as a recipe for economic prosperity" (p.3). In turn, Acs (1992) describes some of the results of the shift of economic activity from large to smaller businesses. He views small firms as innovative change agents as they stimulate industry, create new jobs and play an important role in an economy's evolution through their entrepreneurial activity.

Trigo (2003, p.59) concludes, "Economic growth does not happen automatically only through changing institutions or by the existence of entrepreneurial individuals - enterprise activities are not an automatic consequence of institutional changes -, it requires the cooperation of both institutional structures and entrepreneurship."

2.5 Structuring Entrepreneurship Policy

One of the greatest challenges for a government is to stimulate and support economic growth through its policy initiatives. However, transforming a society's aspiration for increased levels of entrepreneurship is a relatively new area of policy-making and indeed many in government have trouble articulating the meaning and substance of entrepreneurship policy (Hart, 2003; Audretsch, *et al.*, 2006). The first tool that policymakers need is a basic institutional framework that is conducive to entrepreneurship such as described in the table below.

Table 3 - Basic Institutional Framework Needed for Entrepreneurship Policy

Economic Institutions	Political Institutions	Legal Institutions
Private Property • Well-defined • Enforceable • Freedom to contract	Checks and Balances • Federalism • Fiscal • Monetary	Rule of Law • Generality • Stability • Predictability
Capital Markets Open to Trade	Accountability	Independent judiciary
Low Barriers to Entry and Exit	Transparency	Functional and Assessable Courts

(Coyne, & Leeson, 2004, p.239)

Economic, political and legal institutions of this nature that are beneficial to productive entrepreneurship and sustainable economic growth are not always present in developing countries (Coyne, & Leeson, 2004, p.239). As the context of this study is the European Union, and more specifically Portugal, this type of basic institutional framework is assumed to be present and thus the more essential distinction to be made is between traditional small business policy and that of entrepreneurship policy.

Small Business Policy versus Entrepreneurship Policy

Most countries have some entity, ministry or agency, which looks after the needs of small businesses and is a surrogate for the promotion of entrepreneurship. The definition of what is considered a small or medium business also changes among countries and regions. In the United States[1] and Canada companies with fewer than 500 employees and European Union[2] enterprises that have fewer than 250 employees are considered small businesses, whereas in many developing countries small businesses are considered to be those with fewer than 50 workers. In most countries there exists no government structure that is directly responsible for the development and promotion of entrepreneurship. Usually, entrepreneurship is developed across a variety of ministries or agencies that ranges from economy to education to immigration (Hart, 2003), whereas small business policies are usually focused in one entity. Small business policy typically targets the

[1] Note this is a general number. In fact, in the United States Small Businesses are classified a small business by specific SIC Codes. In more labor-intensive industries such as manufacturing the numbers are higher than in less labor-intensive industries. This also goes for revenue classification of small businesses.

[2] Since January, 2005 the European Commission defines Micro-enterprises as up to 9 employees and annual sales of less than 2 million Euros; Small Businesses are between 11 to 50 employees with up to 10 million Euros in sales; Medium-size enterprises are between 51 and 250 employees with sales not exceeding 50 million Euros. Source: EC Recommendation – 96/280/EU

existing array of small enterprises and their viability, especially in light of the cost disadvantages that they must overcome due to their intrinsic size disadvantage when compared to large firms.

The main thrust of small business policy at its inception in the early 20th century was to ensure that the significant market power of large companies was constrained and that monopolies (even public companies that were not monopolies) did not have an unfair advantage over their smaller brethren. Entrepreneurship policy, in contrast, encompasses multiple levels of analysis, such as that of the individual and both the entrepreneur and the potential entrepreneur. This implies that it is not as static as small business policy that focuses primarily on the stock of existing firms and organizational level of analysis consisting of issues primarily related to running a company in the larger business environment. Entrepreneurship policy looks at the decision-making process of the entrepreneur and is concerned with the larger framework in which education and training is developed, knowledge transfer is facilitated, technology commercialization occurs, networks are formed and even a cultural environment that is favorable to taking risks and developing new ideas.

Defining the Essentials of Entrepreneurship Policy

Lundström and Stevenson (2001) defined entrepreneurship policy as measures taken to stimulate entrepreneurship that can focus on the pre-start, start-up and/or post-start-up phases of the entrepreneurial process. Policies should be "designed and delivered" to tackle the areas of motivation, opportunity and skill development. The primary objective of these policies is to encourage more people to start their own business. Further details are presented in the table below, which has been adapted from Lundström and Stevenson's (2001) work:

Table 4 - Summary of Entrepreneurship Policy

Feature	**Entrepreneurship Policy**
Objective	Motivate more new entrepreneurs
Target	Nascent entrepreneurs/new business starters; i.e. individuals (people)
Targeting	General population/subsets (i.e., women, youth)
Client Group	Difficult to identify "nascents"
Levers	Non-financial, business support (networks, education, counseling)
Focus	Entrepreneurial culture/climate (i.e., promote entrepreneurship)
Delivery System	Lots of new players (need orientation)
Approach	Pro-active outreach
Results Orientation	More long-term (results can take longer)
Consultation	Forums do not generally exist

Lundström & Stevenson, 2001, p.44

It is noteworthy that in this table Lundström and Stevenson refer specifically to the focus of entrepreneurship policy as "[to] *promote entrepreneurship*" (Lundström & Stevenson, 2001, p.44). The main difficulty, as noted by them, is identifying the areas that need to be proactively pursued to create a sustained cultural change. As part of improving the business infrastructure for "nascent entrepreneurs", education and counseling are necessary to achieve long-term policy objectives. Small and medium-size businesses and individual entrepreneurs typically do not have sufficient resources to directly lobby a government. Furthermore, fora, seminar and conferences often do not exist where policymakers can sit down with this group for consultation.

Lundström and Stevenson (2001, p.19) emphasize the pre-start-up and start-up phases of business ownership because, "these are the targets for entrepreneurship policy measures and we propose that entrepreneurship policy measures are taken to stimulate individuals to behave more entrepreneurially. It is our position that this can be done by influencing motivation, opportunity and skill factors. Therefore, our aim is to see what types of policy actions are taken towards individuals in the pre- and early stages of idea and business development."

Bridge *et al*. (1998) identify various types of entrepreneurship promotional activities and interventions in accordance with the particular stages of business development that a policy aims to support. This includes a wide range of policies that can focus on the founding and development of a new business to the eventual decline.

Table 5 - Type of Interventions

Stage of Business	**Policy Field or Need**	**Intervention/Instrument**
Culture	• An encouraging and supportive environment	• Community programs, entrepreneurship education
Pre-start	• Ideas	• Spin-off ideas, technology transfer, ideas generation workshops
	• Small business know-how	• Small business skills training
		• Networking, access points
	• Know-who networks • Counseling	• Pre-start counseling
Start-up (external)	• Customers	• Purchasing initiatives
	• Suppliers	• Sourcing initiatives & directories
	• Advice/consultancy • Business plan information	• Business expertise provision, training, counseling, research
		• Databases/business planning
	• Premises	• Incubators, science parks

Start-up (internal)	• Finance	• Grants, loans, business angels
	• Market/admin. Expertise	• Training services
	• Financial management	• Advice/counseling, mentoring
Established	• New ideas • Specialist guidance and investments	• Ideas generation workshops, spin off ideas, technology transfer
		• Guidance services, including banks, accountants, solicitors
Growth	• Market opportunities/exports	• Trade missions, export advisers
		• Market/technical information
	• Product development	• Development courses
	• Strategic approach • Management skills, finance	• Salary support, subsidies, grants
Decline	• Confidence, customers, money • Strategic review and planning	• Mentors • Advice and guidance
Termination	• Legal/other advice	• Advice and counseling
Other dimensions	• Business sector	• Sectoral initiatives/training
	• Business support environment	• Information and education
All	• Information on small business needs	• Research coordination, research databases

Bridge *et al*., 1998, pp.241-242

In developing entrepreneurship policies, a wide variety of areas need to be considered including broader tax incentives, education, immigration as well as specific measures such as special financing or training to promote entrepreneurship (Lundström & Stevenson, 2005).

In light of regional entrepreneurial economies such as California's Silicon Valley which was not a result of any government policy it could be argued that just because entrepreneurship is desirable for economic growth, this alone does not justify public policy intervention. However, just because some areas have grown to be characterized as entrepreneurial with little government intervention, this does not necessarily mean that government action is not justified where market failures exist and entrepreneurship is desired. Audretsch *et al.* (2006) identify roughly four barriers to entrepreneurship or market failures that hinder the development of entrepreneurship in a region and can be used to justify public policy intervention: 1) the lack of entrepreneurial networks rendering opportunity not to be perceived as having the same value because entrepreneurship itself is seen as being more difficult without role models; 2) the proximity of knowledge and knowledge workers; 3) Failure externality which gives benefit through a constant exchange of ideas and proper valuation for those firms that are successful 4) lack of role models for individuals as well as firms.

Adam Smith stated in 1776 that, "Little else is requisite to carry a state to the highest degree of opulence from the lowest barbarism, but peace, easy taxes, and a tolerable administration of justice; all the rest being brought about by the natural course of things." (1998, p.36) The argument that state intervention is justified when market failures exist, however, is fairly well accepted and has been building block for the development of the modern welfare state (Pigou, 1920) from virtually its inception. It has also been acknowledged that the existence of government is essential for economic growth (North, 1981, p.20). Institutions are essentially, "legal, administrative and customary arrangements for repeated human interactions. Their major function is to enhance the predictability of human behavior" (Pejovich, 1995, p.30). In regard to entrepreneurship, public policy institutions have a duty to assist when market failures exist be they regulatory, educational or societal and foster their countries and regions in economic growth. Indeed, "entrepreneurial policies are evolving, they are clearly gaining in importance and impact in the overall portfolio of economic policy instruments." (Audretsch *et al.*, 2006)

2.6 Promoting Entrepreneurship in Europe

Europe Motivated by the American Entrepreneurial Economy

Entrepreneurship is about the creation of economic and social value (see sections 2.3 and 2.4). It generates new jobs, new industries and is a source of innovation that can be the foundation of renewing organizations, institutions and even whole countries. Thurow (2002) concludes, "Europe is falling behind because it doesn't build the new big firms of the future." (p.35). In a paper entitled, "The Lisbon Strategy & EU Knowledge Society: US perspectives & approaches", Redford (2007) concludes that, "The political motivation for European integration has long been driven by competitive anxieties regarding global economic rivals" (p.114). As a result, Europe is predicted to have slower long-term economic growth in comparison to the US in the future because of its lack of technological dynamism and its inability to adequately adjust to the rules of the "new economy" (Soete, 2001; Daveri, 2002).

European countries from 1960 to 1980 generally enjoyed higher employment rates than the United States. Since that time, however, the EU has been outpaced by the US. The European Union's per capita Gross Domestic Product (GDP) has been stagnating at 70% of US levels since the 1970's (CIA Factbook, 2004). EU countries with higher levels of labor productivity growth did show signs of catching up to the United States until the 1960's, however, since 1995 the catching up process

came to an end as EU growth declined and American labor productivity charged forward. This accelerated growth can be credited in large part to the effects of information and communication technology (ICT) in the services sector associated specifically with retail, wholesale and financial services which have, in many cases, been led by entrepreneurial endeavors. Debate does exist about what types of jobs have been created and there are other differences that are troubling for some in using the US as a benchmark for the EU (Denmark, 2005). However, the differences in GDP per capita, hours per worker and general employment levels across almost all European countries compared with the US is significant and shows a major gap (see table below).

Table 6 - EU-US Per Capita Income & Productivity Gap

Percentage difference in	GDP per capita	GDP per hour	Hours per worker	Employment rate
Ireland	-9.7	7.3	-10.9	-6.1
Norway	-11.0	18.0	-33.1	4.1
Denmark	-17.8	0.2	-22.2	4.1
The Netherlands	-25.0	5	-35.2	5.2
Austria	-25.6	-1.1	-20.6	-3.9
Sweden	-27.5	-12.8	-16.5	1.8
Belgium	-29.2	8.6	-16.5	-21.3
Germany	-31.2	3.8	-25.8	-9.2
Finland	-31.3	-11.1	-15.6	-4.6
United Kingdom	-31.3	-15.9	-12.6	-2.8
Italy	-32.4	-4.6	-14.2	-13.5
France	-33.8	4.7	-22.9	-15.6
EU15	-34.3	-8.0	-17.1	-9.2
Spain	-50.8	-33.2	-3.2	-14.4
Portugal	-67.8	-63.9	-8.4	4.5
Greece	-68.5	-47.5	3.4	-24.4

GGDC, 2003

American productivity per capita is on average 30 percent higher than those of European workers (Mitchell, *et al.*, 2006, p.174). One of the primary reasons for this productivity difference is that the amount of hours worked in Europe is far fewer (see table above). Americans are working on average 1,865 hours per year whereas their European counterparts are working only around 1,600 hours (Mitchell, 2006, *et al.*, p.174)

According to Kuratko (2003) the United States has achieved its highest economic performance in recent years by fostering and promoting entrepreneurial activities. In a recent study by the Kauffman Foundation, the strong regional development of the United States from areas such as the Silicon Valley in California, Route 128 in Massachusetts or Research Triangle in North Carolina

was, at least partly, responsible for the expansion of expansion and development of entrepreneurship promotion policy in other countries around the world (Saxenien, 1994; Gilbert *et al.*, 2004; Audretsch *et al.*, 2006).) Ironically, entrepreneurship policy, as such, is viewed as a more popular policy concept in Europe than in the United States (Hart, 2003).

The European Union Lisbon Strategy for Growth and Competitiveness

Worried about the rising productivity gap and slow growth the "Heads of State and Government of the European Union met in Lisbon in 2000 and launched a series of ambitious reforms at national and European levels. By establishing an effective internal market, by boosting research and innovation and by improving education, to name only a few reform efforts, they aimed to make the European Union 'the most dynamic and competitive knowledge-based economy in the world' by 2010." (Europa, 2005) This goal has driven the EU in developing initiatives to foster and promote entrepreneurship and innovation throughout the Member States. Romano Prodi, who served at the time as the President of the European Commission declared in 2002 that entrepreneurship promotion was essential to European economic policy, "Our lacunae in the field of entrepreneurship needs to be taken seriously because there is mounting evidence that the key to economic growth and productivity improvements lies in the entrepreneurial capacity of an economy" (as quoted in Audretsch *et al.*, 2006, p.13)

The Commission of the European Communities, commonly referred to as the European Commission (EC), is the executive branch of the European Union (EU). The Commission governs the Union together with the European Parliament and the Council of the European Union. Its primary role is to propose and enact legislation, and act as a "guardian of the treaties" that provide the legal basis for the Union. Unlike the Council of the European Union, the Commission is intended to be an independent body of member states. Commissioners represent the interests of the citizens of the EU as a whole and therefore are not permitted to take instructions from the government of the country that appointed them. Twenty-seven Commissioners, one from each member state of the EU, currently serve. Each Commissioner heads a department called a Directorate-General and is responsible for a particular area of policy. The Directorate-General of Enterprise has general dominion over initiatives regarding the promotion of entrepreneurship and innovation.

Entrepreneurship & the Lisbon Strategy

Audretsch, *et al.* (2006) notes that the, "European public policy stance towards the entrepreneurial economy has evolved through five distinct stages: denial, recognition, envy, consensus and attainment." (p.182) It was not only until the turn of the century and the signing of the Lisbon Agenda that, "European policy-makers reached a consensus that not only was the entrepreneurial economy superior to the managed economy but a commitment had to be forged to create a European entrepreneurial economy." (Audretsch, *et al.*, 2006, p.185) The fifth stage, "attainment" is still "in process" but the significant aspect to understand is that entrepreneurship policy is now considered a, "bona fide approach to generating economic growth and has not only emerged in a few places but diffused across a broad spectrum of national, regional and local contexts." (Audretsch, *et al.*, 2006, p.186)

The European Commission launched a series of initiatives aimed at promoting small businesses in the EU as a means to achieve the goals of the Lisbon agenda. In January 2003, the commission adopted a Green Paper on Entrepreneurship in Europe aimed at stimulating debate amongst policy makers, academics, representative organizations, businesses and other experts on entrepreneurship promotion. The Green Paper focused on finding answers to two fundamental questions: "How to produce more entrepreneurs" and "How to get more firms to grow" (Commission, 2004a, p.4).

The Commission of the European Communities states, "Entrepreneurship policy aims to enhance entrepreneurial vitality by motivating and equipping entrepreneurs with the necessary skills. A supportive environment for businesses is key for businesses to start, stop, take over, thrive and survive" (Commission, 2003, p.10). The Commission believes in, "A comprehensive approach to promoting entrepreneurship that must work on three levels – individual, firms and society.

- To motivate **individuals** to become entrepreneurs, they should be made aware of the concept of 'entrepreneurship', and this should be made a sufficiently attractive option. They should be equipped with the right skills to turn ambitions into successful ventures.

- For entrepreneurial ventures to develop into healthy **firms,** supportive framework conditions are essential. These should allow firms to develop and grow, and not unduly hinder contraction and exit.

- Entrepreneurial activity depends on a positive appreciation of entrepreneurs in **society.** Entrepreneurial success should be valued and the stigma of failure reduced."

(Commission, 2003, p.10).

The Commission also see the importance of creating "More positive attitudes towards entrepreneurship" (Commission, 2003, p.21). Thus promotional activities that work on a variety of distinct areas and audiences are extremely important. "Building an entrepreneurial society involves everyone. Attitudes towards entrepreneurial initiative, and failure, must be made more positive. Crucial to achieving this are those on whom today's and future entrepreneurs depend" (Commission, 2003, p.21). At the European Union level, "Entrepreneurship was recognized by the Council as worthy of promotion because entrepreneurial skills and attitudes provide benefits to society, even beyond their application to business activity" (Commission, 2003, p.21).

Regarding the Lisbon Agenda of 2000, the Commission states, "We are now half-way through the process and the results are not very satisfactory. The implementation of reform in Member States has been quite scarce. The reform package consists of 28 main objectives and 120 sub-objectives, with 117 different indicators. The reporting system for 25 Member States adds up to no fewer than 300 annual reports….To remedy this lack of commitment of Member States, the Commission proposed to establish a new kind of partnership with Member States. It also decided to focus efforts on two main areas: productivity and employment. To make things simpler and more coherent, there should be just one national growth programme and one EU growth plan." (Europa, 2005). Finally the Commission laments, "The European Union cannot boost productivity and employment if Member States do not do their part" (Europa, 2005).

More recently the European Commission drafted a revised communiqué entitled, *A New Start for the Lisbon Strategy*. In this document the Commission states that the main concerns of European citizens are: "Jobs, growth, the environment and a proper social network" (Europa, 2005). They acknowledge that the, "current lack of economic growth affects all of us; our pensions, salaries and our standard of living considerably suffer from it. If we do not act immediately, our valued social and environmental model will become unaffordable. In the face of international competition and an ageing population, growth could soon decrease to 1% per year (more than half of today's growth)." (Europa, 2005).

In *The Common Actions for Growth and Employment: The Community Lisbon Program* presented on July 20th, 2005 the Commission states, "The Competitiveness and Innovation Framework Programme will be primarily geared towards SMEs and entrepreneurs. By improving access to markets, finance and support services, it will support innovative businesses, promote the uptake of

ICTs and environmental technologies, and facilitate their funding through risk capital" (Commission, 2005a, pp.6-7).

Actions developed at the European Commission level, however, do not amount to anything if they are not implemented by member states. A sense of urgency and importance at the national level is fundamental to the European Union if it is to successfully achieve its goals of promoting entrepreneurship.

2.7 Promoting Entrepreneurship in Portugal

Audretsch (2006, p.170) states, "the mandate for entrepreneurship policy emanates from regions and even countries that…more recently [have] been adversely affected by globalization and loss of competitiveness in traditional industries, resulting in adverse economic performance." Since 2002 Portugal has had lower economic growth than the majority of other European Members States and this has hit small and medium size companies especially hard. Nevertheless, according to IAPMEI, in 2004 there were 290,000 SMEs that generated more than half of the economic activity in Portugal. Approximately 163.5 billion Euros (this represents more than half of the Portuguese economy) and 2 million jobs are attributed to SMEs in Portugal (IAPMEI, 2007, p.1).

Similar to other parts of Europe and North America, Portugal's manufacturing sector has suffered a sustained shift in competitive advantage to developing countries that are characterized by cheaper unskilled and semi-skilled labor. The North of Portugal, traditionally seen as the manufacturing heartland of the country, is many times also referenced as being more entrepreneurial than the rest of the country. The North is also home to one of the most important entrepreneurs association – the Portuguese Entrepreneur Association, AEP as well as the National Young Entrepreneurs Association, ANJE. Both these organizations also give training for entrepeneurs.

Additionally, according to a Eurobarometer study made in September of 2003 of the EU-15, 47% of the working-age population wanted to be self-employed. At 67%, the Portuguese had the strongest desire to be self-employed (Eurobarometer, 2003, p.20). This desire on the part of the Portuguese to be entrepreneurs makes promoting entrepreneurship not only a major economic imperative but also demonstrates the necessity for policy-makers and organizations to address the issue in the context of social cohesion and satisfying the populace.

As much as 30% of the differences in GDP growth rates are attributed to varied levels of entrepreneurial activity (Reynold, *et al.*, 2004). The Global Entrepreneurship Monitor (GEM) is an annual comparative assessment of national entrepreneurial activity levels. In 2004, the GEM project conducted research in 39 countries. The report from that study concluded that, "Portugal has one of the lowest rates of entrepreneurial activity in the EU and among the GEM 2004 countries globally. Portugal only has 4 entrepreneurs for every 100 people aged 18-64 years. This ranks Portugal in 13th place of the 16 EU countries[3] included in GEM." (Baganha, *et al.*, 2005, p.v).

2.8 Promotion of Technology-Based Entrepreneurship in Portugal

One of the major focuses of current entrepreneurship promotion policy globally is to facilitate technology-based entrepreneurship (Audretsch, *et al.*, 2006). Audretsch (1995) developed his "Knowledge Spillover Theory of Entrepreneurship" that "challenge an assumption implicit to knowledge production function – that firms exist exogenously and then endogenously seek out and apply knowledge inputs to generate innovative output…It is the knowledge in the possession of economic agents that is exogenous, and in an effort to appropriate the returns from that knowledge, the spillover of knowledge from its producing entity involved endogenously creating a firm." (pp.179-180). One of the ways in which small firms can generate innovation is by capitalizing on knowledge developed through research and development done at large corporations or in academic institutions.

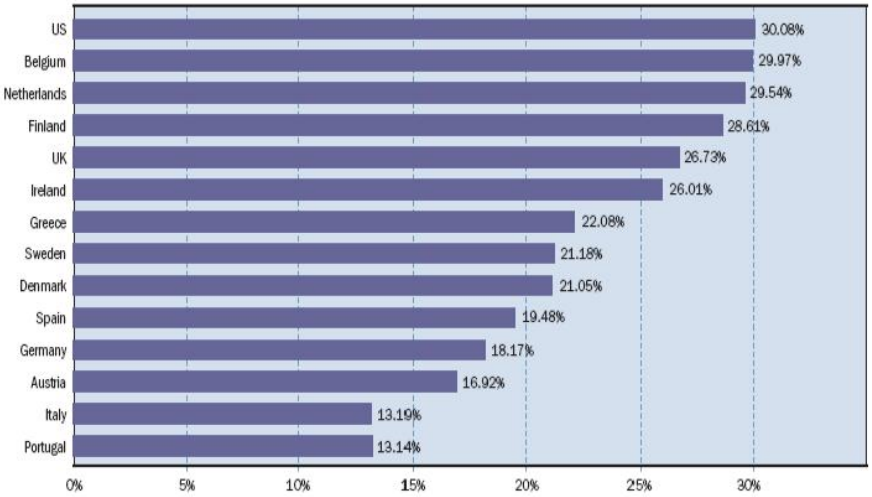
The creation of university spin-offs is one of the most important policy goals from the Ministry of Science, Technology and Higher Education (MCTES, 2007a, 2007b). Various benefits that university spin-offs can bring have included: moving the traditional boundaries between basic and applied research and facilitating change in an economy (Roberts, 1991b; Abramson *et al.*, 1997); bridging between the basic and applied research that gives a technological competitive advantage to customers (Autio, 1997), enabling higher innovation efficiencies (Rothwell & Dodgson, 1993); creating employment opportunities (Roberts, 1991a; Perez & Sanchez, 2003); as well as developing regional economies (Mian, 1997). Corporate spin-off activity can include divestment (Jovanovic, 1993) but also opportunities provided by research for large corporations (Audretsch, *et al.*, 2006).

[3] The 16 EU countries included in the GEM 2004 Study were: Belgium, Denmark, Finland, France, Germany, Greece, Hungary, Ireland, Italy, Netherlands, Poland, Portugal, Slovenia, Spain, Sweden and United Kingdom.

The Need for Technology-based Entrepreneurship in Portugal

Richard Florida and Irene Tinagli demonstrated the need for innovation and entrepreneurship in Portugal in their 2004 article, "Europe in the Creative Age". Their findings indicated that Portugal ranked as the country with the lowest percentage of the population that works in creative class of the 13 European countries that were studied and the only western European country in which the growth rate for creative jobs was negative. (See figures 2 and 3 respectively).

Figure 3 - Creative Occupations as a percent of Total Employment, 2000

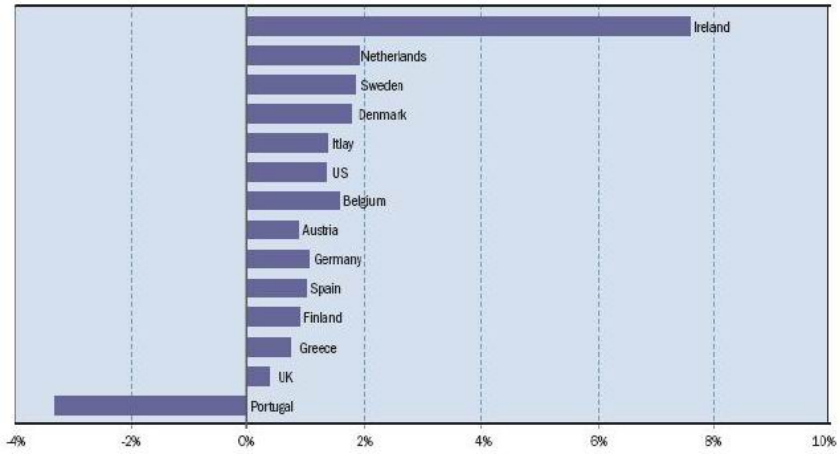


Euro-Creative Class Index, Florida & Tinagli, 2004, p.14

Similar, but more specific than Peter Drucker's 1959 concept of the "knowledge worker", Richard Florida breaks down the "creative class" into two general subcategories. 1) Creative Professionals that incorporates not only knowledge workers but also financial planners, doctors and lawyers. 2) The Super-Creative Core that is comprised of a huge range of occupations such as architects, educators, and computer programmers as well as a smaller subset of people from that area of the arts, design, and media. By a four to one margin, knowledge workers are now estimated to outnumber all other in the North American workforce (Haag *et al*., 2006, p.4). Florida's data shows that 30% of the US workers identify themselves with the creative class and currently 26% are actually a part of the creative class according to the Standard Occupation Codes he uses. In the 1960's less than five percent of the U.S. workforce was a part of the creative class and it has increased more than 10% in the last twenty years. In sum, the ranks of the creative class are seen as vital to today's economies and cities compete to attract these sorts of works to realize regional development.

Knowledge and creativity are key factors in generating comparative advantage and economic growth in the global economy. "The world is moving from an industrial era based upon natural resources into a knowledge-based era based upon skills, education and research and development," (Thurow, 2002, p.25) Entrepreneurship is the organizational form that much of the modern creative class works under, no matter what occupational area individuals work in.

Figure 4 - Euro-Creative Class Growth in Creative Occupations, 1995-2000



Florida & Tinagli, 2004, p.39

The negative growth rate and the low percentage of the creative class is something that the Ministry of Science, Technology and Higher Education is acutely aware of regarding the development of Portugal. The Ministry uses some of the research done by Florida to justify the new expenditures on the US University Partnership Programs such as the University of Texas at Austin agreement (MCTES, 2007a) (See section 2.10 for further discussion on the Portuguese government programs with Carnegie Mellon University, Harvard, MIT and University of Texas at Austin). Investments in the Portuguese National Laboratory Network has been made to attract not only young Portuguese researchers to return but also to entice foreign talent to join new laboratories throughout the country as the human capital and scientific talent is decidedly lower than that of other countries as can be seen in the table below.

Table 7 - Portugal at the Bottom of the Euro-Talent Index

Euro-Talent Index		Creative Class	Human Capital*	Scientific Talent
Rank	Score			
1. United States	15.00	15.00	15.00	11.41
2. Finland	13.22	14.27	7.22	15.00
3. Netherlands	12.86	14.73	13.65	7.13
4. Belgium	10.95	14.95	6.65	8.63
5. United Kingdom	10.81	13.33	8.68	7.82
6. Sweden	10.72	10.56	7.11	11.92
7. Ireland	9.48	12.97	5.98	7.23
8. Germany	9.25	9.06	7.89	8.57
9. Spain	8.31	9.72	7.89	5.32
10. Denmark	8.21	10.50	3.05	9.12
11. France	7.93	n.a.	5.92	8.67
12. Greece	7.61	11.01	6.37	3.63
13. Austria	6.81	8.44	3.50	6.86
14. Italy	5.86	6.58	4.91	4.70
15. Portugal	5.37	6.55	3.67	4.62

Florida & Tinagli, 2004, p.16

The government is not the only one to believe that Portugal must increase its innovation and high technology portfolio. In April of 2003, COTEC Portugal - Associação Empresarial para a Inovação was created by a consortium of one hundred of Portugal's largest companies with the mission of "promoting the competitiveness of companies established in Portugal, through the development and the diffusion of a culture and a practice of innovation as well as of knowledge, specially that generated in our country" (COTEC, 2007, p.1). COTEC Portugal has been actively involved in fostering the entrepreneurial technology commercialization at higher education institutions throughout Portugal. Efforts such as these are important as Portugal is at the bottom of the Euro Technology Index as can be seen in the table below.

Table 8 - Portugal at the Bottom of the Euro Technology Index

Technology Index		Innovation	High Tech Innovation	R&D
Rank	Score			
1. US	15.00	15.00	15.00	10.62
2. Sweden	10.92	9.33	5.25	15.00
3. Finland	9.57	6.14	6.39	13.38
4. Germany	6.97	6.33	2.56	9.97
5. Denmark	5.89	4.48	3.08	8.39
6. Netherlands	5.83	4.43	3.49	7.86
7. Belgium	5.35	4.19	2.28	8.03
8. France	5.34	3.29	2.37	8.80
9. United Kingdom	5.01	3.43	2.56	7.58
10. Austria	4.39	3.67	1.00	7.22
11. Ireland	3.09	2.05	0.68	5.64
12. Italy	2.40	1.52	0.75	4.22
13. Spain	1.55	0.38	0.18	3.65
14. Portugal	1.19	0.05	0.02	3.16
15. Greece	0.83	0.10	0.09	2.07

Florida & Tinagli, 2004, p.20

Investment is one of the main reasons behind this lack of technological development in Portugal. In 2001, data indicates that expenditures in R&D per Researcher in the business sector is well below the EU average for industry exposures, higher education was less than half when compared to the EU average and government less than two and a half times less (see table below).

Table 9 - Expenditure in R&D per Researcher & Inhabitant (1000 €/Full Time Equivalent)

	Expenditure in R&D per Researcher, 2001				**Gross Expenditure in R&D per in habitant**
	Gross expenditure	**Business Sector**	**Higher Education**	**Government**	
	1000 € / FTE				1,000 €
Poland	23	49	12	39	34
Hungary	37	54	24	30	53
Greece	54	101	38	86	73
Czech Rep.	55	87	31	41	80
Portugal	**58**	**121**	**41**	**59**	**99**
Turkey	60	125	50	35	-
Spain	78	172	41	74	155
Finland	125	156	76	103	890
Ireland	139	151	111	130	309
UK	145	164	92	214	382
Belgian	153	201	90	127	450
Norway	154	165	137	144	675
UE-25	**156**	**214**	**90**	**147**	**375**
UE-15	171	225	103	170	442
France	180	239	94	205	525
Austria	180	183	168	228	420
USA	182	169	171	361	845
Holland	186	223	145	170	490
Denmark	188	254	121	132	666
Italy	188	239	150	165	215
Germany	199	236	121	186	628
Japan	212	245	103	404	1133
Sweden	227	291	128	132	1175
Switzerland	266	312	171	222	951

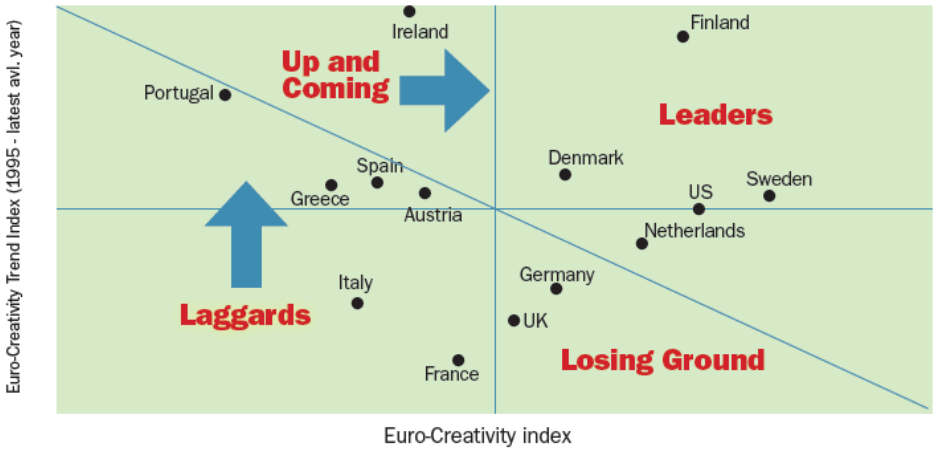
Eurostat, 2005

Carl J. Schramm, the President of the Kauffman Foundation, the largest Foundation in the world devoted to entrepreneurship education and research states that, "Large US Firms today effectively outsource much of their research and development to start-ups. Rather than take on all of the effort and risk of developing an idea internally, they help a new firm do so via strategic investments and working partnerships….Government agencies also invest directly in new firms through channels…[and] US Universities generate a constant flow of ideas for new businesses. An invention or discovery moves out of a university into the entrepreneurial sector when investors and businesspeople help to form a company that commercializes the idea. It has been estimated that the

companies spun out of just one university, the Massachusetts Institute of Technology, would constitute a nation with the twenty-fourth largest GDP in the world." (Schramm, 2005, pp.166-167)

Florida and Tinagli categorize Portugal as one of the countries that is a laggard but that is perhaps moving towards up-and-comer status. This maybe more than wishful thinking as the Portugal's 2007 National Budget saw an over 60% increase in the budget of the Ministry of Science, Technology and Higher Education to try and remedy some of the shortfalls in research investment to move the country forward.

Figure 5 - Portugal from Laggard to Up & Comer?



Florida & Tinagli, 2004, p.39

The Portuguese Ministry of Science, Technology and Higher Education likes to emphasize that Portugal is coming up in the rankings with strong growth in scientific publications (see figure 9) and a strong growth rate in patents and research and development (see table below) but not in the growth of the human resource compentent (see figure 4). Still Portugal has a considerable way to go as it is starting from a significant deficit in this area.

Table 10 - Portugal's Strength in Growth Trends in Euro-Creativity

Euro-Creativity Trend Index		Growth in Creative Class	Growth in Scientific Talent	Growth in Patents	Growth in R&D
Rank	Score				
1. Ireland	0.89	1	1	2	2
2. Finland	0.60	10	2	6	1
3. Portugal	0.51	14	4	1	3
4. Denmark	0.38	4	11	3	6
5. Spain	0.37	9	5	8	4
6. Greece	0.36	12	6	4	9
7. Sweden	0.35	3	9	5	10
7. Belgium	0.35	5	10	7	5
9. Austria	0.34	10	3	9	8
10. US	0.33	7	7	14	7
11. Netherlands	0.27	2	8	10	12
12. Germany	0.20	8	14	12	11
13. Italy	0.18	6	15	11	13
14. United Kingdom	0.15	13	12	13	14
15. France	0.08	n.a.	13	15	15

Florida & Tinagli, 2004, p.37

As mentioned above, in an effort overcome these shortfalls and to improve the competitiveness and academic excellent of top Portuguese universities the MCTES on behalf of the Portuguese Government has signed four significant partnership programs between major universities in the United States which is also the destination for much of the 2007 budgetary increase.

The Portuguese government's initiatives with Massachusetts Institute of Technology (MIT), Carnegie Mellon University (CMU) and University of Texas at Austin (UT-Austin) (see section 2.10 for a full summary of these programs) incorporate aspects of management science and technology-based entrepreneurship. Assessments are being made for the possible creation of a mid-career program in entrepreneurship and technology management within the MIT Portugal program. PhD programs in entrepreneurship and public policy and another one in innovation, technology and public policy will be developed as a part of the CMU Portugal program. Within the UT-Austin agreement the area of "Digital Media emerging challenges in entrepreneurship and technology venturing will be associated with new media technology commercialization in international markets across a variety of initiatives" (MCTES, 2007b, p.4). There is great anticipation that these programs will assist in transforming Portuguese universities through not only sending students abroad but also coordinating networks in Portugal such as the University Technology Enterprise Network (UTEN). "It is expected that over time UTEN will develop increasingly interrelated programs across organizational and institutional boundaries to support the common objective of fostering world-class research and education leading to accelerated science and technology-based enterprise innovation and commercialization." (MCTES, 2007b, p.9)

There is no doubt that the American partnership programs are the "largest bet" that the current government has made in trying to boost technology-based entrepreneurial development in Portugal. To more fully understand, articulate and integrate technology-based entrepreneurship policy at post-secondary level it is helpful to understand the concept of the entrepreneurial university as it has been developed in academic literature and by other governments following entrepreneurship and technological commercialization policies.

The Entrepreneurial University

In the modern knowledge economy, the university is seen as a central force that drives innovation, creativity and economic growth (Mueller, 2006; Audretsch, *et al.*, 2006; Audretsch, 1995). At the core of the entrepreneurial university concept is a connection between the "ivory tower" and the "real world". The concept of the entrepreneurial university is a strategy that has been followed by many leading universities around the world (Atlantic Canada, 2004b) and by regional governments (Atlantic Canada, 2004a).

The entrepreneurial university concept is best utilized by helping an institution to formulate a strategic direction (Clark, 1998), and by both focusing academic goals and the converting of knowledge produced at the university into economic and social utility (Etzkowitz, 2003). "An Entrepreneurial University, on its own, seeks to innovate in how it goes to business. It seeks to work out a substantial shift in organizational character so as to arrive at a more promising posture for the future: "Entrepreneurial universities seek to become 'stand-up' universities that are significant actors in their own terms" (Clark, 1998, p.4). It can be said that, "Just as the university trains individual students and sends them out into the world, the Entrepreneurial University is a natural incubator, providing support structures for teachers and students to initiate new ventures: intellectual, commercial and conjoint" (Etzkowitz, 2003, p.111).

Ropke takes it to a further level by stating that "…to become entrepreneurial, to mutate into an agent of innovation and regional development in the Schumpeterian sense….an entrepreneurial university can mean three things:

1. The university itself, as an organization, becomes entrepreneurial
2. The members of the university-faculty, students, employees-are turning themselves somehow into entrepreneurs

3. The interaction of the university with the environment, the 'structural coupling' between university and region, follows entrepreneurial patterns."

Ropke, 1998, p.2

Beyond individual universities, regions can develop entrepreneurial university strategies such as has been accomplished by the Atlantic Canadian Universities Entrepreneurship Consortium. The consortium consists of 18 entities including university-based business development centers, university entrepreneurship chairs, and other university-based partners to develop research that identifies needs and developmental opportunities relating to gaps in entrepreneurship education, awareness, attitudes and advocacy at the university level in Atlantic Canada (Atlantic Canada, 2004a, 2004b, 2004c, 2004d).

"To make the Entrepreneurial University successful, it is required to create within its members, especially students, the will and the ability to start their own business" (Röpke, 1998, p.2). Whether one course, a program or a degree offered by a university, the curriculum offered at an entrepreneurial university must focus on:

- "the future instead of the past
- creativity instead of critical analysis; insight instead of knowledge
- active understanding instead of passive understanding
- emotional involvement instead of absolute detachment
- manipulation of events instead of manipulation of symbols
- personal communication and influence instead of written communications and neutrality
- the problem or opportunity instead of the concept"

Atlantic Canada, 2004b, p.ii

To develop an entrepreneurial university program there are several steps needed to be taken. These steps include:

- "identifying a champion or champions for the program
- developing a vision and mission statement for the program
- developing and communicating commitment to the program
- creating awareness and acceptance for the program
- facilitating faculty orientation/education in entrepreneurship
- ensuring a realistic and holistic design program utilizing the most effective teaching methods possible within available faculty resources

- developing supporting activities
- creating or fully utilizing available Centers for Entrepreneurship
- developing networks with other universities, community partners, private enterprise and funding agencies"

Atlantic Canada, 2004b, p.28

In the Portuguese case, to better understand current policies aimed at fostering technology commercialization and the possibility of implementing policies related to the implementation of the entrepreneurial university it is necessary to understand the historic progression and reforms of higher education in the country as well as the current state of the post-secondary education system.

HISTORICAL DEVELOPMENT & CURRENT STATE OF HIGHER EDUCATIONAL IN PORTUGAL

2.9 The Political, Cultural & Entrepreneurial Past of Portuguese Society

In the United States, "the cultural sameness and conformity that prevailed after World War II – the era of Father Knows Best and Betty Crocker – have been replaced by popular pursuit of difference and self-expression." (Powers, 2005, p.126) In developing entrepreneurship policy Florida in his other writing connects entrepreneurial vitality to places that have cultures that are tolerant, open and diverse (Hart, 2003). Indeed, self-expression and self-efficacy have been related to the development of entrepreneurial characteristics in other studies (Shaver & Scott, 1991; Baron, 2004). According to Silva and Hall (2005), "Portugal is a country where inequalities of power and wealth may hinder the scope for opportunity…it is further characterized by low tolerance of uncertainty and it is, consequently, a rule oriented country where bureaucracy and controls are very much instituted, a situation in clear contrast with the easiness to accept change and the readiness to take risks…" (pp.331-332).

Figure 6 - Low Self-Expression Index & Creative Class in Portugal

Florida & Tinagli, 2004, p.30

To truly understand the modern societal context and perception of the entrepreneur it is essential to recognize and appreciate the consequences that 48 years of dictatorship had on the country. António de Oliveira Salazar was the patriarch of the dictatorship and seen by many at the time as the "savior" of Portugal, taking the country from corruption, poor financial management and endemic cabinet reshuffling, to stability, solvency and consistent governance. The question of how to understand Salazar's regime on the political spectrum is most important in quantifying the framework, methods and results that the dictatorship had on development of the country and its people.

2.10 Historical Development of Higher Education in Portugal

One University for Almost 700 Years

There were a number of attempts to form specialized institutions of higher learning during Portugal's early history. In 1290, King D. Dinis founded the *Studium Generale*[4] (*Estados Gerais*). This made Portugal one of the first countries in Europe to have an institution of higher learning. First established in Lisbon, for a 247-year span of time, the school moved a number of times between Lisbon and Coimbra. Finally, during the reign of D. João III, it established permanent residence in Coimbra and became known as the *Universidade de Coimbra*. Faculties of Arts, Law, Cannon Law and Medicine were the first to be created. A century later, Theology was added to the curriculum. In subsequent times a number of attempts were made to form specialized institutions of higher learning, principally during the period of the Discoveries in the 14th to 16th centuries. These efforts, some lasting for over a century, were principally developed by the Catholic Church and various mercantile groups.

The only Higher Education Institution, however, that had permanence and continuity was the venerable *Universidade de Coimbra*. And, it was not until the Marquis of Pombal, the 18th century enlightened anti-cleric, Minister of the Kingdom, that significant reforms were made at the University, which especially pertained to the area of the Sciences.

As the only university in Portugal for close to seven centuries Coimbra became not only a seat of higher education but also a place of political and social importance in the development of the country. As Crespo notes, "the history of the past centuries of the Portuguese Universities is intertwined with one university, the University of Coimbra" (Crespo, 1993, p.28). Attendees were principally those of the well born and connected. Coimbra's solitary status remained until the early part of the 20th century.

The First Republic (1910-1926)

As this study is concerned with the development of post-secondary education in the modern era and specifically the development of entrepreneurship education, it is only fitting that our story really

[4] *Studium Generale* is the old name for a medieval university which was registered as an institution of international excellence by the Holy Roman Empire.

begins with the democratic Republic of 1910 at which time Coimbra graduated 1,262 students (Crespo, 1993, p. 32).

Following the abolition of the monarchy and the establishment of the First Republic the 1911 University Constitution (*Constituição Universitária de 1911*) was issued. It called for the government to take over the University of Coimbra and create two additional universities, one in Lisbon and one in Porto (*Universidade de Lisboa* and the *Universidade do Porto*). It took almost another 20 years to add a 4th school of higher learning, the Technical University of Lisbon (*Universidade Tecnica de Lisboa*).

Prior to 1911 the Head of the University of Coimbra, the Rector (*Reitor*), represented the school before the Government. Since 1911, however, the Rectors become the representatives of the Government in the Universities. This gave the government a degree of control it had not enjoyed before. In regards to their administrative and financial autonomy, Coimbra - and later the newly added universities in Lisbon and Porto were, until the end of the 1920's "…entrusted with their own economic government." (Crespo, 1993, p.40).

During this period there were some references made to scientific research. However, none of the universities took the necessary steps to make this happen on a large scale. Research and scientific creation were not defining functions or dominant concerns of these institutions. While scientific and technical progress advanced in other industrialized nations, Portugal seemingly stood still. This was attributed to poor scientific equipment as well as a lack of initiative in seeking assistance from foreign universities to help in the development of post-graduate and PhD programs in the country. Such programs did not become meaningful until the 1950's. As for the teaching staffs for the various faculties, minimum credentials were required to be a professor (i.e. *Bacharelato* or *Licenciatura*) (Crespo, 1993).

The Faculty of Humanities (*Faculdade de Letras*) was created at Coimbra soon after the establishment of the Republic. It offered degrees in Philology, Philosophical Sciences and Geographical and Historical Sciences. The history of Portugal along with European history, Paleography and Diplomacy formed the core of historical teachings. The focus was mainly on political and institutional history (from antiquity to the Renaissance) with modern and contemporary history largely absent.

By and large the overall state of higher education in Portugal was a reflection of the chaotic nature of the government during this period and did not improve in the ensuing years. Significant changes in curriculum had to remain until the democratic revolution of 1974.

The New State (Estado Novo) (1926 - 1969)

In 1926, the military took over the government and, in a sense, normalized regulations relative to the governance of academic institutions. One of these "normalizing" factors was that universities and their faculties became less autonomous and entirely dependent on the Government's will and decisions as a part of the *Estado Novo* (the New State).

During the Salazar dictatorship a new Constitution was written that provided him with power over every facet of life. A pervasive nullification of freedom of expression existed of which the university was not left out. Conservative policies were codified in an attempt to turn back the clock as Salazar dreamt of returning Portugal to a bygone and "better time". For the universities, strict adherence to official doctrine set out in the Statute of University Instruction (*Estatuto de Instrução Universitária*) established disciplinary rules and regulations for both students and faculty. Thus a "dark age" descended on Portuguese Higher Education Institutions and their instruction.

Until the Portuguese Revolution of 1974, "education had been very limited at all levels. The illiteracy rate was still the highest in Europe; places in universities and technical colleges were reserved for the sons and daughters of the well-to-do; and if the senior 'fascist' officials of the old regime were all to be removed at a stroke, there was only a very limited supply of skilled men and women to take their place." (Bruce, 1975, p.22-23)

At the same time, in those countries in Western Europe where some form of democratization was taking hold, the commitment to welfare programs and educational advancement was made apparent. Movements in equality closely follow the path of political development (Acemoglu & Robinson, 2000) and, historically, the concept that mass education follows mass democratization was first emphasized by Easterlin (1981, p.8) who noted, "…to judge from the historical experience of the world's largest nations, the establishment and expansion of formal schooling has depended in a large part on political conditions and ideological influences."

It is axiomatic that Portugal's lack of development in higher education during the Salazar dictatorship was in the interests of a narrow political elite. This lack of development could have

been due to the government not promoting social benefits (Engerman, Mariscal & Sokoloff, 1998). The more likely reason, however, has to do with the fact that an educated populace would have the ability to undermine their power through politically mobilizing of the masses (Bourguignon & Verdier, 2000).

An OECD report (*Projecto Regional do Mediterrâneo, Evolução da Estrutura Escolar Portuguesa*) analyzed the Education System from 1950 to 1959. The report emphasized the need to firmly approach the following challenges:

- The geometric growth of the number of students;
- The inadequate education system, largely, higher education's ability to suit the country's needs;
- Inadequate and old buildings;
- The tragic situation of professors, poorly paid and with insufficient training;
- Teaching in higher education, mainly performed by second-assistants (*segundos-assistentes*) (e.g. 43.2% in 1961/62);
- Regardless of their position, most of the professors spent too much time lecturing.

OCED, 1998, p.6-9

These factual findings, it would appear from the literature, pertained to the Portuguese situation for several years both before and after this study. There were not enough teachers to match the needs of the primary and secondary schools. Poor planning was evident in their solution which was to lower the standards and curricular requirements. In short, between 1940 and the late 1960's there were few significant developments in educational policy. There were only 9,321 students enrolled at the four Universities in 1940/41; 24,149 in 1960/61 and; 49,461 in 1970/71. In 1960, only 2.5% of the county's population between the ages of 18 and 24 studied in higher education institutions. This grew to 3.6% in 1965 and despite the significant increase in the number of students in the 1970's, did not even reach 5% during this period. The 1970's percentages represented less than half of the European averages registered at that time (Braga da Cruz & Cruzeiro, 1995).

At the end of this period there was clear evidence that changes were to come. To reduce the high rates of illiteracy among other public and private initiatives, the compulsory education age was increased. In addition, scholarships for students attending higher education were established in the 1970's (Crespo, 1993).

Veiga Simão's Reforms (1970 - 1974)

In 1970 a man with a mission was appointed to the post of Minister of Education: José Veiga Simão. He recognized the need to answer the growing demand for advanced education in diverse areas. He also saw the need to distribute higher education to other regions of Portugal beyond the three cities. An attempt to reformulate the structure of the Portuguese educational system and its goals was undertaken, with a special focus on higher education. His vehicle for accomplishing this was the creation of new private polytechnic institutes and universities (*Escolas Superiores*). Many of these institutes had their origin in the former industrial and commercial schools of the 19th century. The programs of each higher education institution were adjusted to the local requirements to fill the needs of the particular area in which each institution was situated (Braga da Cruz & Cruzeiro, 1995). Although several of these changes were questioned in the aftermath of the 1974 revolution and suffered various transformations during the first years of the new regime (Teixeira, Amaral & Rosa, 2003, p.184) much of Veiga Simão's plans remained in place.

The idea was to make advanced education available to those who would not otherwise have gotten the opportunity and to fulfill the need for specialized professionals in the development of the areas in which these schools would be located. The university system with its strong theoretical base and high research orientation was to be coupled with a non-university system that provided more practical training and that was more professionally oriented. As Veiga Simão saw it, an expansion plan needed to be developed, "to guaranty the social and economic development of the country, which requires an increasing greater number of scientists and executives with higher education, capable of innovating." (Stoer, 1983, p.801). The unfortunate reality, in most cases, was that for many reasons (e.g. the rapidity of its expansion, the use of part-time professors, lack of research facilities to name but a few) private institutions became commonly regarded as inferior. Recently, an official government evaluation supported the notion that these institutions lacked quality with the strongest criticism leveled at the quality of their academic staffs and facilities (Machado, Farhangmehr & Taylor, 2004).

At this same time, and in the ensuing years, the government stepped up its support of public higher education by increasing their budgets. As noted by Taylor *et al.* (p.11), "Educational provision is often measured by ratios of public expenditures in the same way as healthcare; on this assessment, the Portuguese portrait is modified and so the overall view needs to take into account the different perspectives…. The conclusions do suggest a vigorous 'catching up'…"

There were other significant systems and policies that were put into effect. For example, in years previous a considerable number of scholars went abroad to receive advanced degrees and were then required to repeat their work in Portugal once they returned. Or, they were asked to "confirm" their degrees, which in many cases had been obtained at some of the most prestigious universities in the world. During Veiga Simão's tenure, these wasteful practices were mostly abandoned. One that continued on until the late 1990's, however, regarded those who received their PhD training abroad. In order for their degrees to be formally "recognized" in the Portuguese academic system they had to go through a second defense of their dissertations with a panel of Portuguese academics no matter what university they had earned their degree in internationally.

In July of 1971 the Portuguese Catholic University (*Universidade Católica Portuguesa - UCP*) was created. The University was the result of an already existing agreement between the government of Portugal and the Catholic Church (the *Concordata*). The agreement was intended, not only to promote and extend culture in the area of the religious sciences, but also to offer higher education equivalent to other Portuguese Universities and foster research and development in other sciences (Crespo, 1993).

In 1973, several state-run universities were opened including in: Lisbon, the New University of Lisbon (*Universidade Nova de Lisboa*), Higher Education Insitute of the Science of Work and Companies (*Instituto Superior de Ciências do Trabalho e da Empresa*); Braga, the University of Minho (*Universidade do Minho*); and, Évora, the University of Évora (*Universidade de Évora*). After these three, others were added in the subsequent years. In effect, Veiga Simão's farsighted vision anticipated the transition to democracy and the opening of educational opportunities to the masses that was about to take place (Stoer, 1983).

The Third Republic & the Further Expansion of Higher Education (1974 - Current)

The Carnation Revolution of April 1974 (so named because it was bloodless and came at the time of the blooming of carnations in Portugal) brought with it vast changes in curricular content, the implementation of a democratic model of school management and the democratizing of school access (Grácio, 1981). Conditions were such that the demand for higher education was well entrenched. New public universities were created in:

Aveiro - *Universidade de Aveiro*
Azores - *Universidade dos Açores*
Covilhã - *Universidade da Beira Interior*

Faro - *Universidade do Algarve*
Madeira - *Universidade da Madeira*
Vila Real - *Universidade de Trás-os-Montes e Alto Douro*

As a result of the rapid succession of governments, between 1974 and 1981, Portugal faced a period with the characteristics of a transition period that included instability and a lack of clear definitions and guidelines which spilled over into the growing higher education sector.

In 1975, the social and political pressures of the post-revolution period, which included the right to an education, created a bottleneck in the admissions examination process. As a result, the mass of candidates was such that, "the lack of facilities and professors capable to receive that tidal wave", in the words of then Minister Vitorino Magalhães Godinho, compelled him to suspend registrations. In 1977, *numerus clausus*, literally translated as closed number from Latin, was the method used to limit the number of students who may enter university, similar to a quota system but was also specific for each area of study. This was instituted in Medical, Veterinary and Psychology studies and in 1978 *numerus clausus* became the permanent form of management in all of the various programs in Portuguese higher education (Grácio, 1986).

Between 1977 and 1981 the development of polytechnics became more harmonized with a clarification of their goals and strategies. Originally, Veiga Simão's reforms were designed mainly for the training of skilled technicians for specific areas of industry as well as providing training in the basics of health and education. Now the focus of the polytechnics was to have a stronger connection with the economic and industrial needs of the country and its labor force. With the universities, these institutions allowed a binary system to function. Both universities and polytechnic schools were comprised of private and public institutions (Correia, Amaral & Magalhães, 2002)

Until the mid 1980's the growth of higher education was strongly concentrated in the area of public education institutions. This changed in 1984-85 and again, in 1991-92 when there were significant increases in the number of private higher education institutions created in Portugal.

By 1986, the pre-Bologna educational system was put in place by the adoption of the Framework-Act of the Educational System (*Lei de Bases do Sistema Educativo*). The System, a duel framework of universities and polytechnics of both public and private institutions, covered all parts of the

country. Because the systems were linked, it became more possible to transfer from one institution to another.

Several more universities (*Universidade Aberta, Universidade Autónoma* and *Universidade Portucalense*) were added to the roster during this period. State Polytechnic Institutes were now located in Beja, Cávado e Ave, Bragança, Castelo Branco, Coimbra, Guarda, Leiria, Lisbon, Portalegre, Porto, Santarém, Tomar, Setúbal, Viana do Castelo and Viseu. Added to these numbers were the 20 non-integrated Polytechnic Schools approved by the Ministry of Education, Roberto Carneiro.[5] These schools were viewed as being more suited to the needs of the vocational and professional labor markets. They provided the required level of higher education in varied fields such as: agriculture, education, accounting and administration, engineering and technology management, and fine arts and design. In the late 1980's, these private institutions added programs in the areas of social sciences, law, humanities and teaching.

In the early 1990's, then Minister Roberto Carneiro, had as a part of his education agenda the creation of a quick expansion of the higher education sector. The main problem of that time was that public institutions were incapable of providing an efficient and effective response. Carneiro's goal was achieved primarily through an exponential growth in the private education sector. In fact, in 1991 the number of vacancies in the private sector for the first time surpassed the number in public institutions. One of the reasons for this was that while the public institutions were geographically distributed throughout the country the private sector was primarily concentrated around the larger urban areas. Although the public sector is also concentrated in Lisbon and Porto, its geographic offerings, especially of polytechnic schools, are far more balanced then those of the private sector.

The primary goal for the creation of the polytechnic system was the idea that Portuguese industry had the need of an intermediary level labor force. This idea is being carried forth by the current government of Prime Minister Socrates who is aiming to exponentially increase vocational training in Portugal. In Carneiro's time the labor force needed a system that provided more practical programs suitable for middle and top management as opposed to the high qualification curricular of the universities. These needs are still apparent in Portugal and these same tactics are being

[5] *The Ministério da Ciência, Tecnologia e Ensino Superior* (Ministry of Science, Technology and Higher Education) has gone through several changes in name and responsibility. Between 1985-1987 the *Ministério da Educação e Cultura* (Ministry of Education and Culture) was lead by João de Deus Pinheiro and between 1987-1991 the *Ministério da Educação* (Ministry of Education) was lead by Roberto Carneiro. Today, primary and secondary schooling is the sole responsibility of the Ministry of Education.

employed by the current Government. By 2003, more then one hundred Polytechnic Schools were operating throughout Portugal (Soares & Trindade, 2004). A breakdown of Higher Education Institutions by region is presented in the table below.

Table 11 - Regional Distribution of Higher Education Institutions, 2005

	Public		**Private**		**Catholic univ.**	**Public Others**		**Total**
Region	Univ.	Polytech	Univ.	Polytech		Univ.	Polytech	
Algarve	1	1	2	1				5
Alentejo	1	3	5					9
Centre	3	8	7	9	3		2	32
Lisbon	5	4	20	23	2	4	9	67
North	3	6	14	25	2		3	53
Azores	1							1
Madeira	1			2				3
Total	15	22	48	60	7	4	14	170

Dimas, 2006, p.29

The university and polytechnic binary system (both public and private) have worked well for Portugal. The private sector has provided a partial answer to the reality that public institutions alone could not satisfy the advanced educational needs of the Portuguese youth. A close look at the numbers reveals a meteoric rise in the number of students attending schools of Higher Education.

Table 12 - Student Enrollment in Higher Education in Portugal

Type	**1960/61**	**1970/71**	**1980/81**	**1990/91**	**2000/01**	**2003/04**
Public	21,927	46,172	74,599	135,350	270,312	282,215
Private	2,222	3,289	7,829	51,430	114,010	106,509
Total	24,149	49,461	82,429	186,780	384,322	388,724

Sources: Years 1960/61 to 1980/81, A Situação Social em Portugal; Original, António Barreto; Years 1980/81, 1990/91 to 2000/01, Board of Directors of Higher Education; Years 2003/04, OCES Observatório da Ciência e Ensino Superior; OCED, 2006, p.47

The slight decline indicated in 2003/2004 in the private sector continued in the ensuing years. While the decline has been slight, it is worthy of note in the overall progress of higher education in Portugal. The breakdown for 2005/2006 indicates a total of only 367,934 students enrolled in HEI's (OECD, 2006, p.16). This represents a more significant decrease in the total number of students enrolled than in previous years. However, this may not be a larger trend as indicated by the increase in the 2006/2007 enrollment numbers from the Ministry of Science, Technology and Higher Education.

It is important to also mention the state-run Higher Education Institutions tied into the military (the Air Force Academy, the Military Academy and the Naval School) as well as those that educate the police, the *Instituto Superior de Ciências Policiais e Segurança Interna*. These institutions generally enjoy a good reputation in their respective areas (Machado, 2004).

By no means can it be said that public and private institutions equally shared the same degree of excellence (Crespo, 1993). In the early 1980's the requirements for entrance into the government run polytechnics was much more relaxed than the requirements for the universities. As these schools became more proficient, privately run polytechnics came into vogue. As more academic rigor was introduced and the entrance requirements for public-run schools became more difficult, privately run schools tended to fill the gap. However, as noted by Machado (2004, p.84), "generally speaking in Portugal, private institutions are considered to be on a "second tier" of academic quality when compared to public universities. Nevertheless, they are a reality that imposes new forms of institutional competitiveness which are arguably good for the overall system. However, Machado continues her analysis by stating: "Today, a declining enrollment picture is placing many private institutions in dire financial straits, with some facing the risk of bankruptcy." (Machado, 2004, p.84)

The expansion and diversification of higher education, as well as an increase in the number of students in areas economically relevant, represented goals of various governments for more than a decade. It might be said, however, that these goals were not totally achieved in regard to the contribution of private institutions. They had a tendency to geographically concentrate in urban areas in which the public sector already existed. In addition, they offered a limited number of programs in scientific areas principally because it required less investment in infrastructure and research. This made the private sector follow a different path than the exact goals of the Portuguese government in regards to higher education (Correia, Amaral & Magalhães, 2002).

According to Machado (2004, p.74) "Private institutions have maximum autonomy in administrative and financial areas but, like the polytechnic institutes, they have no pedagogical autonomy". The same scholar continues by quoting researchers Amaral and Magalhães (2001, p.18-19) who point out that, "in Portugal, there is a paradoxical situation as private institutions are in general less autonomous (except in the question of finance) than public universities. While the latter have full pedagogical autonomy, private institutions depend on the Ministry of Education for the approval of their study programs."

In the face of a decline in the overall numbers of entering students in 2003 it is important to note that proportionately less were going to the private institutions than public institutions. A reflection of this can be seen in the table below:

Table 13 - Enrollments in Portuguese Higher Education, 1997-2005

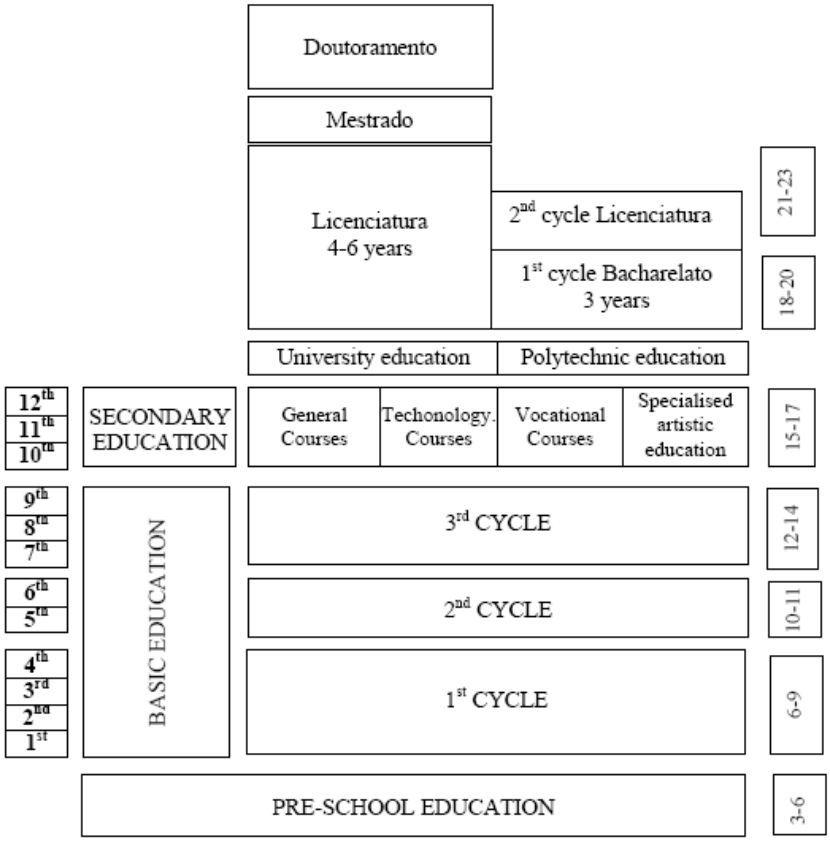
Type		97/98	98/99	99/00	00/01	01/02	02/03	03/04	04/05
Public	Univ.	153951	158850	164722	171735	176303	178000	176827	173897
	Polytech	72691	80007	90286	101895	108486	112532	111482	108376
Total		226642	238857	255008	273530	284789	290532	288309	282273
Private	Univ.	93914	89361	88190	82979	79908	77109	73708	67157
	Polytech	26917	28572	30547	31194	31904	33190	33046	31507
Total		120831	117933	118737	114173	111812	110299	106754	98664
Total		347473	356790	373745	387703	396601	400831	395063	380937

Dimas, 2006, p.33

According to Crespo (1993), the lack of a structured and well-organized system has been one of the main hindrances in the development of scientific output at Portuguese universities. The lack of Master-level education served as an obstacle to the education of professors and researchers. When finally this need was addressed the university's scientific production increased 67% between 1982 and 1988. In that same time period, the numbers of teachers also increased from 1,188 to 2,737 (Crespo, 1993).

Degrees offered at primary, secondary and higher education institutions in Portugal and the corresponding average age to attain them are represented in the table below.

Figure 7 - Portuguese Education System before Bologna Process Implementation



Estia, 2003

Current Reforms & Development at Portuguese Higher Education Institutions

Since 2002, the Ministry for Science, Technology and Higher Education (*Ministério da Ciência, Tecnologia e Ensino Superior {MCTES}*) has been responsible for higher education and research while the Ministry of Education (*Ministério da Educação {ME}*), directs pre-school, basic and secondary level education. Professional training and certification of professional competencies is the responsibility of the Ministry for Work and Social Solidarity (*Ministério do Trabalho e da Solidariedade Social {MTSS}*). This division of responsibility was made to improve and concentrate efforts in these specific areas.

In principle, new legislative proposals related to higher education are reviewed by the National Education Council with the consultation of relevant bodies including the Council of Rectors of Portuguese Universities (*CRUP*), Coordinating Council of the Portuguese Polytechnics Institutes (*CCISP*), Portuguese Association of Private Higher Education Institutions (*APESP*), professional unions and student associations. The Portuguese Parliament also conducts debate over new reforms

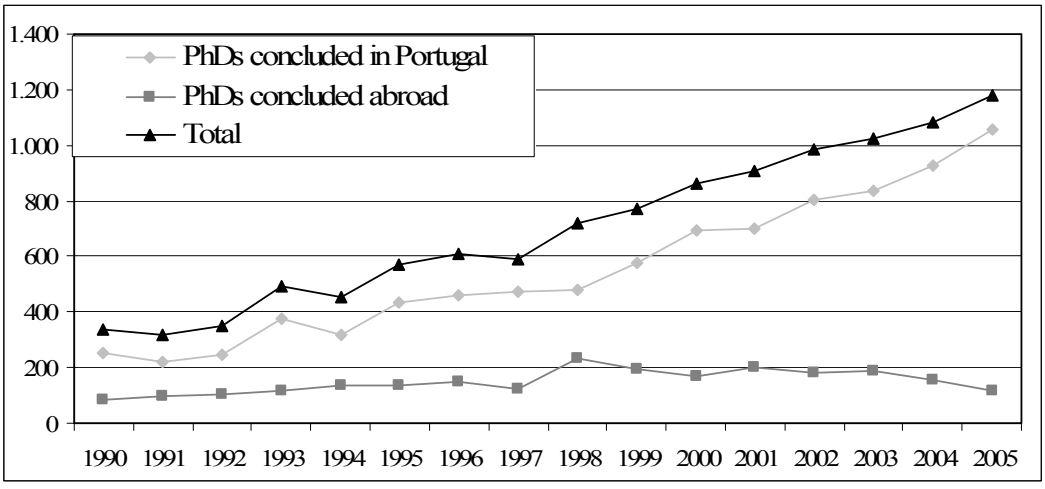
with relevant experts and stakeholders. The President of the Portuguese Republic assures that any reform is done in accordance to the Constitution and may ask for the opinion of the Constitutional Court for any issues of legality. Organizations representing Employers are, "in general conspicuously absent from the policy processes of the Portuguese higher education system" (OECD, 2006, p.41)

In 2002/2003 approximately 400,000 students were enrolled at Portuguese Universities. Approximately 64,000 graduated with *Licenciatura* or *Bacharelato* (undergraduate) degrees, 2,885 graduated with a Masters degree and 952 with PhDs (OECD, 2006, p.130-133). According to the OECD in 2006m, there existed 321 Public and Private HEI's in Portugal, with 172 being public entities, 64 teach at the university level, 101 being polytechnic institutes and seven military or police sciences institutions (p.130-133).

Viewing Portugal's higher educational system from a historic perspective one must marvel at what amounts to phenomenal advancement. The facts are that Portugal's higher education student population grew 800% in the last 30 years. Research units increased 130% from 1996 to 2003 (OECD, 2006, p.179).

PhD recipients more then tripled between 1990 and 2004. The growing amount of PhDs in Portugal is good news. This increase allows a critical mass essential for intellectual and scientific development (Heitor, 2000). (see figure 8)

Figure 8 - PhDs Concluded or Recognized in Portugal, 1990-2005

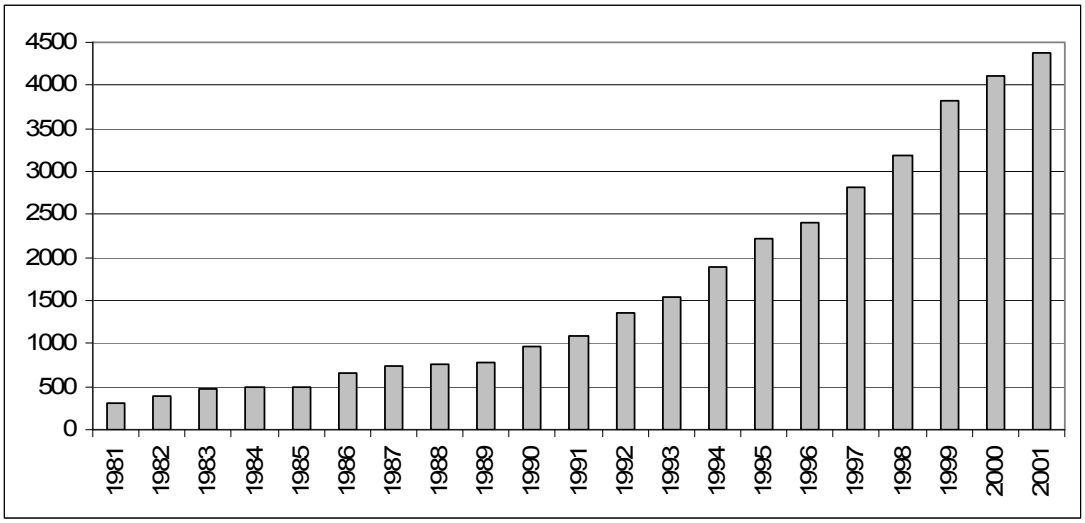


OCES, 2006

It should be noted that "recognized" has to do with the process of getting a foreign degree recognized within Portuguese law. It used to be required to have all degree recognized for official academic standing but this system has been reformed in resent years and will be less of a factor in the future with the results of the Bologna Process.

Scientific publications published in Portugal increased four times between 1991 and 2001. In 2001 Portugal was part of the group of countries that shared the top 1% of the world's highly cited publications (King, 2004).

Figure 9 - Portuguese Scientific Publications, 1981-2001



OCES, 2006

While these accomplishments in many ways are illustrative of a highly intelligent, motivated people there is still much to do by way of catch-up (Taylor, *et al.*, 2005, p.11). Further structural change needs to be made before Portugal can truly be considered a knowledge-based economy. Great problems exist in the form of overcrowded class rooms, obsolete curricula being employed, excessive changing of rules and regulations, ever-increasing student fees (Machado, 2005) and, as of the 2007 national budget, a decrease in higher education's allotment. A deeper analysis of the 2007 national budget shows, however, that scientific and educational development were not cast aside by the government in that the Ministry of Science, Technology and Higher Education received a reinforcement of 133 millions Euros. In point of fact, if the national budget of 2007 represents an 8.2% reduction for higher education institutions it also represents an increase of 250 million euros to invest in the sciences. The reason for this increase is for the hiring of approximately 500 PhD's to the investigation unities and to reinforce by 60% the allocation of PhD and Post-Doc scholarships to conduct scientific research at universities. This is seen as a strong sign

that the government is serious about supporting Portugal's long-running effort to improve the educational process and to develop a functional infrastructure for high added-value research and development (MCTES, 2007a, 2007b; 2006).

US Partnership Programs for HEIs in Portugal

In an effort to improve the competitiveness and academic excellence of top Portuguese Higher Educational Institutions the Ministry of Science Technology and Higher Education (MCTES) on behalf of the Portuguese Government has signed three significant partnership programs with major universities in the United States. MCTES summarizes the general rationale behind these programs stating, "Portugal is an interesting country in challenging times. The country faces a range of possible futures from the inspiring to the bleak. In general, keeping the industrial status-quo, still heavily geared around a strategy of low-cost production, is not a sustainable option in the face of increasing competition from locations such as Eastern Europe and China. Industry must transform and new and qualified employment must be promoted" (MCTES, 2007d, p.2). The preliminary steps in the development of the Massachusetts Institute of Technology (MIT), University of Austin (UT-Austin) and Carnegie Mellon University (CMU) partnership programs were developed, evaluated and put into law during late 2006 and early 2007. A Memorandum of Understanding (MOU) in the development of the newest program with Harvard Medical School was signed in April of 2007. A synopsis of the various programs appears below followed by an analysis of the implication that these programs might have on the development of entrepreneurship at Higher Educational Institutions in Portugal.

In a recent assessment made by a team from the University of Texas at Austin on the Portuguese educational system on these facts they wrote, "Given such statistics and despite long-standing and well-known underpinning challenges, the assessment teams believe that Portugal is in a promising position to achieve enhanced innovation and economic competitiveness through the creation of wealth and jobs based on Portuguese education and research in science and technology if:

1. Portuguese academic, business, and government institutions and leaders make more efficient use of the country's talent, science, and technology base
2. Portuguese industry, academia, and government more effectively collaborate to promote wealth creation, new employment, and career development nationally and internationally
3. Portuguese innovative products and services are more effectively linked to global market opportunities"

UT-Austin, 2007, p.8

Massachusetts Institute of Technology (MIT) Portugal Program

This program that started in 2006 will span five-years. It is designed to expand research and education in management and engineering and will involve an investment of approximately €65 million (MCTES, 2007a, p.1). It is the widest-ranging agreement of its kind undertaken by the Portuguese government, involving professors, researchers and students from the country's engineering, science and technology, economics and management schools at seven different Portuguese universities. A number of Portuguese state supported research facilities and labs will also play a role. In addition, several companies in the private sector that have agreed to invest in research and development are also involved in these partnerships. According to the government, the MIT agreement will find support in the state budget for 2007, which will see a 64% rise in funding for sciences, while 37% of the next batch of EU transfer funds will be channeled to this strategically important education sector. (MCTES, 2007a, p.1)

Carnegie Mellon University (CMU) Portugal Program

At the same time the MIT agreement was signed, a five-year, €56 million agreement with CMU was made final. Of these funds, €28 million will go to activities at the CMU campus. (MCTES, 2007d, p.2) Starting in the 2007/2008 academic year, CMU in cooperation with various Portuguese universities will offer joint PhD programs in Computer Science, Electrical and Computer Engineering, Language Technology, Mathematics and Technological Change and Entrepreneurship. Also included will be Three Masters Programs in Software Engineering, Information Networking and Information Technology. Information Security will be a part of the programs offered. Some 80 new PhD students and about 180 new professional master students will go through the program over the 5 year period. Of perhaps most interested to the development of this area is the investment made in what was originally called the PhD program in entrepreneurship and public policy and another one in innovation, technology and public policy.

University of Texas at Austin (UT-Austin) Portugal Program

In March of 2007, the third U.S. Portugal program was signed with the UT-Austin. The program incorporates the areas of Digital Media, Advanced Computing and Mathematics. The agreement in the area of Digital Media will look at "emerging challenges in entrepreneurship and technology venturing [and] will be associated with new media technology commercialization in international markets across a variety of initiatives." (MCTES, 2007b, p.4) Only the area of Digital Media will

involve the creation of a new PhD and Masters program. In the other two areas the program is designed to strength existing programs in Portugal. The major project highlighted in the UT-Austin program is a international collaboratory. As defined by Bly, a collaboratory is "a system which combines the interests of the scientific community at large with those of the computer science and engineering community to create integrated, tool-oriented computing and communication systems to support scientific collaboration" (1998, p.31). Most recently, Cogburn indicates how the definition has now expanded and states, "a collaboratory is more that an elaborate collection of information and communications technologies; it is a new networked organizational form that also includes social processes; collaboration techniques; formal and informal communication; and agreement on norms, principles, values, and rules" (2003, p.86). The UT-Austin program's collabratory revolves around emerging technologies and is called CoLab for short. This is a 5-year, $25 million Portuguese government project that UT-Austin will receive $11 million for its contribution. According to MCTES this agreement will, "foster new developments in the complex interactions between an emerging scientific agenda in digital media, advanced computing and mathematics, and new emerging businesses and markets in the area of digital media. The agreement will provide a unique opportunity to promote Portuguese research teams and institutions at an international level, together with the media industry." (MCTES, 2007c, p.2)

The ultimate key success factor of the collaboratory will most definitely be more social than technical as Heline (1998, p.69) states, "A successful system must respect existing social conventions while encouraging the development of analogous mechanisms within the new electronic forum." The key element of success will be organizing the Portuguese university actors in a coherent manner and the enforcement of best practices. In this regard, the University Technology Enterprise Network (UTEN) "will work to:

1. Have a unified management structure
2. Coordinate activities and programs across institutional entities
3. Leverage existing regional infrastructure and personnel located at the participating Portuguese institutions.

It is expected that over time UTEN will develop increasingly interrelated programs across organizational and institutional boundaries to support the common objective of fostering world-class research and education leading to accelerated science and technology-based enterprise innovation and commercialization." (UT-Austin, 2007, p.9)

Harvard Medical School Portugal Program

In April of 2007 an assessment period began for the possible collaboration between the Government of Portugal and the Harvard Medical School (HMS) and Harvard Medical International (HMI). This proposed program is smaller and related to the area of medical research and has yet to begin.

The Future of Higher Education in Portugal

The government (which does not currently have an accreditation system) in its attempt to up-grade private institutions that grant degrees, now requires these schools to be evaluated by a team of experts before they are approved. Accreditation systems like EQUIS, which is the quality assurance scheme run by the European Foundation for Management Development (EFMD) assures high international quality standards. To achieve EQUIS accreditation, schools must be able to demonstrate that they satisfy quality criteria in three equally important areas:

- High international standards of quality in all of the areas defined in the EQUIS model
- A significant level of internationalization as defined within the EQUIS model.
- The needs of the corporate world are well integrated into programs, activities and processes.

In March of 2006, the government enacted a law that adopted the "Bologna Principles" (the name lent from the location of this important conference on higher education that included the participation of 45 countries). It introduced a system that encompasses international best practices and standards. The implementation of the Bologna Principles has had a strong influence on present national practices of quality assessment, in accordance with the European Standards and Guidelines for Quality Assurance in the European Higher Education Area (EHEA) as it was agreed upon and adopted by ministers in Bergen in May 2005. The "Principles" (or "Process" as it is also referred to) among other aspects, established requirements that must be met to allow a student of member countries to carry their academic standings/degree from one country to another by the year 2010. The net result of this act is that it creates the need for member countries to get their "academic houses" in order. Many changes have and will be made in both programs and degree requirements over the next several years by most of the countries that helped to establish the Bologna Principles. According to the MCTES close to 50% of courses are now Bologna certified and by the beginning of the 2007/2008 a total of 90% should be compliant (MCTES, 2007a, p.2). The adoption of these standards bodes well for Portugal's individual institutions of higher learning as they review some of their shortcomings and further normalize with international standards.

As for Portugal's private institutions with their limited budgets, lesser quality staffs and, in general, inferior academic quality when compared to the public sector, their future will prove more difficult even if many will adopt the Bologna Principles to their curriculum. According to Machado (2004, p.41), "students prefer to take their degrees at the public universities". Machado also quotes Tavares (2003, p.109) who indicates: "the big motivations for preferentially choosing public universities are reputation, prestige and quality of the programs. The big motivation for choosing private institutions or public polytechnics is to be closer to their residence. […] Private institutions and the public polytechnics appear as the sub-system with less prestige, the second choice, contrasted with the prestige that is attributed to public universities". The future of private institutions is particularly ominous in light of a 15 year (1995 to 2010) projected demographic decline of 23.8% in the 20-24 year age range (Amaral & Teixeira, 2000). Machado (2004) states, "…this bodes particularly ominous for the future well being of the private sector." (p.84) Furthermore, there are already signs of a looming crisis as some private institutions are merging and others have, or are getting close to, bankruptcy (Amaral & Magalhães, 2004).

The Government of Prime Minister Socrates created the "New Opportunity Program" which includes the goal of improving the skills of the Portuguese worker as well as developing lifelong learning initiatives. Lifelong education, a relatively new form of pedagogy for Portugal, focuses on learning that happens throughout a person's life and typically consists of programs people take through distance learning or e-learning, continuing education, home-schooling or correspondence courses. In other countries, lifelong learning includes postgraduate programs for those who want to improve their qualification, update their skills or retool their proficiencies in a new line of work. To this effect the Parliament recently passed rules allowing a person's work experience to also be used as possible credit towards an undergraduate degree.

Under the framework of the EU's Lisbon Strategy, Portugal announced specific goals regarding vocational education in an attempt to further extend the reach of this form of education that Former Education Minister Roberto Carneiro started with polytechnic schools. The current Government's goals are: 1) to enroll an additional 100,000 students to an expanded offer of vocational education in secondary education; and 2) by 2010, to have vocational education represent 50% of the total courses offered in the last two years of secondary schooling; the other 50% of courses should correspond to more general education that leads directly to the student advancing to higher education (see the table below).

Table 14 - Estimated Increase in Upper Secondary Vocational Education

	2005	2006	2007	2008	2009	2010
Additional vacancies	-	5,000	5,000	10,000	10,000	5,000
Accumulated vacancies	-	5,000	10,000	20,000	30,000	35,000
Total yearly vacancies	110,000	115,000	120,000	130,000	140,000	145,000

Ministry of Education and Ministry of Work and Social Solidarity, Programme New Opportunities, 2006

Vocational training courses will offer new opportunities for students that might otherwise leave the education system before completing their secondary education. By 2010, the goal is to have an adequate number of vacancies in vocational program offerings and give alternative routes for the completion of secondary education in Portugal.

The demographic decrease in the number of young people is lowering the demand for higher education, and has enhanced competition for attracting students among Higher Education Institutions. This phenomenon favors the reconfiguration and rationalization of the network of higher education institutions and their study programs (OCDE, 2006, pp.45-46). The total fertility rate in Portugal is the same as it is estimated for the rest of the European Union. Demographically speaking 1.47 children per woman in 2006 is substantially below the 2.1 replacement level needed to replenish the population (UN, 2006).

These demographic trends do not seem likely to soon be reversed and thus the way forward to increase demand for higher education relies heavily increasing the success rates of Portuguese youth in upper secondary education. Currently, only 49% of Portuguese young people complete their education through the 12th grade. This is well below the European Union average of 87% (Eurybase, 2005). Eventually, the Portuguese government will make it compulsory for young people to finish secondary education through the 12th grade. This change in law may influence entrance rates into tertiary education institutions.

In February of 2007, the current Government put forth its policy objectives for the future of Higher Education in Portugal and they are:

- To expand the recruitment and number of students in Higher Education, and provide for greater student mobility, increased quality of education and concentrated relevance of offered programs. The amount of graduates should increase by 50% in the next 10 years; the majority of this increase should come from the growth in the Polytechnic schools.

- To strengthen the "top", and the scientific and technical capacity of the institutions, as well as improving their management, relationships with social and economic partners, and participation in international networks. The number of PhDs conferred by the universities should double in the next 10 years.
- Strengthen the binary system of education through a system in which the polytechnic schools will specifically focus on professionally oriented vocational and advance technical training in "1st cycle" programs. On the other hand, universities should strengthen their offer of scientific programs, especially at the post-graduate level, and create collaborative programs that join the efforts and know-how of teaching units with those of research units.

(MCTES, 2007a, p.3)

Higher Education in Portugal has come a long way and it is proven to be evolving in a very positive and effective manner. But, there still exist simple truths that must be faced and resolved in order for Portugal to take its proper place in the European context. Or, as stated in the recently completed OECD Report on Portugal (OECD, 2006, p.181) "…. This challenge involves assuring the transition from an educational system based on the transmission of knowledge to a system based on competence building. This is a central and critical issue all over Europe, and particularly in Portugal, given the extremely high drop-out and failure rates in our country and the conservative influence of rhetorical and passive methods of teaching."

POST-SECONDARY ENTREPRENEURSHIP EDUCATION IN THE EUROPEAN UNION & PORTUGAL

2.11 Entrepreneurship & Entrepreneurship Education

Today's modern capitalist economies seem to give a predominant economic emphasis on education's social purposes as part of creating the necessary conditions to promote economic competitiveness in a globally competitive world. Education policy, and especially entrepreneurship education policy, is aimed at achieving equality of opportunity in the labor market as well as educating workers for the 21st century workplace.

According to the recent findings of the Kauffman Foundation's research and policy guide, "Entrepreneurs tell us that perhaps the most significant constraint on their future growth, and on the growth of future entrepreneurs, is the difficulty in finding and attracting 'talent'—highly skilled, entrepreneurial workers" (Kauffman, 2007a, p.2). Some studies developed in the US have linked entrepreneurship with various characteristics of individuals including education, age, employment status and experience in the decision to create a new firm (Evans & Leighton, 1989, 1990; Bates, 1990; Shane, 2000).

Charney and Libecap (2000) found that students who had matriculated through an entrepreneurship program were:

- Three times more likely to start a new business;
- Three times more likely to be self-employed;
- Less likely to work for a government;
- Earn annual incomes that are 27% higher and own 62% more assets;
- In large corporations, earning about $23,000 per annum more than peers;
- Slightly more satisfied, on the average, in their jobs than their MBA counterparts;
- Dramatically increase the sales growth of small firms (by 900%);
- Work for high-tech firms in greater numbers;
- More involved in new product development and R&D activities.

The economic benefits of entrepreneurship and entrepreneurship education are tangible and have been discussed. The next section gives a review of what entrepreneurship education entails and the historic development of this area at the post-secondary level internationally.

2.12 Entrepreneurship Education

Although it is difficult to define exactly what is meant by "entrepreneurship education" it can be described by the function that it can play within the larger society: "Entrepreneurship education can play at least three legitimate roles in the development of an entrepreneurial society. First, it can present students with entrepreneurship as a possible career choice in addition to acting as a general advocate for the mindset and type of creativity employed in entrepreneurial endeavors. Second, assist students in developing the technical and business skill-set necessary to have a successful entrepreneurial career. Third, professional educators can assume the responsibility of advancing the body of knowledge associated with the entrepreneurial phenomenon. Their findings should not only be disseminated to students but also to policy-makers and the public at large.

Furthermore, educators must go beyond simply stressing the importance of this subject area to governments and the public. They must aid public and private agencies and institutions to make better use of present and future resources. This can be seen in countries that have had recent histories of authoritarian dictatorships and/or unsustainable welfare models. Educational offerings are generally oriented toward jobseekers rather than job-creators. Entrepreneurship education represents an alternative to the enduring and pervasive reliance on the State to provide economic security." (Redford, 2006, p.20)

There is, however, little consensus among teachers and researchers on what students of entrepreneurship should be taught. Many academics and government officials are concerned with the mindset and skill-set of students to help foster their entrepreneurial spirit. The challenge for educators is to provide the subject matter, resources and experiences necessary to properly prepare students for the challenges they will have to face in starting and sustaining a new venture.

There is general consensus that entrepreneurship education is far from maturity (Robinson & Hayes, 1991). Entrepreneurship and small business management courses have experienced significant growth in the last several decades. During the past 50 years (1955-2005) the field has gone from a single course offering to a wide array of educational offerings available at more than 1,500 colleges and universities around the world (Charney & Libecap, 2000). The first initiative in entrepreneurship education was made in 1938 by Shigeru Fujuini, Professor Emeritus at Kobe University (McMullan & Long, 1987). In the 1940's small business management courses began to emerge (Sexton & Upton, 1984). The first known course in the United States given in

entrepreneurship or small business was offered by Harvard Business School in 1947 (Brockhaus, 2001, p.XIV; Cruikshank, 2005).

Over twenty years ago, researchers predicted *"*…the number of course offerings should increase at an expanding rate over the next few years" (Vesper, 1985, p.380). At that time, 253 colleges and universities offered courses in small business management or entrepreneurship in the United States. By 1993, 441 entrepreneurship courses were available (Gartner & Vesper, 1994). The number of entrepreneurship classes offered by 1996 had increased by 74% and enrollment in entrepreneurship classes at the top 5 American business schools increased 92% from a total of 3,078 to 5,913 students (Foote, 1999). The most recent estimate in the United States suggests that as many as 1,200 post-secondary institutions have courses dedicated to entrepreneurship and small business education (Solomon, 2005). These courses range from integrative classes that include marketing, finance, new product development and technology to more traditional course work (Charney & Libecap, 2000) with the most common teaching methods being business plan creation, class discussion and guest speakers (Solomon, 2005). Business plan elaboration was confirmed to be the most popular teaching method in an earlier study as well (Gorman, *et al.*, 1997). Honig (2004) found that out of the 100 top US universities 78 offered courses specifically centered on the production of business plans.

These courses play a very important role in giving students technical knowledge about entrepreneurship and they typically include the development of a proposed new product or service through integrating a range of management knowledge and instruction from areas of studies such as business planning, capital development, marketing, and cash flow analysis (Cox, Mueller & Moss, 2002). Students have to collect and summarize relevant information that may be very useful if the venture is to come into existence. Educators tend to feel very comfortable with business plans, as they provide, "a specific project-oriented output that assists with student evaluation, and helps provide focus and structure in a field that is, by definition, without conventional borders" (Honig, 2004, p.260). According to Stevenson (2002) the basic beliefs necessary to properly teach entrepreneurship are threefold: "first entrepreneurship has been taught as a process not as a person…. The second aspect is creating the belief within students that they can become entrepreneurs….The third element is the belief that entrepreneurship management is not simply inspiration: There's a lot of perspiration…" (p.1)

Instruction in the conceptual framework and skills necessary to recognize opportunities that others have overlooked, marshalling resources in the face of risk, and initiating a business venture are at the core of what students need to learn from these cross-disciplinary courses.

Early debate focused on the need for a separate area of study within entrepreneurship education. It questioned whether entrepreneurship courses were not simply traditional management courses relabeled (King, 2001). There is general agreement that traditional business programs and management courses give the "essentials" for the success of any business career (Vesper & McMullan, 1987; Block & Stumpf, 1992). However, the business principles applied to new ventures and those applied to large corporations have some fundamental differences (Davis, Hills & LaForge, 1985). The integrated nature of new ventures, the specific skills required and different business life cycle issues make themes pursued in entrepreneurial education distinct from those of traditional business education.

A core objective of entrepreneurship education that differentiates it from classic business education is the challenge, "to generate more quickly a greater variety of different ideas for how to exploit a business opportunity, and the ability to project a more extensive sequence of actions for entering business" (Vesper & McMullan, 1988, p.18).

Hisrich and Peters (1998, p.20) classify the different skills required by entrepreneurs citing the follow:

- Technical skills: including oral and written communication, technical management and organizational skills
- Business management skills: including planning, decision-making, marketing and accounting skills
- Personal entrepreneurial skills: including inner control, innovation, risk-taking and vision and persistence in leadership.

The authors cite the development of personal entrepreneurial skills as one of the main aspects that differentiate an entrepreneur from a manager. Indeed the skills that are taught in the classroom are in many ways different than those needed in the real world of entrepreneurship. Gibb (1987) gives examples of these different types of differences.

Table 15 - University vs. Real World Differences

University/Business School - Classroom	Entrepreneurial – Real Word
Critical judgment after analysis of large amounts of information	'Gut feel' decision making with limited information
Understanding and recalling the information itself	Understanding the values of those who transmit and filter information
Assuming goals away	Recognizing the widely varied goals of others
Seeking verification of the truth by study of information	Making decisions on the basis of judgment of trust and competence of people
Understanding basic principles of society in the metaphysical sense	Seeking to apply and adjust in practice to basic principles of society
Seeking the correct answer with time to do it	Developing the most appropriate solution under pressure
Learning in the classroom	Learning while and through doing
Gleaning information from experts and authoritative sources	Gleaning information personally from any and everywhere and weighing it up
Evaluation through written assessments	Evaluation by judgment of people and events through feedback
Success in learning measured by knowledge-based examination passed	Success in learning by solving problems and learning from failure

Adapted by Henry, *et al*. 2003, p.99 from Gibb, 1987, p.18

The question left to educators is which teaching pedagogies and what course content can bridge the theoretical and practical gap between the two.

2.13 Entrepreneurship Education in the European Union & Portugal

According to the GEM Portugal Executive Report from 2004, "The educational system at all levels in Portugal does not prepare students to take advantage of new business opportunities, and does not promote creative or innovative thinking." (Baganha, 2005, p.8) The European Union wrote of Portugal in 2002, "Only one country (Portugal) seems to show no explicit policy commitment on education for entrepreneurship." (Commission, 2002, p.18)

In Portugal's *Semanário Económico* on the 5th of August, 2005, Trigo defended the importance of entrepreneurship in the Portuguese education system. She supposes the idea of a, "esprit d'entreprise' culture (…) the education system is the best way to change mentalities and reorient energies. If entrepreneurship education promotes creativity, open-mindedness, the willingness to take risks, and self-confidence these qualities will be defused throughout society serving as a mechanism of constant reaffirmation and the l'esprit d'entreprise will be so well integrated in

educators' minds that teachers from primary school to university, from mathematics to literature, even in an unconsciousness way, will use formal education to promote a general social belief (of entrepreneurship) instead of fighting it".

In the *Report on the implementation of the European Charter for Small Enterprises in the Member States of the European Union* from the 8th of February, 2005, it states, "Promoting entrepreneurship education is still a relatively new policy area in Europe" (Commission 2005b, p.10). And indeed this is very true in the Portuguese context as the first course on entrepreneurship was developed only a few years ago.

The European Commission's *Action Plan: The European agenda for Entrepreneurship* was designed to provide a strategic framework to advance entrepreneurship. One of the five key actions detailed in the Action Plan is to foster entrepreneurial mindsets through education. The long-term policy objectives are best summarized as follows:

- introduce entrepreneurship "across the board" or as a specific topic into the national/regional curriculum, at all levels of formal education (from primary school to university)
- motivate and train teachers in entrepreneurial education
- promote programs based on 'learning by doing' through work, virtual firms and mini-companies, etc...
- involve entrepreneurs and local companies in designing and implementing entrepreneurship courses and activities
- increase higher education entrepreneurship courses outside the economic and business faculties especially at scientific and technical universities and put emphasis on setting up companies in the curricula of this business-type of study

(Commission, 2004b, pp.1-4).

The European Commission found that most Member States, to varying degrees, are now committed to promoting the teaching of entrepreneurship in their education systems. Regarding Portugal, the Commission wrote in 2002, "A number of actions whose objective is to foster entrepreneurship (seminars, conferences, visits) are currently being carried out by the Ministry of Economy in cooperation with the Ministry of Education, as well as by private organizations (Enterprise associations) which have close links with educational institutions. Nevertheless, these actions are not included in the framework of the national education system." (European Commission, 2002, p.40).

The Enterprise Directorate-General report from the 29th of September 2004 stated about Portugal, "There has been increasing work on bringing universities closer to the business world, in developing projects and programs targeted at entrepreneurs and in setting up courses which are more specifically oriented towards integrating trainees into working life. Particular attention has been paid to some areas of technology, such as information and communication technologies, but specific programs have covered other fields such as management and logistics." (Enterprise, 2004, p.6)

2.14 Entrepreneurship Education Pedagogy

The process of business entry differs significantly from the activities of managing a business (Gartner & Vesper, 1994). Entrepreneurial education must focus on delivering the skills and knowledge base necessary for business entry (Gartner, Bird & Starr, 1992). Negotiation, leadership, new product development, creative thinking and exposure to technological innovation have all been identified as part of this entry process (McMullan & Long, 1987; Vesper & McMullan, 1988).

Other authors have identified a variety of specific areas of importance that entrepreneurship education must address including: how to finding venture capital (Vesper & McMullan, 1988; Zeithaml & Rice, 1987); intellectual property and protection of business ideas/concepts (Vesper & McMullan, 1988); tolerance of the ambiguity associated with new ventures (Ronstadt, 1987); and the challenges associated with each stage of enterprise development (McMullan & Long, 1987; Plaschka & Welsch, 1990). Yet others have suggested that there are needs to concentrate on the characteristics that define the entrepreneurial personality (Hills, 1988; Scott & Twomey, 1998; Hood & Young, 1993) and to build the awareness that entrepreneurship is a possible career option (Hills, 1988; Donckels, 1991).

The pedagogy of entrepreneurial education is continuously changing to meet the needs of students and the marketplace-at-large. University programs can have one instructor or rely on faculty teams to teach their programs. These programs can target students from the arts, the sciences, engineering and/or business. There is a growing trend of courses being developed specifically for non-business students in the US (Solomon, 2005). Non-business students who take courses in the area of entrepreneurship may require educators to emphasize different skill-sets than the courses more commonly developed for business majors (Kingon & Vilarinho, 2005).

Teaching methods utilized in entrepreneurship education vary. Previous research indicates that the most common methodologies used in courses are business plan writing, in-class discussions, guest speakers (such as business owners), readings (such as case studies) and research projects (Vesper, 1985; Klatt, 1988; Kent, 1990; Gartner & Vesper, 1994; Solomon, 2005). Typically, students are evaluated on in-class participation, exams and projects.

Project-based learning is a particularly common aspect across entrepreneurship education which perhaps differentiates its pedagogy from those used in traditional business and/or non-business courses. Research has shown the widespread use of various teaching methods including: Development of business plans (Hills, 1988; Vesper & McMullan, 1988; Gartner & Vesper, 1994; Gorman *et al.*, 1997, Solomon, 2005); Business start-ups projects by students (Hills, 1988); Market feasibility studies (Solomon, 2005); On-site visits to new business ventures and to entrepreneurs (Klatt, 1988; Solomon, 2005); Computer simulations (Brawer, 1997); And role-playing (Stumpf, *et al.*, 1991). Student run entrepreneurship clubs are also prevalent (Gartner & Vesper, 1994).

Several scholars (Connor *et al*., 1996; Sarasvathy, 2001) in recent years have advocated the use of experiential learning techniques to more effectively bridging the classroom real - world gap (Gibb, 1987). Authors such as Wright (1996) have also advocated the use of mini-case studies. Others, however, (Shepherd & Douglas, 1996; Young, 1997) suggest that as the classroom is a place with its own guidelines and structure with "known" outcomes that the use of pedagogies such as role playing, simulation, problem solving teaching methods and less traditional cases is simply not effective and actually may promote non-creative thinking and problem solving (Shepherd & Douglas, 1996).

The evolution of course content and methodology continues to be debated. Technology, and especially the Internet, has changed the ways in which people teach and learn within entrepreneurship education, as it has in almost all fields of education. In a recent survey of U.S. colleges and universities, over 50% indicated that they are using the Internet as part of their teaching procedures either through online courses or posting information on the Web for their students and the public to read (Solomon, 2005). A juxtaposition of how technology is being used in entrepreneurship education in the United States versus Portugal is discussed further in the Findings section.

It is predicted that the Internet will play an increasingly important role in entrepreneurship education with the primary focus no longer being technological or stylistic issues but centered, rather, on the quality of materials presented (Solomon, 2005).

III. RESEARCH STRATEGY & METHODS

This chapter describes the research strategy and methods used for investigating the subject area. It begins with the research context, scope and key assumptions. The subsequent subsections clarify the evolution through which the research was developed and the corresponding research methods that were used to achieve the results of the empirical research. This was done in chronological order of the implementation of the surveys.

In this study, multiple data collecting methods were employed to overcome the limitations of using a single method and to complement the strengths of each of the individual methods (Fetterman, 1998). Qualitative methods such as observational research, interviews and primary document content analysis were used in the preliminary research focus and discovery stage of the research. The initial qualitative research on entrepreneurship promotion entities informed the main body of quantitative investigation on entrepreneurship education on a national level in Portugal. Questionnaires were developed in the form of quantitative instruments to research entrepreneurship education from the perspective of students and professors.

The information gathered in the first stage of the qualitative research was used to design a questionnaire (Rea & Parker, 1997; Suskie, 1996). Survey research is "[…] an attempt to collect data from a member population in order to determine the current status of that population with respect to one or more variables" (Gay, 1996, p.251). Marshall and Rossman (2006) mentioned surveys as particularly useful in discovering the distribution of characteristics, attitudes, or beliefs within a sample of a population. In the post-secondary students survey, close-ended questions were used because of the large predetermined size of the sample (expected n = 1000) and because of a desire to make correlations while using in-depth statistical analysis. In the two surveys of entrepreneurship professors, both closed and open questions were included in the questionnaire and a descriptive statistical analysis was predetermined to be used because of the small sample size and the desire to learn about tendencies in the words of the professors.

A content analysis of open-ended questions as well as primary documents was carried out following the procedures defined by Rubin and Rubin (1995). The data was analyzed by putting together all the data in categories, defined previously by the predetermined focus of the research and the background knowledge from the literature review. It was then compared within the categories to seek out variations and nuances in meanings. Comparison across various categories was also made

to discover connections between various themes when pertinent. When important data was found that did not fit into the categories, a new category was added and the data was once again examined to guarantee that it was correctly coded.

3.1 Research Context

Entrepreneurship promotion is a relatively new policy area for government (Hart, 2003; Lundström & Stevenson, 2001). This holds true for the European Union, the OECD and the Portuguese government. Research in the area of entrepreneurship education and training is still a developing field (Commission, 2006a; Solomon, 2005; McMullan & Long, 1987). Portugal offers an interesting case for research in the area because the country is a late adopter of entrepreneurship education (Redford, 2006; Commission, 2002). Thus, it is possible to compare what is going on in Portugal with what has happened in other countries and to review the recommendations and best practices developed by super-governmental organizations such as the European Union and the Organization for Economic Cooperation and Development with what is being done in Portugal.

Selection of Portugal as the Research Context

In the research for this dissertation the single national context of Portugal has been chosen for several reasons:

First, restricting the research "to a single country provides an implicit control for a number of crucial factors that can introduce bias into cross-country studies, such as institutions, culture, history, laws and regulations" (Audretsch *et al.*, 2006, p.9). The history of higher education in Portugal is given as background in the literature review section in order to give the reader a better understanding of the larger context of the research findings and current developments in entrepreneurship education.

Second, Portugal provides an interesting research environment because entrepreneurship education is in its infancy and can benefit from the various good practices developed in other countries.

Third, Portugal represents an excellent case study in the area of entrepreneurship promotion because virtually every type of promotional activity exists in the country in some form or another through various private sector and public sector actors. In the European Union, Portugal now

represents a "medium" size country. As such, it allows for some of the results of this study to be extended to smaller as well as larger national contexts.

Fourth, because of the country's geographic and demographic dimensions, it is possible to make studies of the whole national system. Of course, a very detailed study of all initiatives that have taken place in the national system of Portugal is impossible; however, taking a virtual "census" of all actions that have taken place in a strategic area, such as higher education, is achievable.

Fifth, the area of education has been chosen because it has been demonstrated that in Portugal government policy and funding in an area of specialized initiatives can result in rapid change and the implementation of new initiatives. The ability of the Portuguese government to be able to rapidly implement changes in the area of education has been recently demonstrated in 2005 by the socialist government and their campaign promise of making English language training mandatory throughout the school system. Further, Quadro de Referência Estratégico Nacional (QREN) is the local Portuguese application of the European Community's policy for economic and social cohesion in Portugal for 2007 to 2013 that emphasizes education and training. These funds can serve to subsidize Portugal's efforts to implement various programs under the Lisbon Agenda.

Finally, it is through education and training that substantive long-term societal change can be achieved. It is this part of the overall system that holds the greatest potential to transform the mindsets and skill-sets of the next generation of Portuguese. This will allow the country to achieve the desired goals of the European Commission and the Portuguese people to have a more entrepreneurial, innovative and thus more productive society.

In point of fact, more is being accomplished in Portugal than most people realize regarding the promotion of entrepreneurship in the country. There is an extremely strong desire by the Portuguese people to participate in entrepreneurial activities (Eurobarometer, 2004). Additionally, "There is a high level of government awareness of the needs of entrepreneurs" (Baganha, 2005, p.v). However, although there is a high level of awareness related to entrepreneurship education there has been no fully developed, coherent national strategy that looks to include government and non-government stakeholders (Commission, 2002).

Previous Studies on Entrepreneurship Education in Portugal

There have been only a handful of previous studies[6] related to Portuguese entrepreneurship education at the post-secondary level that have attempted to survey entrepreneurship education courses nationally and only two other academic-based studies were identified in this area. Dominguinhos *et al.*, 2005 found nine different entrepreneurship offerings (p.4), of which two were confirmed upon further inquiry to be incorrect (the authors of this survey used a web search methodology exclusively). Another study done by Sociedade Portuguesa de Inovação in 2000 found that only one course existed (SPI, 2001, p.25). According to the historical data on entrepreneurship education from this study (see sections 2.11 & 2.12) showed that several more courses existed at that time.

In terms of studies related to entrepreneurship intentions for post-secondary students in Portugal, no formally published studies were discovered. More recently one researcher had completed a study on entrepreneurship intentions limited to engineering and business students at one university, the University of Porto in Portugal (Teixeira, 2007).

3.2 Key Assumptions, Limitations of Scope & Methods

This study started out with the ambition of covering research in all areas (see section 2.5) of the entrepreneurship promotion infrastructure in Portugal. As the research progressed it became apparent that for the study to achieve maximum relevance it was necessary to focus on the area that was most neglected: entrepreneurship education at the post-secondary level. At the time this decision was made, there were no entrepreneurship educational offerings at the primary or secondary educational levels (Commission, 2002). Subsequent to this decision, several offerings at these levels started to appear in Portugal. These included programs such as those sponsored by the international network of Junior Achievement as well as pilot programs from the Ministry of Education.

[6] To determine what previous studies were done in this area an exhaustive literature review was completed as well as empirical research from professors in Portugal that teach entrepreneurship – see appendix 7.6 2004/2005 Entrepreneurship Professors Survey, Q. 12) to make sure no work had been excluded from the analysis behind this assertion.

This research corresponds to the European Commission's policy assumption that the best way in which to view entrepreneurship education at the post-secondary level is through the larger perspective of life-long learning. Part of this rationale states that due to the nature of entrepreneurial activities and because the attributes and characteristics necessary to be an entrepreneur are varied, the earlier a student can be exposed to its concepts the greater the effect (Commission, 2006a). This is especially true for those who do not have entrepreneurial role-models in their lives (e.g. family or cultural models). This study goes in-depth into not only the *level* of entrepreneurship education at the post-secondary level in Portugal but also into the *content* of that education.

One assumption that is not debated but rather accepted as one of the departure points of this dissertation is that entrepreneurship can be taught. Lundström and Stevenson (2005) put it best by stating, "The question of whether or not entrepreneurship can be taught and learned, which was prevalent in the research society for a number of years, is no longer as frequently challenged." (p.205). It is accepted that as in any area of learning, an individual may or may not have an innate predisposition for the development of a specific talent and ability. However, it should be remembered that the larger goal of entrepreneurship education, especially in the Portuguese context, is to bring a greater awareness of what entrepreneurship is so that even if one never becomes an entrepreneur he or she can still use aspects of an entrepreneurial mindset and skill-sets in their lives as well as support, or at least understand, those who choose entrepreneurship as a career.

3.3 Defining the Focus of the Research

The initial research focus for this study was accomplished by observing various conferences, seminars and fora in Portugal aimed at promoting entrepreneurship during 2004 and spring 2005 (e.g. COTEC Annual Conference; COTEC Entrepreneurship Education Conference; SEDES Entrepreneurship Conference). In these events, the researcher's role could be best described as "observer-as-participant" (Gold, 1958). "Here the researcher formalizes their role and sets limits to the amount and type of contact they have with participants." (Scott, 1997, p.166). As Scott (1997) points out, it is productive in the earlier stages of research not to use pre-defined category instruments because they can limit the data collected and can introduce bias into the observations being made. Detailed notes were taken at each event mentioned above. A review of the notes taken, the seminar materials distributed at the various events as well as a review of the invited speakers and people/organizations in attendance yielded a preliminary analysis. It was noted that a significant amount of duplication was found at events sponsored by the several entities regarding

their invited speakers (the same "successful" entrepreneurs), the case studies presented (the same "successful" organizations) and, on many occasions, seemingly the exact same people/organizations in attendance.

Twenty-one experts in entrepreneurship promotion, many of whom were first encountered at the entrepreneurship events attended, were interviewed. These experts came from a variety of organizations including the private sector, government, academia and the media (for a list of names, titles and organizations see appendix 7.2 Experts Consulting during First Phase of Field Research). The interviews were not structured but rather in the form of a conversation with a purpose (Bogdan & Biklen, 1992; Marshall & Rossman, 2006). The primary purpose of these interviews was to gain opinions and information on entrepreneurship promotion in Portugal in order to better focus the study and understand the Portuguese context.

The general conclusion drawn from this observational research and the preliminary interviews was that entrepreneurship promotion was an area that justified further research because of the large amount of resources being dedicated to the development of this area. It especially highlighted a need to categorize the organizations involved and objectives being pursued in the promotion of entrepreneurship (See figure 1).

Parallel to acquiring knowledge about the entities that exist to promote entrepreneurship, it was considered necessary to also better understand more about the target group of potential entrepreneurs that entrepreneurship was being promoted. Through the interviews it was evident that the experts felt that young people with a post-secondary education held the greatest promise for Portugal's future in entrepreneurship. Thus, to better understand the policies required in the promotion of entrepreneurship, it was evident that a study of the undergraduate student population, the area in which entrepreneurship was primarily being encouraged, was needed.

3.4 Discovery Research of Entrepreneurship Promotion in Portugal

To assure that all higher education institutions in Portugal that had entrepreneurship initiatives were included in the research and to put post-secondary education into the larger entrepreneurship promotion context, it was deemed necessary to embark on research that would discover the entrepreneurship initiatives of not only higher education institutions but all entities that had contributed something to promote entrepreneurship in Portugal.

Discovering the "Total Universe" of Entrepreneurship Promotion Entities in Portugal

Although many organizations involved with entrepreneurship were known to the researcher, to make certain that the "total universe" of organizations was captured, an exhaustive web search was deemed necessary. The decision to use the Internet was made recognizing the evident advantages of the: (1) enlarged sample sizes, (2) improved access to typically hard-to-reach populations, (3) reduction of research costs, (4) reduced time spent on the data collection process (Rogelberg *et al*, 2002, p.144).

To understand the "total universe" of entities that promote entrepreneurship in Portugal, two Google.pt searches were conducted on July 1st 2005 on .pt domains websites using the Portuguese word *empreendedorismo* and the English word entrepreneurship in the page title.

This search went to the "third level" in each site explored using the links from any of the website pages. A level, in this case, is considered a forward "click" on the mouse within the browser which opens a new page. The first level was the first page entered after leaving the Google.pt search engine page. From the entry page the researcher went to different parts of the site and, in many instances, to other sites where other organization(s) were encountered and recorded. Because the Google Internet search engine is dynamic, Google.pt search pages were saved and then accessed. The search took 28 research hours to conduct with 213 sites visited and approximately 781 pages reviewed. Thus, any mention of an organization associated with the promotion of entrepreneurship or that partnered with any organization on an initiative was captured during the research. In addition, any events that took place or were going to take place in 2005 were dually recorded and entered into the database.

A third website search was conducted of all websites that had the word *empreendedorismo* mentioned anywhere on the site. Some duplicate entries were automatically omitted using the Google search engine. This "first level" research took 41 research hours and was conducted from July 12th to July 15th with 470 sites entered and reviewed. Many sources were originally used to gather names of organizations that participate in entrepreneurship promotion through personal, academic and business contacts as well as consulting all known materials on entrepreneurial activity in Portugal. A controlled mechanism was designed to insure that all organizations, regardless of their size, were included in the sample. The ten largest and smallest organizations

previously known to the researcher were found to be included in the web research (see appendix 7.3 - "Universe" of Entrepreneurship Promotion Entities in Portugal, 2005)

Content Analysis of Entrepreneurship Courses Syllabi

A content analysis of the syllabi of four entrepreneurship courses offered in geographically dispersed Portuguese universities was undertaken during October, 2005. The original data for this analysis was in the form of text (the syllabi). Content analysis offers several practical benefits as a research methodology: 1) although the coding scheme can be clearly predefined, it is possible to introduce changes if flaws are detected; 2) It is possible to use another researcher to guarantee the quality of the results and the replication of the database, if desired (Woodrum, 1984).

Two course syllabi were obtained from the professors (Universidade Nova and ISCTE) and the other two course syllabi were taken from university websites (Universidade do Algarve and Universidade do Porto).

The content analysis was made by the principal researcher and another academic colleague who specializes in this form of qualitative research. Both reached the same conclusions working independently and using the same categories to analyze the data. This redundancy of analysis aided in guaranteeing the quality of the results.

The procedures explained by Rubin and Rubin (1995) were followed to carry out the content analysis. The text was first read, then marked each time a particular idea or concept was mentioned or explained which allowed the subject of each paragraph to be coded. Responses describing the same idea or process were then grouped together and then all the data that had been put in each category was reexamined. By further exploring the material in each of the categories, concepts, meanings and comparisons of the various themes were able to be refined and, where appropriate, assisted in piecing together separate events into a narrative. Comparing material across categories allowed for recognizing which themes seemed to go together and which contradicted each other.

The categories were predefined considering the objectives of the research (i.e. to understand/characterize the kinds of entrepreneurship courses offered). The categories defined were: pedagogical methods, general course content, evaluation/grading procedures and the overall main objectives of the courses.

The table below presents examples from the data collected during the analysis. The data in the table has been translated from Portuguese to English (in three cases) or uses the original English (one case).

Table 16 - Summary of Syllabi Content Analysis

University; Geographic Region; Course Name	
Course Characteristics	
Universidade do Algarve; South; Entrepreneurship	
Pedagogical Methods	No Reference
Content	Entrepreneurship theories and profiles of entrepreneurs; How to start a business and business plan (idea generation, market research, legal aspects of starting a business, operations, marketing, financing and general management included)
Evaluation	Group work (presentation of a new business start-up)
Main objective	To develop entrepreneurial mindset
ISCTE; Central (Lisbon); Entrepreneurship & Organizations	
Pedagogical Methods	Guest speakers; group work and case studies
Content	Entrepreneurship theories, processes and profiles of entrepreneurs; How to start a business and business plan (innovation, creativity, idea generation, market research, operations, marketing, financing and general management), and intrapreneurship within organizations
Evaluation	Participation; Group Work; Exam.
Main objective	To develop students career plans; To develop personal competencies of: managing success/failure; to be an entrepreneur (to start a business or within an organization); leadership, to make decisions and interact with environment
Universidade Nova; Central (Lisbon); Entrepreneurship	
Pedagogical Methods	Case study analysis; Group work; and Guests speakers (entrepreneurs)
Content	How to start a new business and business plan (Idea, marketing, operations, strategies, HR, financing and results)
Evaluation	Exam; Group research project; Idea lab
Main objective	To develop entrepreneurial mindset; To deliver information (entrepreneurship theories and concepts); To share entrepreneurial experiences

Universidade do Porto; North (Porto); Entrepreneurship	
Pedagogical Methods	Oral presentation; Work group; Case studies; Guest speakers
Content	Business plan (idea generation, market research, how to start a business, how to maintain and develop a business, how to exit a business); Complementary subjects
Evaluation	Continuous evaluation (exam and work group); Final evaluation exam with two separate parts (theoretical and case study analysis)
Main objective	To develop entrepreneurial mindset; To deliver information (entrepreneurship theories and concepts)

All the courses analyzed have one or both of the following main objectives: 1) to develop entrepreneurial mindset and/or 2) to deliver information (entrepreneurship theories and concepts). According to the literature these objectives are common to entrepreneurship courses in other countries (Solomon, 2005).

Some courses have a stronger focus on developing personal competencies (for example, Universidade Nova and ISCTE). Regardless of the different goals emphasized in the course focus (i.e. developing competencies and/or knowledge) all courses have the common element of business planning whether that is the full elaboration of a business plan itself or the explanation of how to write a business plan.

Teaching methods utilized in entrepreneurship education vary. Previous research indicates that the most common methodologies used in courses are business plan writing, in-class discussions, guest speakers (such as business owners), readings (such as case studies) and research projects (Vesper, 1985; Klatt, 1988; Kent, 1990; Gartner & Vesper, 1994; Solomon, 2005). The examples of pedagogical methods used in these courses are similar to those presented in the literature. Regarding evaluation methods, students are, typically, evaluated on in-class participation, exams and projects.

In some areas, the course syllabi did not give sufficient information to do as complete an analysis as was desired (i.e. the pedagogical method category). The limitation of these research results demonstrated the need for an in-depth quantitative survey.

3.5 2004/2005 Entrepreneurship Professors Survey

Questionnaire Development for the 2004/2005 Entrepreneurship Professors Survey

The ambition of the study was to collect data in Portugal from all courses at the undergraduate, graduate and post-graduate level given in academic year 2004/2005 (in Portugal this specifically includes coursework for *bacharelato, licenciatura, pós-graduação, mestrado* and *doutoramento* degrees). The goal of the questionnaire was to discover the number and types of students who were taking entrepreneurship courses; the backgrounds of the professors who taught those courses; the pedagogic methodologies used; the use of parallel initiatives and technology in promoting and teaching these courses; and the future trends in entrepreneurship education. This questionnaire (See appendix 7.4 2004/2005 Portuguese Entrepreneurship Professors Survey) was developed through a content analysis of entrepreneurship course syllabi, interviews of entrepreneurship promotion experts (see appendix 7.2) and by adapting questions found in two other national studies from the US and UK (Solomon, 2005; Levie, 1999). Both closed and open-ended questions were included in the questionnaire.

Data Collection & Analysis of the 2004/2005 Entrepreneurship Professors Survey

The 2004/2005 Portuguese Entrepreneurship Professors Survey was first made available online on November 9th, 2005 and was kept open until November 30th, 2005. Respondents were allowed to answer more than one questionnaire whenever they taught more than one course. In two cases, respondents taught courses to undergraduate and post-graduate students and in one case a professor was responsible for two different courses that approached complementary areas (e.g. *Empreendedorismo* and *Laboratório de Empresas*).

The 2004/2005 and 2005/2006 surveys were analyzed with descriptive stastics because of the limited number of responses in the sample. For the open-ended questions (38 and 39) a content analysis was conducted to analyze the data. The original data for this analysis was in the form of text (written responses). The content analysis found several categories of responses through the repetition of phrases used by the respondents which were grouped together. The coding scheme was not predefined and emerged throught the analysis (Woodrum, 1984). The results of the analysis of these questions in the 2004/2005 and 2005/2006 surveys were summerized and put into tables in the Findings section (see tables 24 and 25; and 61 and 62, respectively).

Universities also offer complete educational programs for post-graduates (continuing education / certificate programs) fully dedicated to the subject of entrepreneurship. Research identified a total of three programs offered during the academic year 2004/2005. Course coordinators of these programs were contacted. Even though these programs addressed entrepreneurship they all have different titles (i.e. *Empreendedorismo e Criação de Empresas*, *Empreendedorismo de Base Tecnológica*) and represented different approaches to the subject. Because of the limited sample size of the study, descriptive statistics were used in the analysis of the results.

A second survey was developed based on the 2004/2005 Portuguese Entrepreneurship Professors Survey but with some important alterations that clarified certain aspects of the study. The 2005/2006 Portuguese Entrepreneurship Professors Survey allowed for further exploration of this educational area as well as seeing the evolution and growth of undergraduate and graduate courses throughout the country.

3.6 National Undergraduate Student Survey

The main purpose of this part of the research was to study undergraduates on a national level at Portuguese higher education institutions. The aim was to investigate four aspects related to entrepreneurship: 1) Entrepreneurship and future career expectations; 2) Perceived risks and obstacles in creating a business; 3) Entrepreneurship education; 4) Building social networks/partnerships and immediacy of returns on investment.

Development of the Questionnaire

Several questions have items that correspond to Eurobarometer studies of 2003 and 2004 so as to have some form of comparative analysis with which to relate the opinions of students of this study to the larger population represented in the Eurobarometer studies. It should be noted that the Eurobarometer studies use a convenience sample of 500 in 2003 and 1000 in 2004 for the Portuguese population. The Eurobarometer survey has several differences in methodology and sampling: It was administered randomly via the telephone and is not a representative sample such as is used in this thesis, but nevertheless it serves as an interesting and valid guide for comparison. The questions taken from the Eurobarometer studies were: Q5, risk evaluation; Q6, barriers to firm creation; Q7, sources of entrepreneurial knowledge; and, Q8, perceptions about education system. The Eurobarometer was developed with the express purpose of informing the entrepreneurship

policy discussion in Europe. As part of this, it benchmarked the EU with the United States to give further context to the results. In the course of this research study, the United States is also used as general benchmark to compare the Portuguese results. Some questions in the Eurobarometer studies employ different survey question techniques such as 4-points Likert Scales of Agreement. In designing some of the questions, this choice was made to make them easier for student respondents to answer. This applied to questions such as risks and barriers to starting a company. It allowed them to identify all those elements they felt were obstacles (see table 32). Thus, some of the Eurobarometer data is not directly comparable as it is in other questions (see tables 30 & 31).

The majority of the questions in this study required respondents to give only one answer. There were several questions (Q4, Q5, Q6 and Q7 - see appendix 7.8) to which respondents were allowed to choose more than one answer to better describe their beliefs related to a given subject such as, "at which education level do you believe the basic knowledge of how to start a business should be taught" or "what are the main barriers for developing a company in Portugal". The final section of the questionnaire deals with issues related to networking and return on investment. This set of questions was designed to test the hypothesis that business and social networking is an area that needs to be expanded in the entrepreneurial curricula in Portugal.

The socio-demographic variables used to characterize the sample included the following factors: Type of Higher Education Institution (*University* or *Polytechnic*); Type of Institution (*Public / Private Institute*); *Educational Area* (Engineering, Law, Medicine, etc.); *Location of Institution*, *Permanent Residence*; *Gender*; *Family Income Level*; *University / Temporary Residence*; *Employment Status* (having been employed during the past year); *Age;* and *Parental Education* (highest degree achieved by their mother and father). A detailed demographic breakdown is shown in the Section 4.2, Findings from Post-Secondary Student Survey.

Building the Sample

To build the sample a proportional stratification method was used. This method was used because the stratum was clear and pre-defined (Black, 1999) and the population can be separated into homogenous groups/strata considering the characteristics being studied (Almeida & Freire, 2003). The stratum adopted for the analysis was that of the different undergraduate majors offered at Portuguese higher educational institutions at the *licenciatura* and *bacharelatos* undergraduate level. Stratifying by educational area 1) best served the purpose of this study and the further development of entrepreneurship education and, 2) was the breakdown offered in the database obtained. The

categories were defined using the first code number of the National Classification System for Educational and Training (*Classificação Nacional das Áreas de Educação e Formação* - CNAEF). The courses of the Portuguese system of education are categorized by course content of each educational program. The criteria used was established by Portuguese law: Portaria n.º 256/2005 de 16 de Março do Ministério das Actividades Económicas e do Trabalho published in the Portuguese Diário da República I- Série B.

The National Classification System for the Educational and Training areas contains 9 categories that represent 25 educational areas with 111 sub-areas of education and training. The *licenciatura* and *bacharelato* degrees are at the level of the sub-areas. The decision for this stratification criterion was made considering the objectives of the research as presented in the beginning of this section. The use of additional stratified levels of desegregation for the 111 sub-areas of Education and Training was considered. However, the use of such a stratum was judged not to be an enhancement of the quality of the research results nor was the accomplishment of this feasible with regard to time and cost.

During the sample planning, it was decided to include the sub-area Tourism and Leisure (*Turismo e Lazer*) and Environmental Protection (*Protecção do Ambiente*) with the area of Agriculture (*Agricultura*) due to the economic relation these areas share (Covas, 2007). As a consequence this sub-area was renamed as Agriculture, Tourism and the Environment (*Agricultura, Turismo e Ambiente*). Tourism and the Environment were omitted from the Services (*Serviços*) area. The area of Services refers to personal services (Hotel and Restaurant Management, Sport Management, etc.), Transportations Services, Security Services & Environment Protection (Note: For further information refer to Portuguese Law - Portaria n.º 256/2005 de 16 de Março do Ministério das Actividades Económicas e do Trabalho published in the Portuguese Diário da República I- Série B).

It was decided that the survey sample would include 1,000 second-year students of the *bacharelatos* and *licenciaturas* from all public and private Portuguese institutions of higher education and all statically relevant areas of academic study offered during the 2004/2005 academic year. For the purposes of this study second-year students were selected because they meet two important research criteria for comparative study: 1) some educational experience at the post-secondary level and 2) are not in the last year of their undergraduate studies for either students in 3-year bacharelatos or 4 to 5-year licenciaturas degrees. A database for the sample population was acquired from the Ministry of Science, Technology and Higher Education (MCTES). This database was used to identify the population of students for the sample was taken from the official number of students

that entered Portuguese institutions of higher education in the 2003/2004 academic year. In addition, it was used because neither MCTES nor INE keeps/makes available year-to-year data on students currently enrolled. Of the 1,000 planned, 802 (N = 802) were collected, which is a representative sample using proportional stratification, with an error margin of ± 4%.

The table below presents the subjects and the distribution by Class of Education and Training Areas stratum. A total of 802 subjects participated in the research (N = 802).

Table 17 - Expected & Actual Number of Respondent by Areas of Study

Areas	**Expected # of Responses (Expected N)**	**Actual # of Responses (N)**	**Response Rate (%) Success**
Education (*Educação*)	38	38	100.0
Arts and Humanities (*Artes e Humanidades*)	71	71	100.0
Social Sciences, Business and Law (*Ciências Sociais, Comércio e Direito*)	293	293	100.0
Sciences, Mathematic and Computer Science (*Ciências, Matemática e Informática*)	87	64	74.6
Industrial, Material and Civil Engineering (*Engenharia, Indústrias Transformadoras e construção*)	366	198	54.1
Agriculture, Tourism and Environment Sciences (*Agricultura, Turismo e Ambiente*)	35	35	100.0
Health Sciences and Social Work (*Saúde e Protecção Social*)	69	69	100.0
Services, excluding the areas of Tourism and Environment Protection (*Serviços*)	41	34	83.9
Total	1,000	802	80.2

Data Collection & Analysis

The questionnaire was pilot tested on higher education students to assure that there was no confusion relative to terms or phrases used in the study. Authorization was requested for the application of the survey before the study was executed. All surveys were collected between May 5th and June 23rd, 2005. Initially, it was designed so that all questionnaires would be collected by the end of May but the period was prolonged to achieve the highest possible response rate.

During the data collection phase a team of four research assistants supported the principal researcher. All went physically to the various campuses throughout the southern and central regions of Portugal. In the North of Portugal, the data collection was outsourced to a professional market research company, GBN, Lda., which used a team of twelve people geographically located in the

North and Central regions as well as in the islands of Madeira and Azores. This team also visited the campuses as required by the sampling method employed. Prior to university visits, telephone contact was made with the respective Dean/Chancellor of the University (or a representative from their office) and authorization was obtained to collect data on their campus.

The majority of the questionnaires were filled out and completed in isolation in the presence of one of the research assistants, members of the research company or the principal researcher. All respondents did the survey voluntarily and no compensation was offered. When students were asked to answer the questionnaire in their classroom, prior authorization from the professor in charge was obtained. Others were requested to take the survey in work or break areas such as cafeterias and snack bars or in computer labs or the hallways of the institution. All questionnaires were collected at the campus of the school. In two cases, the Nursing School, *Enfermagem da Escola Superior de Saúde da Cruz Vermelha Portuguesa* of the *Universidade Atlântica* and the *Escola Superior de Saúde de Faro,* questionnaires were filled out at public health facilities where internship training was taking place and not on the campus grounds. Only in the case of the *Universidade Aberta*, Portugal's "Open University", a correspondent or "virtual" school, was the questionnaire mailed via the Portuguese postal service and not observed while being filled out. This applied to 10 questionnaires or 1.25% of the sample.

After all of the questionnaires were collected approximately 10% of the sample was called to confirm their demographic information and that in fact it had been they who answered the questionnaire and were currently enrolled as second year students. No abnormalities were found and the sample was declared valid from the standpoint of data collection.

Data entry of the survey was done via an optical reader to assure that there were no errors in the input of the data into the database. The entries were verified comparing approximately 5% randomly selected paper versions of the questionnaire with the results of the database. No abnormalities were found and the data entry of the optical reader was vetted.

Univariate descriptive analyses were carried out to describe the basic features of the data in the study (percentages and central tendency measures such as the mode for nominal variables and the median for ordinal ones) (Koosis, 1997). After the descriptive analysis was completed, a bivariate analysis was done to reach further, more detailed conclusions. The purpose was to understand if and how the variables were related and if so, the intensity of the relationships.

To assess the intensity of the association between the variables and to determine the effect that the factor may have in the dependent variable (aspects related to entrepreneurship) both symmetrical and asymmetrical measures, respectively, were used. When both the variables involved were nominal, the correlation coefficients (Cramer's V) and uncertainty coefficient was used. When both variables were ordinal, Spearman's Rho and Sommer's d tests were used.

When associations were revealed by the measures used, a complementary statistical analysis, Adjusted Standardized Residuals (ASR) was used to evaluate which categories of the variables contributed most to a given relationship. These cross-tabulation procedures were also used to perform a deeper analysis between nominal and ordinal variables, when the null hypothesis of the Chi-square test was rejected.

The Cramer's V is a symmetric correlation coefficient based on the Chi-square statistic that varies from 0 to 1. The intensity of the relationship is, thus, identified by the relative proximity of the extremes 0 (none or low intensity) and 1 (high association). The uncertainty coefficient varies with the same boundaries (i.e. 0 – 1) and its asymmetrical version (the one that was used, so as not to be redundant) measures the proportional reduction in the forecasting error when the factor was used to predict the object variable. Both measures apply to relations between nominal variables.

With the same logic of the uncertainty coefficient - but translating to relationships between ordinal variables - the Sommer's d makes the distinction between dependent or explained variable (aspects of entrepreneurship) and the independent or explanatory ones (the socio-demographic factors). It varies in the interval 0 to 1, and measures the degree in which the independent variable can improve the prediction of the dependent one.

The Spearman's Rho correlation coefficient is used for ordinal variables. It is widely used, and it varies in between -1 and 1. The absolute value of this statistic gives us the intensity of the relation, while the sign gives us the direction of it.

The Adjusted Standardized Residuals are a cross-tabulation derived procedure that explores specific relationships between categories of the variables. When its value is between -1.96 and 1.96, it is assumed that the categories behave the way it was expected so there is nothing to report, for a significance level of 0.05. In the analysis, levels of significance up to 0.10 have been considered so that the bound values involved were around 1.70 in what concerns its absolute value. For values - in module - higher than 1.70 it was considered to exist a relation between categories.

When deemed appropriate for statistical testing, Kruskal-Wallis and Mann-Whitney were used as a statistical measure. The purpose was to relate pairs of nominal variables and to find out the covariance between variables and the degree of association. As each answer does not always have the same number of responses in each category/answer choice, it is necessary to evaluate the proportional distribution within categories.

All the statistical tests were made with the use of SPSS – Statistical Package for the Social Sciences, version 14.0.

3.7 2005/2006 Entrepreneurship Professors Survey

Questionnaire Development for the 2005/2006 Entrepreneurship Professors Survey

The results of the 2004/2005 Portuguese Entrepreneurship Professors Survey were used to further refine the research tool used in 2005/2006. In several questions (e.g. 19, 21 22, 36, 37) small additions to the close-ended responses were added as a result of the analysis made on those responses given in the "other, please specify" field. Question numbers correspond to 2004/2005 Entrepreneurship Professors Survey (see appendix 7.6). The information gathered from some of the questions (e.g. 28, 29, 30, 31) regarding areas such as financial support for the development of courses, was omitted from the second version of the questionnaire. This was done because sufficient information was previously gathered with few differences between respondent answers. The financial support question, for example, which is valid in the US context where funding sources are varied, is not as pertinent in the Portuguese/European context.

In some cases it was necessary to separate the questions into two specific questions such as Question 14 (Does your institution intend to develop any of the following to promote entrepreneurship and innovation in the future). This was rewritten into two questions for more accurate results (i.e. Does your University have or have plans to develop any of the following to promote entrepreneurship and innovation; Did your institution develop any of the following to promote entrepreneurship and innovation during the academic year 2005/2006).

In another question (i.e.12) information gathered in the 2004/2005 study was verified by a similar question (i.e. Are you aware of any academic research that has been developed in the Area of Entrepreneurship Education in Portugal? If you are, please identify the researcher and the research

itself. This was changed to, Have you published any work (opinion article, scientific article, presentation, books or chapters on entrepreneurship?).

The resulting questionnaire for the 2005/2006 Entrepreneurship Professors Survey was a much more specific and refined research instrument. It was used to verify the previous study results and indicated the evolution of this area from one year to another.

Data Collection & Analysis of the 2005/2006 Entrepreneurship Professors Survey

The questionnaire was first made available online on April 11th, 2006 and was kept open until July 6th, 2006. Respondents were asked to answer more than one questionnaire if they taught more than one course. In three cases, respondents taught courses to undergraduate and post-graduate students and in one case a professor was responsible for two different courses that approached complementary areas (e.g. *Empreendedorismo* and *Laboratório de Empresas*).

It was also found that universities offered complete educational programs for post-graduates (continuing education / certificate programs) fully dedicated to the subject of entrepreneurship. Research identified a total of eight programs offered during the academic year 2005/2006. Even though these programs addressed entrepreneurship they all had different titles (i.e. *Empreendedorismo e Criação de Empresas*, *Empreendedorismo de Base Tecnológica*) and represented different approaches to the subject. In processing the data descriptive statistics were used to analyze the results presented because of the limited sample size.

IV. RESEARCH FINDINGS

Entrepreneurship education is a new field that is still seeking its place in Portuguese post-secondary institutions. Although the majority of government officials, journalists, businesspeople, and academics interviewed over the course of this research (see appendix 7.2 and 7.12) believed that entrepreneurship education is something that would benefit Portugal, its people and its economy, the subject area is still fighting for recognition, credibility, full support and, most importantly, greater participation by students and institutions. As one of the findings in this study reveals, Portugal is approximately 20 years behind the United States in the development of entrepreneurship education at the post-secondary level (see section 4.1). It is not the case, however, that those who teach entrepreneurship feel isolated such as Katz (1991) suggested was true at the beginning of the American experience, "Ten years ago entrepreneurship faculty were often treated as lepers by their business school colleagues (or so the parable goes)" (p. 101). In recent years, at the very least, entrepreneurship has become more widely discussed and has increasingly become a more "popular" idea in Portuguese society. This is evident through the ever-increasing number of articles, books and even television shows related to entrepreneurship. However, similar to Gibbs (1997) observation about early post-secondary entrepreneurship education in the UK, in Portugal it is yet to become fully mainstream, even in business schools that still have rather low participation rates in entrepreneurship courses (see chapter V. Conclusions & Recommendations).

This chapter demonstrates the results of three separate studies completed in 2005 and 2006 (see sections 3.4, 3.5 & 3.6 of Research Method & Strategy). Two of the surveys are a virtual census of academic years 2004/2005 and 2005/2006 and include the opinions and perspectives of entrepreneurship professors in Portugal (see sections 4.1 & 4.3). A third survey is a representative sample of Portuguese post-secondary students from academic year 2004/2005. At the end of this chapter a comparison is made between the two professor surveys. This was done to provide further clarity and to allow for several observations on the evolution between the two years. Further comparative analysis between the research findings of this thesis and those from other studies published on Portugal are presented in the next chapter (see V. Conclusions & Recommendations).

4.1 Findings from the 2004/2005 Professors' Survey

A total of 27 entrepreneurship courses were found to have been taught in Portugal during the academic year of 2004/2005. These courses represent the total "universe" of this research paper and

the area as far as it was then known. The study includes data and analysis of 22 courses representing an 81.5% response rate. The diversity of titles that these 22 courses use are shown in tables 19 and 20.

Table 18 - Respondent Profile

Total Universe of Courses	27
Total Courses Analyzed (Sample)	22
Total Participating Universities/Institutes	17
Total Participating Professors	19

Table 19 - Undergraduate Course Titles in Portugal

- *Empreendedorismo* (Entrepreneurship) (7)
- *Criação de Empresas* (Business Creation) (4)
- *Avaliação de Projectos* (Project Evaluation) (1)
- *Empreendedorismo de Base Tecnológica* (Technology-based Entrepreneurship) (1)
- *Empreendedorismo e Criação de Novos Negócios* (Entrepreneurship and New Business Creation) (1)
- *Empreendedorismo e Organizações* (Entrepreneurship and Organizations) (1)
- *Iniciativa Empresarial* (Business Initiative) (1)
- *Laboratório de Empresas* (Entreprise Lab) (1)

Table 20 - Graduate Course Titles in Portugal

- *Empreender numa Economia Global, Digital e Super Competitiva* (Entrepreneurship in a Global, Digital and Super Competitive Economy) (1)
- *Empreendedorismo* (Entrepreneurship) (1)
- *Empreendedorismo e Desenvolvimento de Novos Negócios* (Entrepreneurship and New Business Development) (1)
- *Empreendedorismo e Criação de Empresas* (Entrepreneurship and Business Creation) (1)
- Entrepreneurship *e Projecto de Negócios* (Entrepreneurship and Business Plan) (1)

A total of 19 professors answered the questionnaire. The primary teaching areas of these professors are: General management (29.4%), entrepreneurship (23.5%) and finance/accounting (23.5%) with other areas representing a smaller proportion, such as economics (11.8%) and marketing (5.9%).

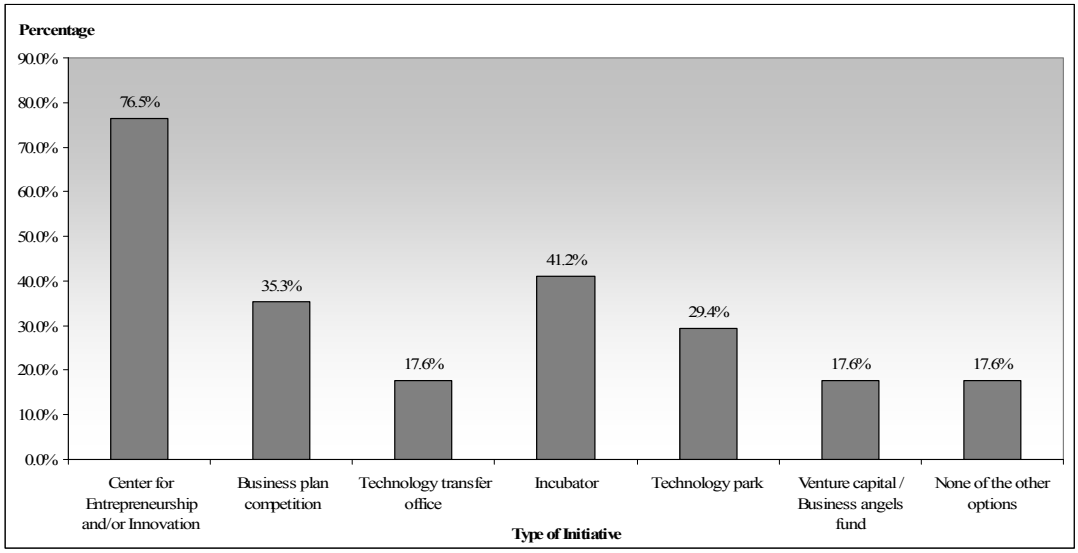
Forty-four percent of the professors that teach entrepreneurship related courses at Portuguese universities dedicate their research to the subject of entrepreneurship. Other primary areas in which these professors do research include finance (18.8%) and marketing (12.5%).

From the entrepreneurship courses represented in this study, 77% are taught by one primary faculty member. Sixty-two percent of professors surveyed have had the "real life" experience of founding a company at some point during their careers. No professors of entrepreneurship are either a *Professor Catedrático* or *Professor Associado com Agregação*[7]. Seventy-five percent are *Professor Auxiliar*[8] or below. This further indicates that entrepreneurship education is a developing area with "up-and-coming" and "young" professors.

Since 2003, there has been a sharp increase in the number of new entrepreneurship courses offered at Portuguese universities. Of the 17 universities that have entrepreneurship courses, 41% started offering education in entrepreneurship during 2003 or 2004.

Educational services provided by universities can also be supported by other initiatives such as centers for entrepreneurship and/or innovation, incubators, and business plan competitions. Many universities in Portugal are planning on creating these support structures that represents practical opportunities for the development of knowledge and help in creating an entrepreneurial endeavor. Whereas few entrepreneurship centers currently exist in Portugal, the majority of universities surveyed plan on developing entrepreneurship centers (76.5%) in the future.

Figure 10 - Intention to Develop Promotion Initiatives at Portuguese Universities



[7] *Professor Catedrático* and *Professor Associado com Agregação* represent two of the highest academic titles a professor in Portugal can achieve.

[8] *Professor Auxiliar* represents the first academic title given to professors after completing their PhDs.

When asked what was the primary reason for these courses being created, professors answered: The university was responding to the market (50%); because of the "personal interest of the professor" (45.5%); or, as a "result of a PhD thesis / PhD program" (4.5%).

It is notable that none of the respondents stated that their courses were created to pursue either the Portuguese Government or European Union policies. Despite EU and Portuguese Government support in the area of entrepreneurship & innovation, only 33% of universities stated that they received State funds to develop initiatives in these areas. Moreover, 58% never applied for support. Private investment/support of entrepreneurship education initiatives is also rare at Portuguese universities. Ninety-two percent answered that they never applied for private funding.

Analysis of the research identified differences between the Portuguese regions eligible and those not eligible for the European Structural Funding under Objective 1 (European Commission, 2005). Table 21 exhibits the primary reasons for the courses being created in these developed and developing regions. As shown below, 61.5% of the courses offered in the Lisbon area were created because of the professors' personal interest. However, in Portuguese regions that still receive Structural Funds the majority of courses being offered resulted from the universities' efforts to respond to the market (66.7%), whereas the professors' personal interest was mentioned by far fewer (22.2%).

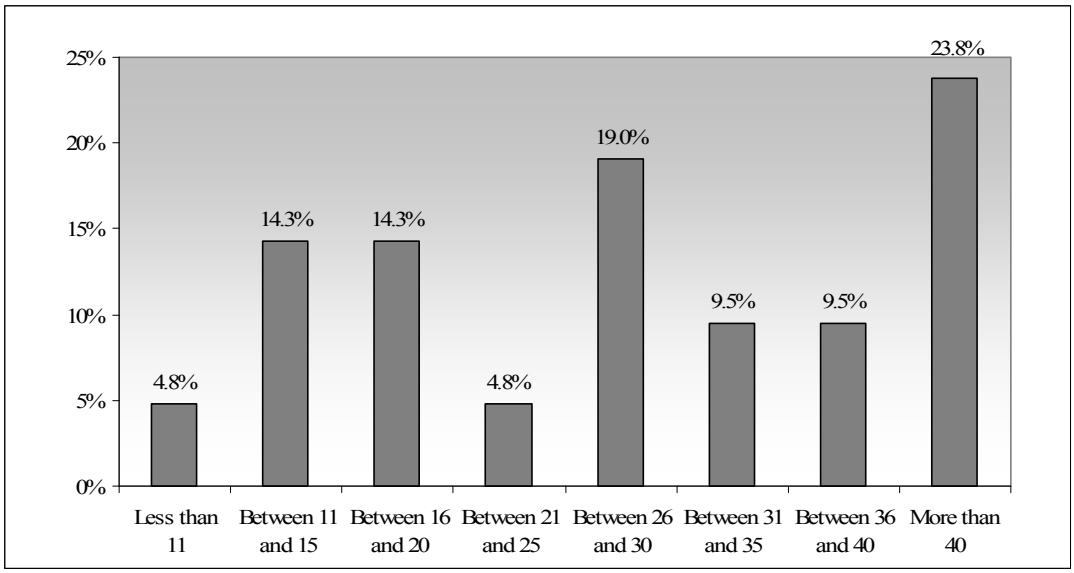
Table 21 - Primary Reason for Development of Courses in Portugal

Lisboa e Vale do Tejo, Lezíria do Tejo and *Médio Tejo* regions[9]	Number of answers	Percentage
Response to the "market" / Request from firms	5	38.5%
Personal interest of the professor	**8**	**61.5%**
Result of a PhD thesis / PhD program	0	0.0%
Total	13	100.0%
Other regions	Number of answers	Percentage
Response to the "market" / Request from firms	**6**	**66.7%**
Personal interest of the professor	2	22.2%
Result of a PhD thesis / PhD program	1	11.1%
Total	9	100.0%

[9] The *Lisboa e Vale do Tejo* region ceased receiving European Structural Funds during 2005. Two other regions (*Lezíria do Tejo* and *Medio Tejo*) will stop receiving the funding during 2006. All the other regions in Portugal are still eligible for Objective 1, however it should be noted that this will dependent on future negotiations between all the 27 Member States of the EU.

Figure 11 shows the average class-size of Portuguese entrepreneurship courses. Over 42% of these courses are taught in classes with more than 30 students.

Figure 11 - Average Entrepreneurship Class Size in Portugal (2004/2005)



It has been found that as the number of members of a group increases the possibilities of contact between these individuals diminish. Goldstein (1983) suggests that small groups are defined as having 30 individuals or less. If class-size usually influences a students' interest and attentiveness for the subjects discussed, pedagogical methods used must be adapted to the size of the class being taught. Entrepreneurship professors very frequently use "business plan creation" (57%) and "lectures" (48%), which are teaching methods often connected to educating large groups of students (see section 2.14 for further discussion on why business plan creation is a commonly used pedagogic method). Activities such as "role-playing", "computer simulations" and "internships", which are often associated with teaching small groups of students, were never or rarely used in the courses (50%). Professors who teach less than 30 students, which represents 57.1% of the sample, use these pedagogical methods even less, 83% report that they rarely or never use "computer simulations", 82% rarely or never use "internships" and 45% rarely or never use "role-playing".

As might be expected, all entrepreneurship courses teach "opportunity identification" and "opportunity assessment". Subjects such as, "bankruptcy control and prevention" (9%) and "competences in intercultural relationships" (5%) are seldom approached during courses. In a country where "failure" is rarely accepted as a positive learning experience, perhaps teaching and discussing of the subject of bankruptcy control and prevention could contribute to changing the societal bias against risk-taking (Hofstede, 1994) and the stigma of failure.

The researcher used "competences in intercultural relationships" as a pseudo-proxy for internationalization. If a professor is not teaching intercultural communication while educating students in internationalization then, it would appear, their students would be missing a fundamental and necessary skill-set.

Table 22 - Areas of Curricular Focus in Portuguese Entrepreneurship Courses

	Number of Answers	Percentage
Opportunity identification	22	100%
Opportunity assessment	22	100%
Market analysis	19	86%
Financing	19	86%
Business plan development	19	86%
Competences in entrepreneurial behavior and interpersonal relations	17	77%
Company creation and registry	17	77%
Marketing	15	68%
Management	15	68%
Legal aspects, including patents	15	68%
Financial management	14	64%
Private financing / Venture Capital	13	59%
Public financing in the creation of companies	12	55%
Production processes	9	41%
Evaluation of initiatives/projects of entrepreneurship fostering	9	41%
Processes optimization	7	32%
Competences in knowledge transmission	5	23%
Bankruptcy control and prevention	2	9%
Other	2	9%
Competences in intercultural relationships	1	5%

According to professors, all students attending their courses have a positive opinion of their course. Generally, respondents feel that other groups also perceive their courses favorably. Nevertheless, professors believe that 50% of students not enrolled in their courses hold a generally neutral opinion. They also feel that 30% of other professors hold this same neutral bias concerning entrepreneurship courses. From the point of view of this researcher, this appears to indicate a need to better "market" entrepreneurship programs to students who are not currently enrolled in these courses in order to positively influence student perceptions of these courses.

The table below shows that Anglo-Saxon case studies have a significant influence on Portuguese entrepreneurship education. The content of information delivered to Portuguese students (from a total of 22 entrepreneurship courses) never or only occasionally (84%) came from foreign case studies written in a language other than English.

Table 23 - Frequency of Use of Reading Materials in Portuguese Courses

Reading Materials	Frequency				
	Very Frequently	Frequently	Usually	Occasionally	Never
Academic journal articles	**7**	2	5	5	1
Portuguese case studies (written in Portuguese)	**5**	3	3	4	**5**
Foreign case studies (translated into Portuguese)	2	2	4	3	**7**
Foreign case studies (written in English)	**6**	3	2	4	5
Foreign case studies (written in another language)	1	1	1	4	**12**
Textbook	4	**9**	2	1	2
Other books written by academics	**8**	5	4	2	1
Books written by entrepreneurs	2	6	0	**9**	3
Magazines and newspapers	5	**6**	4	4	1

Entrepreneurship students are required to complete web-based assignments in the majority of courses (86%). Despite this fact most universities (60%) still do not offer information on the Web regarding entrepreneurship, new venture creation, or small business management to either students or entrepreneurs. Portuguese universities also do not offer entrepreneurship courses on the Internet. Nevertheless, professors believe that in the next five years entrepreneurship education in Portugal will come to rely on the use of technology (see table 24). Access to e-learning services and the use of computer simulations, for example, are expected to complement the development of entrepreneurship education in the country.

Eighty percent of respondent universities stated they did not present online technical and management assistance to entrepreneurs. The possibility of offering this type of information could be part of a greater link that, in the opinion of this researcher, needs to be forged between the theory taught in Portuguese entrepreneurship courses and the actual needs of entrepreneurs in the country.

When asked about the differentiation of their courses, the main reason presented by respondents (see table 24) concerned the possibility of providing practical knowledge and focused on how to create a business. Some courses concentrated on specific areas by addressing the creation of businesses in industries related to high-technologies. In addition, the researcher found that courses also focused on creating an entrepreneurial mindset in students and teaching the importance that entrepreneurship has on the economic development of a country.

Table 24 - Entrepreneurship Course Differentiation in Portugal

Categories (times mentioned)	Example of Quotes
Practical Knowledge (5)	"it is absolutely practical"
	"to seek practical information"
	"a very practical program"
	"practical dimension of the course"
Business Creation (5)	"evaluates the business plans"
	"students develop non simulated companies"
	"creation of a firm"
	"business plan that looks at the whole market"
Specialization (2)	"technology-based business ideas"
	"technology-based entrepreneurship"
Mindset (1)	"development of the entrepreneurial spirit"
Importance to Economy (1)	"importance of entrepreneurship to economic development"

The analysis suggests that professors seemed to compare their courses against other courses offered at their university rather than comparing their programs against other entrepreneurship courses offered in the country. Perhaps this is because very few of them actually know how many universities have offerings in this academic area.

Professors also addressed future trends in the area of entrepreneurship education that they expected to be implemented in Portugal over the next five years (see table 25). Respondents predict that entrepreneurship education will be offered to a broader target audience. According to them, entrepreneurship courses should not only be taught to all university students (independent of their area of study) but they should also be extended to high school students as well as currently working professionals who may lack an advanced academic degree and not qualify or not be suited for current post-graduate programs.

It is expected that the content of entrepreneurship education is going to go through a substantial transformation during the next five years beyond an expansion of the target audience. Professors anticipate that courses will provide more than just practical knowledge on how to create a business and address other important subject areas such as intrapreneurship and family businesses. They also

expect to see educational offerings incorporating a better use of technology with use of computer simulators as part of course pedagogy as well as using e-learning to reaching other potential students.

Table 25 - Future Trends in Entrepreneurship Education in Portugal

Categories	Analysis (times mentioned)	Example of Quotes
Broader Target Audience	All University Students (5)	"generalized teaching of entrepreneurship"
		"all universities will have entrepreneurship courses"
		"will become a required course instead of optional"
	High School Level (4)	"extension of entrepreneurship to the secondary level programs"
		"introduction of entrepreneurship courses to high school"
	Professionals without a Degree (2)	"entrepreneurship executive programs"
		"education for businessmen with lower levels of education"
Content	Specialization (6)	"technology based entrepreneurship programs"
		"the reinforcement of the technology dimension of entrepreneurship"
		"specialization at the Masters level"
	New Subjects Discussed (4)	"intrapreneurship"
		"succession of family business"
		"problem solver methodologies"
		"innovation, branding and vertical integration"
Use of Support Technologies	Computer Simulations (3)	"use of IT for simulations"
		"broader use of management simulators"
	E-Learning (2)	"distance learning of entrepreneurship"

Complete educational programs such as certificate-granting post-graduate and master programs are another area where universities are investing. During the 2004/2005 academic year two post-graduate (from *Universidade Autónoma de Lisboa* and *ISCTE*) and one master's (from *Universidade do Porto*) were offered. Other universities (a total of six) will start offering entrepreneurship programs in the next academic year. It is important to note that three of these six universities had originally scheduled their programs to start during the 2005/2006 academic year but they were forced to postpone because of a lack of enrollment. Further research will be conducted in an attempt to better understand the reason(s) for this by interviewing course

coordinators. In a separate analysis of these three programs, it was noted that the majority of responses from program coordinators mirrored those given by entrepreneurship professors.

4.2 Findings from Post-Secondary Student Survey

The main purpose of this research is to study entrepreneurial education in institutions of higher learning in Portugal and discuss ways on how it could be improved which could be of use for academia and policy making. The study was accomplished by surveying 802 2nd year students. The results of the survey were examined through a socio-demographic analysis. The aim was to test four aspects related to entrepreneurship: 1) Entrepreneurship and future career expectations; 2) Perceived risks and obstacles in creating a business; 3) Entrepreneurship education; 4) Building social networks/partnerships and immediacy of returns on investment.

The socio-demographic variables used to characterize the sample included the following factors: Type of Higher Education Institution (*University* or *Polytechnic*), Type of Institution (*Public / Private Institute*), *Educational Area* (Engineering, Law, Medicine, etc.), *Location of Institution*, *Permanent Residence*, *Gender*, *Family Income Level*, *University / Temporary Residence*, *Employment Status* (having been employed during the past year), *Age* and *Parental Education* (highest degree achieved by their mother and father).

After the socio-demographic breakdown of the sample, two types of statistical analysis are used in the presentation of the findings: univariate descriptive analysis and bivariate analysis. Part of the bivariate section utilizes the socio-demographic variables stated above for its analysis. The subcategories of the analysis for both the univariate and bivariate analysis sections follow the studies objectives.

Socio-Demographic Breakdown

The socio-demographic breakdown of the sample corresponds to the predefined criteria explained in the research strategy and method section (see section 3.6). As the data presented is a representative sample of 2nd year students at universities and polytechnic institutes throughout Portugal, a noteworthy element of the sample is the areas of study that the respondents represent.

Table 26 - Respondent Areas of Study

Areas	**N (%)**
Education (*Educação*)	38
Arts and Humanities (*Artes e Humanidades*)	71
Social Sciences, Business and Law (*Ciências Sociais, Comércio e Direito*)	293
Sciences, Mathematic and Computer Science (*Ciências, Matemática e Informática*)	64
Industrial, Material and Civil Engineering (*Engenharia, Indústrias Transformadoras e construção*)	198
Agriculture, Tourism and Environment Sciences (*Agricultura, Turismo e Ambiente*)	35
Health Sciences and Social Work (*Saúde e Protecção Social*)	69
Services, excluding the areas of Tourism and Environment Protection (*Serviços*)	34
Total	802

Students from universities (53.6%) and Polytechnic Schools (*Politécnicos*) (46.4%) were surveyed. Of these, more than half of the sample attended public institutions.

Table 27 - Type of Institution

Type of Institution	**N (%)**
Universities (*Universidades)*	430 (53.6)
Polytechnic Schools (*Politécnicos*)	372 (46.4)
Public Universities (*Universidades)*	345 (58.2)
Public Polytechnic Schools (*Politécnicos*)	248 (41.8)
Private Universities (*Universidades)*	85 (40.7)
Private Polytechnic Schools (*Politécnicos*)	124 (59.3)

The geographic distribution of the students surveyed covered all regions of Portugal. It corresponds to the regions identified by the European Commission related to dispersing of European Structural Funding under Objective 1 (European Commission, 2005). Of this the majority attended schools in the Lisbon area (39.7%), which also included the Tejo River valley area, the North (31.7%), which included the cities of Braga, Bragança, Guimarães and Porto, and the Central region (21.5%) which included the cities of Aveiro, Coimbra and Covilhã.

Table 28 - Geographical Location of Institution

Regional Location of Institution	**N (%)**
Lisbon & Tejo Area (*Lisboa e Vale do Tejo*)	318 (39.7)
North (*Norte*)	254 (31.7)
Center (*Centro*)	172 (21.5)
Alentejo	30 (3.7)
Algarve	18 (2.2)
Madeira	5 (0.6)
Azores (*Açores*)	5 (0.6)

Social, economic and demographic variables of the sample also included: *Permanent Residence*, *Gender*, *Family Income Level*, *Age* and *Parental Education* (highest degree achieved by their mother and father). The majority of the sample consisted of women (57.6%), which reflects the fact that the greater proportion of post-secondary students in Portugal are female (Cabral-Cardoso, 2004). As is to be expected, the majority (82.3%) were under the age of 25. The average respondent is from a middle-class family (79.1%) and as is reflective of the generation of the students' parents, both mothers (58.8%) and fathers (56.6%) had only achieved an elementary education or less. In the majority o the cases the region of permanent residency of respondents was very similar to the location of their post-secondary institution. This is typical in Portugal as the majority of students go to school close or in the same city in which they have grown up as can be seen by comparing tables 28 and 29.

Table 29 - Social-demographic Characteristics

Demographic Characteristic	**N (%)**
Gender	
Female	461 (57.6)
Male	340 (42.5)
Age	
25 and under	657 (82.3)
26 to 30	104 (13.0)
31 to 35	20 (2.5)
36 to 40	5 (0.6)
Over 40	12 (1.5)
Family Income	
High Income	102 (12.9)
Middle Income	628 (79.1)
Low Income	64 (8.1)
Educational Level – Mother	
Grade School	460 (58.8)
High School or Equivalent	137 (17.5)
Undergraduate Degree (*Bacharelato or Licenciatura*)	159 (20.3)
Post-Graduate Studies (*Curso Superior Pós-Graduado*)	26 (3.3)
Educational Level – Father	
Grade School	434 (56.6)
High School or Equivalent	175 (22.8)
Undergraduate Degree (*Bacharelato or Licenciatura*)	129 (16.8)
Post-Graduate Studies (*Curso Superior Pós-Graduado*)	29 (3.8)

Region of Permanent Residence	
Lisbon & Tejo Area (*Lisboa e Vale do Tejo*)	294 (37.0)
North (*Norte*)	273 (34.3)
Center (*Centro*)	156 (19.6)
Alentejo	26 (3.3)
Algarve	22 (2.8)
Madeira	12 (1.5)
Azores (*Açores*)	8 (1.0)
Foreign Countries	4 (0.5)
Employment within the Last Year	
Yes	143(17.8)
No	655(81.7)

Univariate Descriptive Analysis

The univariate analysis gives a good descriptive understanding of the data. The analysis in this section follows the main aims of the study: 1) Entrepreneurship and future career expectations; 2) Perceived risks and obstacles in creating a business; 3) Entrepreneurship education; 4) Building social networks/partnerships and immediacy of returns on investment. After the descriptive findings of this section a bivariate analysis cross-tabulates several variables.

Entrepreneurship & Future Career Expectations

The career options of students were evaluated with the following two questions: 1) "After finishing your course, what do you intend to do?" 2) "Do you believe it is possible that you will ever own your own business?" With both questions, the entrepreneurial career options were assessed through the self-reporting intention of students creating their own business. After the conclusion of their undergraduate studies, 38.6% of the students would like to work in public services[10] and 28.0% in a multinational company.

[10] Public Service refers to direct employment in government or a government-sponsored agency or entity.

Table 30 - Career Options of Students

Question	N (%)
After concluding your program, what do you intent to do?	
Work in the public sector	291 (38.6)
Work in a multinational company	211 (28.0)
Create my own company	121 (16.1)
Work in an SME	110 (14.6)
To continue studying	6 (0.8)
Other	7 (0.9)
NS / NR	8 (1.1)
Do you believe it is possible that you will ever own your own business?	
Yes	483 (63.2)
No	281 (36.8)
How much time do you think you would wait after finishing your course to start your own business? (Responses of those who answered yes to the possibility of ever creating their own business)	
Less than 2 years	69 (14.7)
Between 2 to 5 years	130 (27.7)
Between 6 to 10 years	187 (39.8)
More than 10 years	84 (17.9)
The business you expect to create will serve the: (Responses of those who answered yes to the possibility of ever creating their own business)	
Local market	111 (23.5)
Portuguese market	222 (47.0)
Iberian market	22 (4.7)
European market	62 (13.1)
World market	55 (11.7)

Those who want to work in an SME represent 14.6% of respondents whereas 16.1% want to create their own business. In total, 81.2% want to work for others and only 16.1% want to create their own business.

Students were also asked if they believe they would *ever* own their own business; 63.2% answered yes. Of the students who think they will have their own business, the majority (39.8%) believe this will happen between 6 to 10 years after they graduate whereas 27.7% thought it will happen in a 2 to 5 years period and 14.7% believe they will accomplish it in 2 years or less after they finish their courses.

The geographic markets students wish that their future business will serve includes the Portuguese or local market (70.6%) with fewer who would like to serve external markets such as the European (13.1%), global (11.7%) and/or Iberian (4.7%). The question related to markets was developed to use as a pseudo-proxy to better understand what percentage of students would look towards creating growth-oriented companies that serve larger external markets (17.3%).

Perceived Risks & Obstacles in Creating a Business

Students were asked about the risks and obstacles they would anticipate facing if they chose an entrepreneurial career. The main risks, related to owning a business, identified by the respondents were: the possibility of going bankrupt (58.0%); and, the uncertainty of income (50.9%). The possibility of suffering a personal failure is also considered a strong risk (27.2%).

Table 31 - Main Risks in Creating a Business

If you were to set up a business, which are the two risks you would be most afraid of?	**N (%)**
The possibility of going bankrupt	465 (58.0)
The uncertainty of your income	408 (50.9)
The possibility of suffering a personal failure	218 (27.2)
The risk of losing your property	143 (17.8)
Job insecurity	119 (14.8)
The need to devote too much energy or time to it	108 (13.5)
Other	5 (0.6)
NA / NR	0 (0.0)

When asked about the main obstacles to creating a business, half (49.9%) of the respondents point to the bureaucracy of governmental entities while 41.2% considered the unfavorable economic climate and 33.2% the lack of financial support from the State.

Table 32 - Main Obstacles in Creating a Business

In your opinion, what are the main barriers for developing a company in Portugal?	**N (%)**
Bureaucracy of governmental entities	400 (49.9)
Unfavorable economic climate	330 (41.2)
Lack of financial support from the State	266 (33.2)
High amount of money required to create a company	195 (24.3)
Difficulties in obtaining funds from private investors/banks/VCs	162 (20.2)
Rigid labor market	86 (10.7)
Lack of information available	59 (7.4)
Other	11 (1.4)
NA / NR	19 (2.4)

Of the post-secondary students surveyed 77.7% believe that the main barriers for developing a company are related to the financing needed from private entities or the State to start a company (see categorizes in table above).

Entrepreneurship Education

Most students consider the educational system as being the most appropriate way to give people basic knowledge on how to create and manage a business and believe that this kind of knowledge should be taught at the tertiary educational level (57.9%) (Bachelors/*Licenciatura*); the technical secondary school level (32.8%); and, the secondary school level (30.8%) (see table 33).

Young people in Portugal believe even less (14.8%) that the Portuguese educational system develops a state of mind that encourages the creation of new firms.

Table 33 - Educational System Capacity to Promote Entrepreneurial Attitudes

Question	**N (%)**
Our education system develops a state of mind that encourages us to create our own company.	
I believe	113 (14.8)
I do not believe	551 (71.9)
NA / NR	102 (13.3)
In your opinion, where should basic knowledge of how to create and run a business be taught?	
At secondary schools	247 (30.8)
At technical secondary schools	263 (32.8)
Tertiary education: Bachelors/*Licenciatura*	464 (57.9)
Tertiary education: Post-graduate/Masters	88 (11.0)
Seminars/workshops/executive courses	203 (25.3)
Professional Training	234 (29.9)
Elsewhere	4 (0.5)
Nowhere (it cannot be taught)	3 (0.4)
NA / NR	15 (1.9)

Building Social Networks/Partnerships & Immediacy of Returns on Investment

Respondents' perceptions about the utility of building partnerships and of a networking for their career development were assessed. Considering that trust is one of the most important aspects for any relationship, there were some interesting observations related to building partnerships and a contact network. A third social component was incorporated and tested relating to the concept of

social networking in the Portuguese context, "*cunhas*" (Cunhas is best translated as "personal favors" and the English expression of "pulling strings" for the purposes of achieving professional or personal advancement).

Students believe that most people cannot be trusted (21.5% disagree or 46.5% strongly disagree - see table below). The respondents generally agree, however, that for a project to be successful one must build partnerships (49.9% agree or 24.5% strongly agree) and that contacts are important to have success in life (43.8% agree or 41.7% strongly agree).

"*Cunhas*" were also viewed as important (35.9% agree or 26.2% strongly agree) but were seen as distinctive from contacts and partnerships and seen to be of lesser importance.

Table 34 - Networking and Return on Academic & Entrepreneurial Investment

Statement	Strongly disagree	Disagree	Neutral	Agree	Strongly agree
Most people can be trusted	164 (21.5)	354 (46.5)	153 (20.1)	75 (9.8)	16 (2.1)
For a project to be successful one must build partnerships	9 (1.2)	37 (4.8)	150 (19.6)	381 (49.9)	187 (24.5)
Contacts are important to have success in life	8 (1.1)	20 (2.6)	83 (10.9)	334 (43.8)	318 (41.7)
Cunhas are important to have success in life	48 (6.3)	80 (10.4)	162 (21.2)	275 (35.9)	201 (26.2)
After investing in my education I expect immediate return	11 (1.4)	64 (8.3)	58 (7.6)	376 (49.0)	258 (33.6)
After investing in the creation of a company I expect immediate return	31 (4.1)	208 (27.2)	176 (23.0)	268 (35.1)	81 (10.6)

The majority of students expect to have immediate return from their educational investment (49.0% agree and 33.6% strongly agree). Their expectations are more moderate when it comes to the possibility of achieving an immediate return on investment after creating a business (35.1% agree and 10.6% strongly agree).

To further explore and understand the relationship that students have to entrepreneurship and what they expect from their careers; the risks and obstacles that they perceive in creating a business; their beliefs relating to where entrepreneurship should be taught in the educational system; and how they believe partnerships and the immediacy of the returns they expect from their personal and

professional investment a bivariate analysis is necessary to see how the range of variables interrelate so as to be able to draw more profound conclusions in exploring these areas.

Bivariate Analysis

A bivariate analysis builds on the univariate descriptive section by cross-tabulating various aspects of the study. This section focuses mainly on entrepreneurship and future career expectations as well as students ambitions as to what geographic area their future business would serve. The second part of the bivariate analysis uses a consistent set of socio-demographic criteria to analyze the perceived risks and obstacles in creating a business, entrepreneurship education and building social networks/partnerships and immediacy of returns on investment.

Entrepreneurship & Future Career Expectations

To further develop the study, a bivariate analysis was made to test the relationship between entrepreneurship and: 1) future career expectations; 2) perceived risks and obstacles to creating a firm; 3) entrepreneurship education; and, 4) expectations regarding immediacy of return on "investments" (i.e. educational, business and networking).

Students' career expectations and their entrepreneurship intentions were analyzed by cross tabulating several related questions (i.e. "After finishing your course, what do you intend to do?"; "Do you believe it is possible that you will ever own your own business?"; "If you answered yes, how much time do you think you would wait after finishing your course to start your own business?"; "The business you expect to create will serve the _____ market").

It was found that many students consider entrepreneurship as a possible career choice. When cross-tabulating, two questions related to career expectations and entrepreneurship (i.e. "After finishing your course, what do you intend to do?"; "Do you believe it is possible that you will ever own your own business?") a strong relationship was found. The Cramer's V is moderate (.369), for a $p < 0.001$, and null hypothesis of variable independence was rejected relating to entrepreneurship as a career option.

Table 35 - Possibility of Starting a Business & Post-Graduation Work Experience

Possibility of Starting a Business	Work in public service	Work in a multi-national company	Work in a SME	Create my own company	Other	Total
Yes	145 (30.7)	118 (25.0)	76 (16.1)	121 (25.6)	12 (2. 5)	472 (100.0)
No	145 (52.2)	91 (32.7)	33 (11.9)	- (0)	9 (3.2)	278 (100.0)
Total	290 (38.7)	209 (27.9)	109 (14.5)	121 (16.1)	21 (2.8)	750 (100.0)

When the question of the possibility of having one's own business is cross-tabulated with the type of work experience students intend to have, they choose to create their own firm (25.6%; ASR = 9.2; p = 0.00). Even if students intend to own their own business many consider working in the public sector as a possibility for their first work experience (30.7%) even though this association is relatively weak, as indicated by a ASR = -5.8 and a p = 0.00.

Among students that believe in the possibility of having their own business, 16.1% (ASR = 1.6; p = 0.10) plan on working in an SME (see table 35). Among students that do not believe in the possibility that they will ever own their own business, 52.2% want to have their first work experience in the public sector (ASR = 5.8; p = 0.00) or in a multinational company (32.7%; ASR = 2.3; p = 0.02) after graduating.

Table 36 - Post-Graduation Work Experience & Time until Starting their Business

Type of Work Experience After Graduation	**Time Until Students Plan to Start they Own Company**				
	Less than 2 years	2 to 5 years	6 to 10 years	More than 10 years	Total
Work in public service	12 (8.6)	45 (32.1)	53 (37.9)	30 (21.4)	140 (100.0)
Work in a multinational company	11 (9.5)	17 (14.7)	60 (51.7)	28 (24.1)	116 (100.0)
Work in a SME	8 (11.0)	19 (26.0)	35 (47.9)	11 (15.1)	73 (100.0)
Create my own company	37 (31.4)	46 (39.0)	28 (23.7)	7 (5.9)	118 (100.0)
Other	- (0)	1 (8.3)	6 (50.0)	5 (41.7)	12 (100.0)
Total	68 (14.8)	128 (27.9)	182 (39.7)	81 (17.6)	459 (100.0)

Of the students that believe in the possibility of owning their own business, 31.4% will start that business immediately after graduation, 39.0% would like to have 2 to 5 years of work experience or at least 6 to 10 years of work experience (23.7%), before creating their company.

There was a strong association between those who said that they wanted to create their own company after graduating and the timeframes of less than 2 years (31.4%; ASR = 5.9; p = 0.00) and 2 to 5 years (39.0%; ASR = 3.1; p = 0.00).

To get a better understanding of what kind of entrepreneurial endeavors students wanted to create, they were asked, "what type of market (local, Portuguese, Iberian, European and/or Global)" would they like their future business to serve. Although this does not qualify as a direct proxy for "growth-oriented", nor does it directly indicate that the students' aims are to create a firm of large dimension, it does demonstrate an important personal ambition on the part of students that would seemingly aid the further growth and integration of Portugal into the global market. The univariate analysis points out that, those students that wish their companies to serve the European (13.2%) or global (11.7%) markets look to move beyond the smaller internal market of Portugal. As might be expected, the majority of students intend to serve the local (23.4%), Portuguese national (47.0%) markets with the least chosen option being that of the Iberian market (4.8%). The bivariate analysis shows, however, that there is a stronger association between those who express the ambitious intention of "creating my own company" directly after graduating and the intention to serve the global market (17.9%; ASR = 2.4; p = 0.02), compared to those who choose the European market (10.3%; ASR = -1.1; p = 0.00) (see table below).

Table 37 - Post-Graduation Work Experience & Type of Market Firm will Serve

Type of Work Experience After Graduation	**Market Firm will Serve**					
	Local	Portuguese	Iberian	European	Global	Total
Work in public service	47 (32.6)	72 (50.0)	5 (3.5)	13 (9.0)	7 (4.9)	144 (100.0)
Work in a multinational company	10 (8.7)	51 (44.3)	7 (6.1)	30 (26.1)	17 (14.8)	115 (100.0)
Work in a SME	17 (23.3)	38 (52.1)	6 (8.2)	5 (6.8)	7 (9.6)	73 (100.0)
Create my own company	29 (24.8)	51 (43.6)	4 (3.4)	12 (10.3)	21 (17.9)	117 (100.0)
Other	4 (33.3)	5 (41.7)	0 (.0)	1 (8.3)	2 (16.7)	12 (100.0)
Total	107 (23.2)	217 (47.1)	22 (4.8)	61 (13.2)	54 (11.7)	461 (100.0)

Bivariate Analysis Using Socio-demographic Variables

The socio-demographic variables used to analyze the sample included the following factors: Type of Higher Education Institution (*University* or *Polytechnic*); Type of Institution (*Public* / *Private Institute*); *Educational Area* (Engineering; Law; Medicine; etc.); *Location of Institution*; *Permanent Residence*; *Gender*; *Family Income Level*; *University* / *Temporary Residence*; *Employment Status* (having been employed during the past year); *Age*; and *Parental Education* (highest degree achieved by their mother and father).

A student's first work experience after graduating can be extremely important. Using the socio-demographic variables it is possible to characterize the probability of their options and the socio-demographic variables that influence most students' options.

Table 38 - Post-Graduation Work Experience

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df[11])	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	8.781(3)	0.032	0.109	0.032	0.009	0.032
Public / Private Institute	17.628(3)	0.001	0.155	0.001	0.019	0.001
Educational Area	127.041(21)	0.000	0.240	0.000	0.052	0.000
Location of Institution	39.725(18)	0.002	0.134	0.002	0.021	0.001
Permanent Residence	32.553(21)	0.051	0.122	0.051	0.017	0.029
Gender	49.358(3)	0.000	0.259	0.000	0.051	0.000
Family Income	13.100(6)	0.041				
Uni. Residence / Temp.	1.169(3)	0.759	0.040	0.760	0.001	0.759
Employment Status	6.749(6)	0.345	0.095	0.345	0.009	0.427
Age	24.922(12)	0.015				
Parental Education	21.881(9)	0.009				

Among the variables that best predict the type of work experience that a student wishes to have after graduating are *Public/ Private Institute* (χ^2 (3) = 17.628), the *Educational Area* (χ^2 (21) = 127.041), in which they are studying and their *Gender* (χ^2 (3) = 49.358), (all *p*s $\leq$ 0.001).

Considering only four multiple choice career options in the questionnaire (i.e. "Work in public service"; "Work in a multinational company"; "Work in a SME"; and "Create my own company"), it can be determined that those from *Public Institutes* prefer to "Work in a multinational company"

[11] df = degrees of freedom

(ASR = 1.6; p = 0.10) more than "Create my own company" (ASR = -4.1; p = 0.00). Those students from *Private Institutes* show a greater preference for "Create my own company" (ASR = 4.1; p = 0.00) and less for "Work in a multinational company" (ASR = -1.6; p = 0.10).

Taking into account students' *Educational Area* of the study (see table 18), those students who are from Education (ASR = 6.2; p = 0.00) and from Health Sciences and Social Work students (ASR = 5.8; p = 0.00) areas opt to "work at public services". Whereas Arts and Humanities students (ASR = 2.2; p = 0.03) as well as Social Sciences, Business and Law students (ASR = 1.8; p = 0.08) show a greater preference for working in SME. Sciences, Mathematics and Computer Science students would rather work at a multinational company (ASR = 2.0; p = 0.04) as do Industrial, Material and Civil Engineering students (ASR = 6.0; p = 0.00).

Women strongly prefer to "work in public service" (ASR = 6.0; p = 0.00) instead of "Work in a multinational company" (ASR = -3.0; p = 0.00); "Work in a SME" (ASR = -1.9; p = 0.06); or to "create my own company" (ASR = -3.7; p = 0.00). *Men* favor less to "work in public service" (ASR = -6.0; p = 0.00) and would prefer to "Work in a multinational company" (ASR = 3.0; p = 0.00); "Work in a SME" (ASR = 1.9; p = 0.06); or to "create my own company" (ASR = 3.7; p = 0.00).

Table 39 - Possibility of Ever Owning their own Business

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Ro		Sommer's d	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	1.144(1)	0.285	0.039	0.285	0.001	0.285
Public / Private Institute	14.512(1)	0.000	0.138	0.000	0.017	0.000
Educational Area	10.191(7)	0.178	0.116	0.178	0.004	0.191
Location of Institution	13.573(6)	0.035	0.133	0.035	0.007	0.035
Permanent Residence	21.014(8)	0.007	0.166	0.007	0.011	0.004
Gender	7.742(1)	0.005	0.101	0.005	0.008	0.005
Family Income	13.896(2)	0.001				
Uni. Residence / Temp.	0.410(1)	0.522	0.023	0.522	0.000	0.521
Employment Status	0.241(1)	0.623	0.018	0.345	0.000	0.622
Age	9.476(4)	0.050				
Parental Education	21.043(3)	0.000				

Public / Private Institute (χ^2 (1) = 14.512), *Parental Education* (χ^2 (3) = 21.043) and *Family Income* (χ^2 (2) = 13.896), (all *p*s $\leq$ 0.001) are the variables which influence the students' belief in the possibility of having their own business. There is a positive association between the option of believing in owning a business in the future and attending classes at a *Private Institute* (ASR = 3.8; p = 0.00) and a strong negative association with those students who are at a *Public Institution* (ASR = - 3.8; p = 0.00).

Considering students socio-economic background - *Parental Education and Family Income* - students who believe that they will have a business in the future have families with high school or equivalent (ASR = 1.8; p = 0.08) or post-graduate studies (ASR = 2.7; p = 0.00) as education level and a high income level (ASR = 3.0; p = 0.00). Students with parents whose highest educational accomplishment is grade school (ASR = 4.1; p = 0.00) as well as those who come from families with low income (ASR = 2.5; p = 0.02) do not believe in the possibility of owning their own business.

Table 40 - Time until Starting their Business

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Ro		Sommer's d	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	9.377(3)	0.025				
Public / Private Institute	21.296(3)	0.000				
Educational Area	41.201(21)	0.005				
Location of Institution	19.252(18)	0.376				
Permanent Residence	34.224(24)	0.081				
Gender	4.329(3)	0.228				
Family Income	8.679(6)	0.192	0.048	0.301	0.031	0.325
Uni. Residence / Temp.	0.953(3)	0.813				
Employment Status	7.010(3)	0.072				
Age	55.430(12)	0.000	-0.230	0.000	-0.143	0.000
Parental Education	7.954(9)	0.539	0.048	0.310	0.040	0.321

Public or *Private* higher education systems (χ^2 (3) = 21.296; p < 0.001), students' *Age* (χ^2 (12) = 55.430; p<0.001) and *Educational Area* (χ^2 (21) = 41.201; p < 0.05) are good indicators for measuring the amount of time they believe they will take until they create their own business after finishing their studies.

Concerning *Educational Area* (χ^2 (21) = 41.201; p < 0.05) some "tendencies" were found: Students from Social Sciences, Business and Law will invest in a 2-year time period (ASR = 2.5; p = 0.02) after they finish their undergraduate degree but not after 10 years (ASR = -2.8; p = 0.00). Services (excluding the areas of Tourism and Environment Protection) students follow the same pattern, that is to invest 2 years after they finish their course (ASR = 2.1; p = 0.04). Students from Sciences, Mathematics and Computer Science (ASR = 2.8; p = 0.00) and Health Sciences and Social Work (ASR = 3.4; p = 0.00) will invest in their own business 10 years after they finish their graduation.

Considering *Public* or *Private* higher education systems, students from the *Public* system show a preference to create their own business in more than 5 years after they complete their studies:

between 6 and 10 years (ASR = 2.4; p = 0.02); and, in more than 10 years (ASR = 2.0; p = 0.04). They do not considered it suitable to try this within 2 years after finishing their studies (ASR = -4.0; p = 0.00). The *Private* higher education system students have an opposite and symmetrical intention of the *Public* students: they want to invest between 2 to 5 years (ASR = 4.0; p = 0.00) after graduating and do not considered starting their business between 6 and 10 years (ASR = -2.4; p = 0.02) or, after more than 10 years (ASR = -2.0; p = 0.04).

Students, that are less than 26 years old, want to create their company more than 5 years after they finish their studies and tend to choose the option between 6 and 10 years (ASR = - 2.5; p = 0.02) and more than 10 years (ASR = 2.6; p = 0.00).

Those who are between 26 and 30 years prefer to invest 2 to 5 years after they finish their studies (ASR = 2.2; p = 0.02) and are very strongly opposed to doing 10 years after they graduate (ASR = -2.0; p = 0.04). Students with ages between 31 and 35 years old strongly prefer to create their own company up till 2 years after they finish their studies (ASR = 3.8; p = 0.00) as do students between the ages of 36 and 40 (ASR = 4.2; p = 0.00) and those more than 40 years (ASR = 2.9; p = 0.00).

Table 41 - Type of Market the Business will Serve

Socio-demographic Variable	Chi-square Test (χ^2)		Symmetric Correlation		Directional Correlation	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	7.890 (4)	0.096	0.129	0.096	0.012	0.093
Public / Private Institute	0.410 (4)	0.982	0.029	0.982	0.001	0.982
Educational Area	62.864(28)	0.000	0.182	0.000	0.044	0.000
Location of Institution	20.165(24)	0.687	0.103	0.687	0.017	0.662
Permanent Residence	40.953(32)	0.133	0.147	0.133	0.031	0.145
Gender	19.494(4)	0.001	0.203	0.001	0.030	0.001
Family Income	44.524(8)	0.000	0.110	0.017	0.072	0.037
Uni. Residence / Temp.	2.889(4)	0.577	0.079	0.577	0.005	0.576
Employment Status	1.711(4)	0.789	0.060	0.789	0.004	0.743
Age	16.751(16)	0.402	-0.059	0.198	-0.037	0.193
Parental Education	40.170 (12)	0.000	0.230	0.000	0.194	0.000

The variables that are most influential in the choice of the market student future businesses will serve are the *Educational Area* (χ^2 (28) = 62.864; p < 0.001), *Parental Education* (χ^2 (12) = 40.170; p < 0.001), *Family Income* (χ^2 (8) = 44.524; p < 0.001) and their *Gender* (χ^2 (4) = 19.494; p = 0.001).

Considering the *Educational Area*, some tendencies were observed: Arts and Humanities students (ASR = -2.1; p = 0.04) reject local market as do Sciences, Mathematics and Computer Science students (ASR = 1.7; p = 0.08) and Industrial, Material and Civil Engineering students (ASR = -2.8; p = 0.00). Only Education students (ASR = 2.0; p = 0.04) and those in Health Sciences and Social Work (ASR = 3.6; p = 0.00) would choose local markets as preferable for their own business. The global market is the choice of Arts and Humanities students (ASR = 2.3; p = 0.02) as well as Industrial, Material and Civil Engineering students (ASR = 3.0; p = 0.00) who also choose the European market (ASR = 2.0; p = 0.04). These observations are consistent with expectations considering the nature of the work that the different *Educational Areas* prepare students (e.g. Education students who will teach in local schools or start their own school locally and would typically not consider a European or global market).

In analysing *Gender* in reference to the type of market students believe that their business will serve, female students expect to invest in the local market (ASR = 3.1; p = 0.00) but not in the European (ASR = -2.1; p = 0.04) or global markets (ASR = -2.5; p = 0.02). Male students express the symmetric tendency: will invest on the European (ASR = 2.1; p = 0.04) or global markets (ASR = 2.5; p = 0.02) but not in the local market (ASR = -3.1; p = 0.00).

Analysing the influence of the variables, *Family Income* and *Parental Education*, data shows that students who intend to own their own business and come from families with high income level choose the European (ASR = 2.9; p = 0.00) and global (ASR = 3.1; p = 0.00) market and not the local market (ASR = -2.41; p = 0.00) or the Portuguese market (ASR = -2.6; p = 0.00). Whereas Students from medium income families prefer the local market (ASR = 2.6; p = 0.00) and avoid European (ASR = -3.9; p = 0.00) or global (ASR = -4.1; p = 0.00) markets. Those students from low income families and want to have their own business will target the European (ASR = 2.2; p = 0.04) and global (ASR = 2.6; p = 0.00) markets.

Considering *Parental Education,* students that come from parents with a grade school education will choose as a market for their firms, the local (ASR = 2.3; p = 0,02) and national (ASR = 2.1; p = 0.04), not considering the European (ASR = -3.1; p = 0.00) nor the global markets (ASR = -3.4; p = 0.00). Those students with parents that have *Bacharelato* or *Licenciatura*, prefer the global market (ASR = 2.4; p = 0.02) whereas those with parents with post-graduate studies chose the Iberian market (ASR = 1.9; p = 0.0) or European market (ASR = 3.4; p = 0.00) but not the Portuguese market (ASR = -2.0; p = 0.04).

Perceived Risks & Obstacles in Creating a Business

In the development of a business there are several risks and obstacles that an entrepreneur must face. The fear of possibly going Bankrupt was the greatest fear among the students surveyed (see table 31) as shown in more detail in the table below.

Table 42 - The Risk of Possibly Going Bankrupt

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	1.553(1)	0.213	0.044	0.213	0.001	0.213
Public / Private Institute	5.339(1)	0.021	0.082	0.021	0.006	0.021
Educational Area	12.385(7)	0.089	0.124	0.089	0.004	0.089
Location of Institution	36.212(6)	0.000	0.212	0.000	0.017	0.000
Permanent Residence	24.557(8)	0.002	0.175	0.002	0.011	0.002
Gender	1.473(1)	0.225	0.043	0.225	0.001	0.225
Family Income	4.796(2)	0.091				
Uni. Residence / Temp.	6.197(1)	0.013	0.088	0.013	0.006	0.013
Employment Status	1.246(1)	0.264	0.040	0.264	0.002	0.266
Age	8.197(4)	0.085				
Parental Education	10.073(3)	0.018				

The possibility of going bankrupt is the greatest risk noted by respondents with 58.0%. From all the socio-demographic factors evaluated. Only *University / Polytechnic*, *Gender* and *Employment Status* had no influence on the perception of this type of risk (i.e. there was uniformity in the different strata in these factors).

Nevertheless, it is important to note some positive associations namely with *Public / Private Institute* (χ^2 (1) = 5.339; $p < 0.05$), *Location of Institution* (χ^2 (6) = 36.212; $p < 0.001$), *Permanent Residence* (χ^2 (8) = 24.557; $p < 0.05$) and *Uni. Residence / Temp.* (χ^2 (1) = 6.197; $p < 0.05$), and *Parental Education* (χ^2 (3) = 10.073; $p < 0.05$).

Students who are attending classes at *Public* Higher Educational Institutions (ASR = 2.3; p = 0.02), located at region Centro (ASR = 5.1; p = 0.00) are more sensitive to this risk than those who are at *Private* Higher Educational Institutions (ASR = -2.3; p = 0.02) located at Lisbon and Tejo area (ASR = -4.7; p = 0.00).

Those students that have their permanent residence in the North (ASR = 2.7; p = 0.00) and Center (ASR = 2.1; p = 0.04) areas are more sensitive to this risk than those who are from Lisbon and the

Tejo area (ASR = -2.6; p = 0.00) and from Madeira (ASR = -1.9; p = 0.06). The same tendency is found when the variable *University Residence* / *Temporary* is analyzed: those students that are away from their permanent residence are more sensitive to this risk (ASR = 2.5; p = 0.00).

Students with parents with an undergraduate degree level of education (ASR = -2.1; p = 0.04) have less fear of bankruptcy. Students whose parents who have only a grade school level of education are more sensitive to this risk (ASR = 3.1; p = 0.00).

Table 43 - The Risk of Uncertainty of Income

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	3.795(1)	0.051	0.069	0.051	0.003	0.051
Public / Private Institute	0.185(1)	0.667	0.015	0.667	0.000	0.667
Educational Area	4.438(7)	0.728	0.074	0.728	0.002	0.727
Location of Institution	11.513(6)	0.074	0.120	0.074	0.005	0.070
Permanent Residence	5.084(8)	0.749	0.080	0.749	0.002	0.743
Gender	1.055(1)	0.304	0.036	0.304	0.001	0.304
Family Income	0.743(2)	0.690				
Uni. Residence / Temp.	0.000(1)	0.982	0.001	0.982	0.000	0.982
Employment Status	4.818(1)	0.028	0.078	0.028	0.006	0.028
Age	5.746(4)	0.219				
Parental Education	1.150(3)	0.765				

As revealed by the table above, the associations of variables are generally weak which means that "the uncertainty about income" is consensual for many respondents (57.8%) that believe this to be an important risk. Some associations can be found with "*Employment Status*" (χ^2 (1) = 4.818; p < 0.05). Students who had been employed in the previous year are more sensitive to this risk (ASR = 2.2; p = 0.03).

Table 44 - The Risk of Job Insecurity

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	0.312(1)	0.577	0.020	0.577	0.000	0.577
Public / Private Institute	3.268(1)	0.071	0.064	0.071	0.003	0.076
Educational Area	2.890(7)	0.895	0.060	0.895	0.001	0.874
Location of Institution	15.401(6)	0.017	0.139	0.017	0.008	0.012
Permanent Residence	20.394(8)	0.009	0.159	0.009	0.010	0.003
Gender	0.492(1)	0.483	0.025	0.483	0.000	0.484
Family Income	5.651(2)	0.059				
Uni. Residence / Temp.	0.529(1)	0.467	0.026	0.467	0.000	0.465
Employment Status	1.256(1)	0.262	0.040	0.262	0.002	0.251
Age	7.816(4)	0.099				
Parental Education	1.581(3)	0.664				

There is a relevant association between *Location of Institution* (χ^2 (6) = 15.401; p < 0.05), *Permanent Residence* (χ^2 (8) = 20.394; p < 0.05) and job insecurity. Students from the North (ASR = 4.1; p = 0.00) who are attending institutions that are in the North (ASR = 3.7; p = 0.00) are more sensitive to this risk than, for example, those from Lisbon and Tejo area (ASR = -1.8; p = 0.08) and are attending institutions in the Lisbon and Tejo area (ASR = -1.9; p = 0.06).

Table 45 - The Risk of Personal Failure

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	0.090(1)	0.764	0.011	0.764	0.000	0.764
Public / Private Institute	0.880(1)	0.348	0.033	0.348	0.001	0.351
Educational Area	16.757(7)	0.019	0.145	0.019	0.006	0.029
Location of Institution	7.613(6)	0.268	0.097	0.268	0.004	0.230
Permanent Residence	8.079(8)	0.426	0.100	0.426	0.004	0.336
Gender	7.053(1)	0.008	0.094	0.008	0.007	0.008
Family Income	7.603(2)	0.022				
Uni. Residence / Temp.	2.735(1)	0.098	0.059	0.098	0.003	0.099
Employment Status	0.183(1)	0.669	0.015	0.669	0.000	0.667
Age	7.406 (4)	0.116				
Parental Education	8.589(3)	0.035				

The possibility of "suffering a personal failure" is one of the most chosen kinds of risks indicated by the respondents as reflected by 27.2% of the sample.

The factors that have a stronger influence on the perception of this risk are: *Educational Area* (χ^2 (7) = 16.757; p < 0.05), *Gender* (χ^2 (1) = 7.053; p < 0.05), *Family Income* (χ^2 (2) = 7.603; p < 0.05) and *Parental Education* (χ^2 (3) = 8.589; p < 0.05).

Health Sciences and Social Work Students (ASR = 3.7; p = 0.00) reveal high levels of sensitivity to this risk. Female students (ASR = 2.7; p = 0.00) have more sensitivity to this risk than male students (ASR = -2.7; p = 0.00).

Students that have families with high income (ASR = 2.4; p = 0.02) and parents with post-graduate studies (ASR = 2.2; p = 0.03) are more sensitive to the possibility of suffering a personal failure than those students from families with low income (ASR = -1.6; p = 0.10) and with parents with grade school level of education (ASR = -2.3; p = 0.02).

In the opinion of the respondents, the main obstacles to creating a firm are the "Bureaucracy of governmental entities" (49.9%), "Unfavorable economic climate" (41.2%) and "Lack of financial support from the State" (33.2%).

Concerning this last obstacle - "Lack of financial support from the State" - the analysis shows that there is no particular socio-demographic characteristic of respondents that are associated with this obstacle, except with the location of their *Temporary* / *University Residence* (χ^2 (1) = 7.707; p = 0.006). Those who have moved from their permanent residence (not living with their parents), seem to be more sensitive to this obstacle (ASR = 2.8; p = 0.00).

Table 46 - The Obstacle of Governmental Bureaucracy

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	5.436(1)	0.020	0.082	0.020	0.005	0.020
Public / Private Institute	2.466(1)	0.116	0.055	0.116	0.003	0.116
Educational Area	12.138(7)	0.096	0.123	0.096	0.004	0.094
Location of Institution	6.002(6)	0.423	0.087	0.423	0.003	0.408
Permanent Residence	5.794(8)	0.670	0.085	0.670	0.003	0.657
Gender	4.129(1)	0.042	0.072	0.042	0.004	0.042
Family Income	0.206(2)	0.902				
Uni. Residence / Temp.	2.533(1)	0.111	0.057	0.111	0.002	0.111
Employment Status	3.757(1)	0.053	0.069	0.053	0.005	0.052
Age	2.756(4)	0.599				
Parental Education	8.249(3)	0.041				

There is an association with the obstacle of government bureaucracy and the variables, *University / Polytechnic* (χ^2 (1) = 5.436; p < 0.05), *Gender* (χ^2 (1) = 4.129; p < 0.05) and *Parental Education* (χ^2 (3) = 8.249; p < 0.05), when considering an analyzed "maximum" level of significance of 0.05.

The sub-groups that are most susceptible to this type of perceived obstacle include: *Polytechnic* students (ASR = 2.3; p = 0.02); students with parents who have only achieved a grade school level of education (ASR = 1.8; p = 0.07) and, men (ASR = 2.0; p = 0.04).

University students (ASR = -2.3; p = 0.02), women (ASR = -2.0; p = 0.04) and those with parents that have undergraduate degrees (ASR = -1.9; p = 0.06) or post-graduate study levels of education (ASR = -1.8; p = 0.08) are not as sensitive to this obstacle.

Table 47 - The Obstacle of an Unfavorable Economic Climate

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	6.031(1)	0.014	0.087	0.014	0.005	0.014
Public / Private Institute	0.107(1)	0.743	0.012	0.743	0.000	0.744
Educational Area	21.174(7)	0.004	0.162	0.004	0.008	0.003
Location of Institution	11.727(6)	0.068	0.121	0.068	0.006	0.062
Permanent Residence	6.493(8)	0.592	0.090	0.592	0.003	0.430
Gender	2.141(1)	0.143	0.052	0.143	0.002	0.143
Family Income	2.389(2)	0.303				
Uni. Residence / Temp.	1.967(1)	0.161	0.050	0.161	0.002	0.160
Employment Status	0.053(1)	0.819	0.008	0.819	0.000	0.819
Age	0.835(4)	0.934				
Parental Education	1.178(3)	0.758				

University / Polytechnic (χ^2 (1) = 6.031; $p < 0.05$) and *Educational Area* (χ^2 (7) = 21.174; $p < 0.05$) are the socio-demographic variables that have some influence on the perception of this particular obstacle.

University students (ASR = 2.5; p = 0.02) and those that attend Social Sciences, Business and Law courses (ASR = 3.6; p = 0.00) are more sensitive to this obstacle. *Polytechnic* students (ASR = -2.5; p = 0.02), whose *Educational Area* are Education and Industrial, Material and Civil Engineering (ASR = -2.1; p = 0.02) are not as sensitive to an unfavourable economic climate.

Entrepreneurship Education

Students believe that the "basic knowledge of how to create and run a business" should be taught at the tertiary level (*Licenciatura*/bachelors) (57.9%), technical secondary schools (32.8%) and secondary schools (30.8%).

Table 48 - Entrepreneurship Education at Secondary School

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	3.074(1)	0.080	0.062	0.080	0.003	0.080
Public / Private Institute	0.963(1)	0.326	0.035	0.326	0.001	0.329
Educational Area	5.064(7)	0.652	0.079	0.652	0.002	0.664
Location of Institution	9.218(6)	0.162	0.107	0.162	0.004	0.191
Permanent Residence	7.766(8)	0.457	0.098	0.457	0.003	0.436
Gender	0.111(1)	0.739	0.012	0.739	0.000	0.739

Family Income	2.133(2)	0.344				
Uni. Residence / Temp.	0.667(1)	0.414	0.029	0.414	0.001	0.415
Employment Status	0.340(1)	0.560	0.021	0.560	0.000	0.562
Age	7.093(4)	0.131				
Parental Education	8.401(3)	0.038				

When associated with all the socio-demographic variables, a specific association can be found with *Parental Education* (χ^2 (3) = 8.401; p < 0.05). Students whose parents have only a grade school education level (ASR = 2.7; p = 0.00) think that secondary schools are the appropriated location to teach how to create a business.

Table 49 - Entrepreneurship Education at Undergraduate Programs

Socio-demographic Variable	**Chi-square Test (χ^2)**		**Cramer's V**		**Uncertainty Coefficient**	
	Value (df)	**P-Value**	**Value**	**P-Value**	**Value**	**P-Value**
University / Polytechnic	0.012(1)	0.911	0.004	0.911	0.000	0.911
Public / Private Institute	1.664(1)	0.197	0.046	0.197	0.002	0.198
Educational Area	15.268(7)	0.033	0.138	0.033	0.005	0.033
Location of Institution	9.507(6)	0.147	0.109	0.147	0.004	0.147
Permanent Residence	8.625(8)	0.375	0.104	0.375	0.004	0.385
Gender	3.569(1)	0.059	0.067	0.059	0.003	0.058
Family Income	1.575(2)	0.455				
Uni. Residence / Temp.	4.445(1)	0.035	0.075	0.035	0.004	0.035
Employment Status	1.323(1)	0.250	0.041	0.250	0.002	0.252
Age	18.610(4)	0.001				
Parental Education	0.383(3)	0.944				

For those respondents, some positive associations exist between the following socio-demographic variables: *Educational Area* (χ^2 (7) = 15.268; p < 0.05); *University Residence / Temporary* (χ^2 (1) = 4.445; p < 0.05); and *Age* (χ^2 (4) = 18.610; p < 0.05). Agriculture, Tourism and Environment Sciences students (ASR = 1.7; p = 0.08); those younger than 26 years (ASR = 1.7; p = 0.08); and especially those "non-traditional" students between 36 and 40 (ASR = 1.9; p = 0.06), agree that this knowledge should be taught at the bachelors/*Licenciatura* level. Students from Science, Mathematics and Computer Science (ASR = -1.9; p = 0.06) and Health Sciences and Social Work; (ASR = -2.8; p = 0.00); and those between 30 and 35 years of age (ASR = -3.5; p = 0.00); older than 40 years old (ASR = -1.7; p = 0.08), and those students who come from the Alentejo area (ASR = -1.6; p = 0.1), disagree.

When asked, "As a student, I believe that our education system develops a state of mind that encourages us to create our own company", 83.0% answered "no" and 17.2% "yes". There were

13.2% of students who did not know how to answer the question "As a student, I believe that our education system develops a state of mind that encourages us to create our own company".

Table 50 - Educational System Encouraging Entrepreneurship

Socio-demographic Variable	Chi-square Test (χ^2)		Cramer's V		Uncertainty Coefficient	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	3.939(1)	0.047	0.077	0.047	0.004	0.047
Public / Private Institute	0.336(1)	0.562	0.022	0.562	0.000	0.565
Educational Area	9.012(7)	0.252	0.116	0.252	0.006	0.063
Location of Institution	7.531(6)	0.275	0.106	0.275	0.005	0.182
Permanent Residence	17.552(8)	0.025	0.163	0.025	0.009	0.035
Gender	5.988(1)	0.014	0.095	0.014	0.007	0.015
Family Income	0.641(2)	0.726				
Uni. Residence / Temp.	0.154(1)	0.694	0.015	0.694	0.000	0.695
Employment Status	0.028(1)	0.868	0.006	0.868	0.000	0.867
Age	5.668(4)	0.225				
Parental Education	1.448(3)	0.694				

Some association was found with, *Gender* (χ^2 (1) = 5.988; p < 0.05)*, University / Polytechnic* (χ^2 (1) = 3.939; p < 0.05), and *Permanent Residence* (χ^2 (8) = 17.552; p < 0.05) and beliefs related to entrepreneurship education. Students that attend *University* (ASR = -2.0; p = 0.04) as well as female (ASR = -2.4; p = 0.02) students tend to disagree that the education system develops a state of mind that encourage them to create their own company while the opposite opinion is shared by *Polytechnic* (ASR = 2.0; p = 0.04) and male (ASR = 2.4; p = 0.02) students.

Considering the Chi square test values related to the variable *Permanent Residence*, the null hypothesis of variables independence is rejected. But the analysis of the test outputs showed that 50% of the cells had expected values under (5), so, it was decided that would be considered as not having an association.

Building Social Networks/Partnerships & Immediacy of Returns on Investment

In the univariate analysis (see table 34), it was pointed out that the statement, "Contacts are important to have success in life" had a very high level of agreement (agree (43.8%) or strongly agree (41.7%)). In addition, there was a high level of consensus that (agree (49.0%) or strongly agree (33.6%)) "After investing in my education I expect immediate return" - and "*Cunhas* are important to have success in life" - Agree (35.9%) or strongly agree (26.2%). "Most people can be

trusted" is the question which reached higher levels of disagreement: Strongly disagree (21.5%) and disagree (46.5%).

Table 51 - Attitudes about Networking: Most People can be Trusted

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Rho		Sommer's D	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	3.107(4)	0.540				
Public / Private Institute	10.528(4)	0.032				
Educational Area	35.858(28)	0.146				
Location of Institution	21.822(20)	0.350				
Permanent Residence	27.668(32)	0.686				
Gender	21.797(4)	0.000				
Family Income	2.789(8)	0.947	-0.007	0.868	-0.004	0.873
Uni. Residence / Temp.	2.575(4)	0.631				
Employment Status	7.076(4)	0.132				
Age	17.772(16)	0.337	-0.015	0.699	-0.010	0.700
Parental Education	4.910(12)	0.961	0.013	0.756	0.011	0.744

The respondents' opinion about trusting others is influenced by the socio-demographic variables *Public / Private Institute* (χ^2 (4) = 10.528; $p < 0.05$), and *Gender* (χ^2 (4) = 21.797; $p < 0.001$).

Students from *private institutes* are neutral on the subject of trust (ASR = 2.6; p = 0.00) while the *polytechnic* students tend to trust others (they "agree"; ASR = 2.1; p = 0.04). Most female students tend to disagree (ASR =2.8; p = 0.00) or strongly disagree (ASR = 1.6; p = 0.1) about trusting others while male students believe the opposite (agree; ASR = 2.6; p = 0.00 or strongly agree; ASR = 2.2; p = 0.02).

Table 52 - Attitudes about Networking: Contacts are Important for Success

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Rho		Sommer's D	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	1.796(4)	0.773				
Public / Private Institute	3.005(4)	0.557				
Educational Area	30.682(28)	0.331				
Location of Institution	18.776(20)	0.536				
Permanent Residence	29.015(32)	0.618				
Gender	4.656(4)	0.324				
Family Income	4.464(8)	0.813	-0.011	0.775	-0.008	0.761
Uni. Residence / Temp.	4.356(4)	0.360				
Employment Status	1.889(4)	0.756				
Age	14.582(16)	0.555	-0.074	0.062	-0.048	0.063
Parental Education	17.309(12)	0.138	0.041	0.308	0.037	0.295

Respondents opinions to the question, "Contacts are important to have success in life" are not correlated with any one socio-demographic variables.

Table 53 - Attitudes about Networking: *Cunhas* are Important for Success

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Rho		Sommer's D	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	8.748(4)	0.068				
Public / Private Institute	6.388(4)	0.172				
Educational Area	35.430(28)	0.158				
Location of Institution	28.113(20)	0.107				
Permanent Residence	26.972(32)	0.719				
Gender	10.742(4)	0.030				
Family Income	6.370(8)	0.606	-0.048	0.227	-0.028	0.221
Uni. Residence / Temp.	6.553(4)	0.161				
Employment Status	1.799(4)	0.773				
Age	18.300(16)	0.307	-0.037	0.349	-0.021	0.363
Parental Education	5.286(12)	0.948	0.049	0.224	0.039	0.226

Gender (χ^2 (4) = 10.742; $p < 0.05$) is the socio-demographic factor that seems to most influence respondents' opinions. Female students "agree" (ASR = 2.4; p = 0.02) regarding "*Cunhas* are important for success" and male students "strongly agree" (ASR = 2.8; p = 0.00) about their importance.

Table 54 - Attitudes about Networking: Building Partnerships needed for Success

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Rho		Sommer's D	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	4.348(4)	0.361				
Public / Private Institute	12.591(4)	0.013				
Educational Area	30.328(28)	0.348				
Location of Institution	12.317(20)	0.905				
Permanent Residence	23.282(32)	0.869				
Gender	0.929(4)	0.920				
Family Income	20.853(8)	0.008	-0.091	0.021	-0.060	0.026
Uni. Residence / Temp.	4.361(4)	0.359				
Employment Status	7.102(4)	0.131				
Age	18.300(16)	0.307	-0.037	0.349	-0.021	0.363
Parental Education	5.286(12)	0.948	0.049	0.224	0.039	0.226

Public / Private Institute (χ^2 (4) = 12.591; $p < 0.05$) and *Family Income* (χ^2 (8) = 20.853; $p < 0.05$) appear to influence students' opinions on this subject. Students from *Public Institutes* agree (ASR = 1.9; p = 0.06) that "For a project to be successful one must build partnerships" while those from *Private Institutes* strongly disagree (ASR = 2.6; p = 0.00) or are neutral (ASR = 1.9; p = 0.06). The analysis of the correlation coefficients, which is negative, indicated that respondents who come

from low income families demonstrated the greatest propensity to build partnerships in developing their own business. In fact, students with families with high level income, strongly disagree with the statement, "For a project to be successful one must build partnerships" (ASR = 2.0; p = 0.04) while those who come from a background of medium income are neutral (ASR = 2.2; p = 0.02) and low income strongly agree (ASR = 3.7; p = 0.00).

Table 55 - Expected Immediacy of Entrepreneurial Return on Investment

Socio-demographic Variable	Chi-square Test (χ^2)		Spearman's Rho		Sommer's D	
	Value (df)	P-Value	Value	P-Value	Value	P-Value
University / Polytechnic	8.452(4)	0.076				
Public / Private Institute	7.925(4)	0.094				
Educational Area	28.262(28)	0.451				
Location of Institution	21.384(20)	0.375				
Permanent Residence	23.282(32)	0.869				
Gender	10.070(4)	0.039				
Family Income	11.217(8)	0.190	0.006	0.878	0.004	0.876
Uni. Residence / Temp.	1.880(4)	0.758				
Employment Status	6.421(4)	0.170				
Age	16.521(16)	0.417	0.039	0.326	0.022	0.351
Parental Education	13.364(12)	0.343	0.018	0.657	0.015	0.647

Gender (χ^2 (4) = 10.070; $p < 0.05$) is the socio-demographic variable that seems to influence respondent opinions when it comes to expected immediacy of returns on their own business. Women also show a tendency to expect more immediate returns (ASR = 1.9; p = 0.06) after creating a company, while men are neutral (ASR = 2.1; p = 0.04) or have little expectation of immediate returns (ASR = 1.8; p = 0.08).

4.3 Findings from the 2005/2006 Professors Survey

A total of 28 entrepreneurship courses were found to have been taught in Portugal during the academic year of 2005/2006. These courses represent the total "universe" of this study and the area as far as it was known (see table 56). In all, 21 institutions of higher education are represented in this study. Of the 85 total universities and polytechnic schools in Portugal this study includes the majority of those which are considered to be the most prestigious in the country. The study contains data and analysis of 26 courses representing a 92.9% response rate. These 26 courses are categorized in tables 57 and 58 by "undergraduate" (21) and "graduate" (5) courses respectively. Tables 57 and 58 also show the diversity of titles used in these courses as referenced in the research methods and strategy chapter (see section 3.5 & 3.7).

Table 56 - Respondent Profile

Total Universe of Courses	28
Total Courses Analyzed (Sample)	26
Total Participating Universities/Institutes	21
Total Participating Professors	22

Table 57 - Undergraduate Course Titles in Portugal

- *Empreendedorismo* (10) Entrepreneurship
- *Criação de Empresas* (2) Enterprise Creation
- *Gestão de Empresas* (2) Enterprise Management
- *Avaliação de Projectos* (1) Project Evaluation
- *Criação e Gestão de Empresas* (1) Enterprise Creation and Management
- *Empreendedorismo de Base Tecnologica* (1) High-Tech Entrepreneurship
- *Empreendedorismo e Criação de Empresas* (1) Entrepreneurship and Firm Creation
- *Empreendedorismo e Criação de Novos Negócios* (1) Entrepreneurship and New Business Creation
- *Empreendedorismo e Organizações* (1) Entrepreneurship and Organizations
- *Empresas em Laboratório* (1) Enterprises in the Laboratory
- *Iniciativa Empresarial* (1) Entrepreneurial Initiative
- *Projecto Profissional* (1) Professional Project
- *Teoria e Prática do Empreendedorismo* (1) Theory and Practice of Entrepreneurship

Table 58 - Graduate Course Titles in Portugal

- *Empreendedorismo* (2) Entrepreneurship
- *Entrepreneurship* (1)
- *Entrepreneurship and New Venture Creation* (1)
- *Empreendedorismo e Criação de Empresas* (1)
- *Projecto de Negócio* (1) Business Project

Respondents indicated that in 90.5% of the cases the management department or business school in their university was responsible for entrepreneurship courses. While seven universities have an entrepreneurship center, only in one case is such a center responsible for entrepreneurship education.

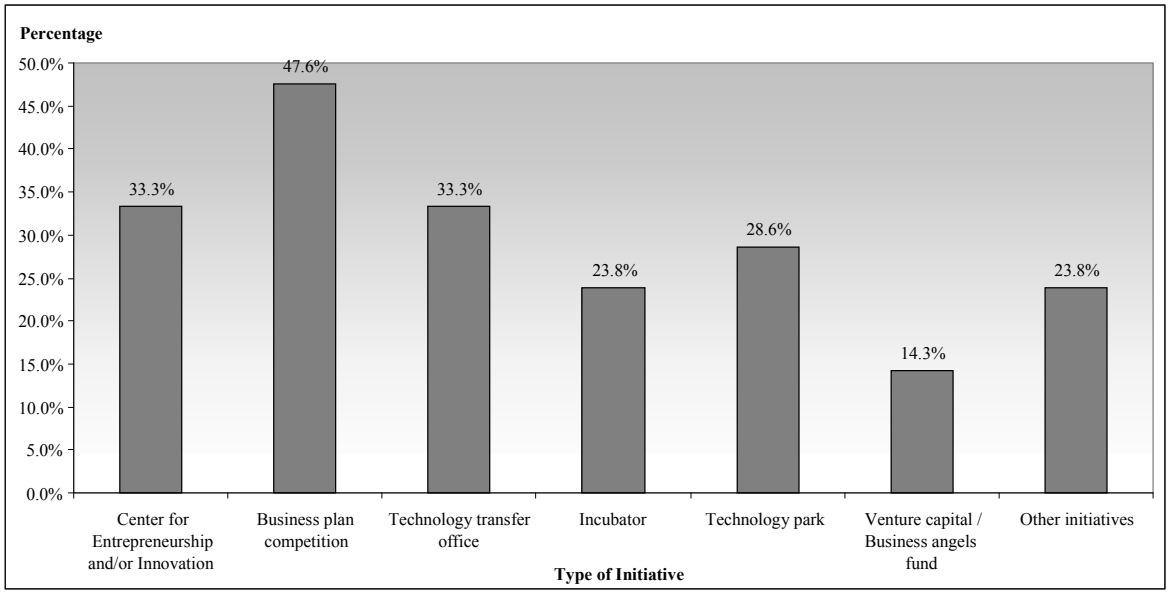
A total of 22 professors answered the questionnaire. The primary teaching areas of these professors are: entrepreneurship (29.6%), management (14.8%), marketing (14.8%) and finance (14.8%) with other areas representing a smaller proportion, such as strategy (7.4%) and economics (3.7%). Thirty-two percent of the respondents indicated their primary area of research is entrepreneurship. Other areas in which these professors do research include strategy (12%) and marketing (12%).

From the entrepreneurship courses represented in this study 73.1% are taught by one primary faculty member. Fifty-five percent of professors surveyed have had the "real life" experience of founding a company at some point during their careers, while 31.8% have no experience starting or managing a business. Fifty percent of them have contributed to the development of the subject by publishing works (i.e. books; scholarly articles; and book chapters). Only one professor who teaches entrepreneurship is a *Professor Catedrático*. Seventy-seven percent are *Professor Auxiliar* or below. This further indicates that entrepreneurship education is a developing area with "up-and-coming", and "young" professors.

Since 2002, there has been a sharp increase in the number of new entrepreneurship courses offered at Portuguese universities. Of the 21 universities that responded to the survey, 63.2% started offering education in entrepreneurship during 2002 or later. Seventy-one percent of the universities have or plan to have one or more degrees in which entrepreneurship is a required course. These degrees are mostly in the management (46.2%), engineering (19.2%) and computer science (11.5%) area.

Educational services provided by universities can be supported by other initiatives (see figure 12). Forty-eight percent of the universities have organized business plan competitions in the past, while a center for entrepreneurship and/or innovation and a technology transfer office have been developed in 33.3% of the universities.

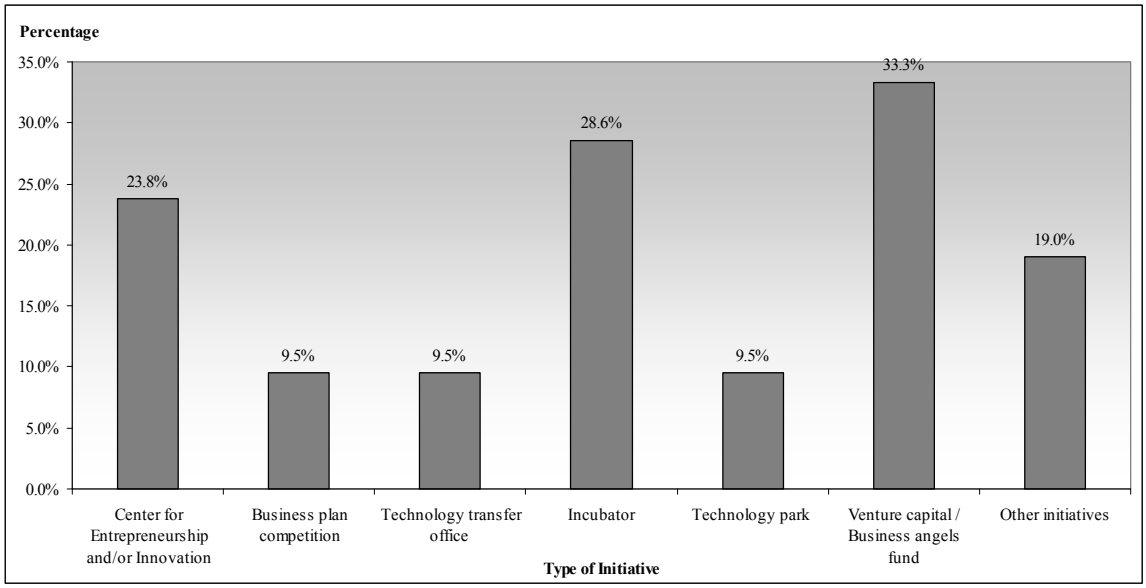
Figure 12 - Promotion Initiatives Developed at Portuguese Universities



Many universities in Portugal intend to develop initiatives that promote entrepreneurship and innovation (see figure 13). Venture capital / business angel funds are initiatives that 33.3% of the respondents' universities intend to develop. Twenty-nine percent intend to start an incubator and 23.8% intend to develop a center for entrepreneurship and innovation. Because of the high amount of universities that already have developed business plan competitions, the intention in this category is relatively low.

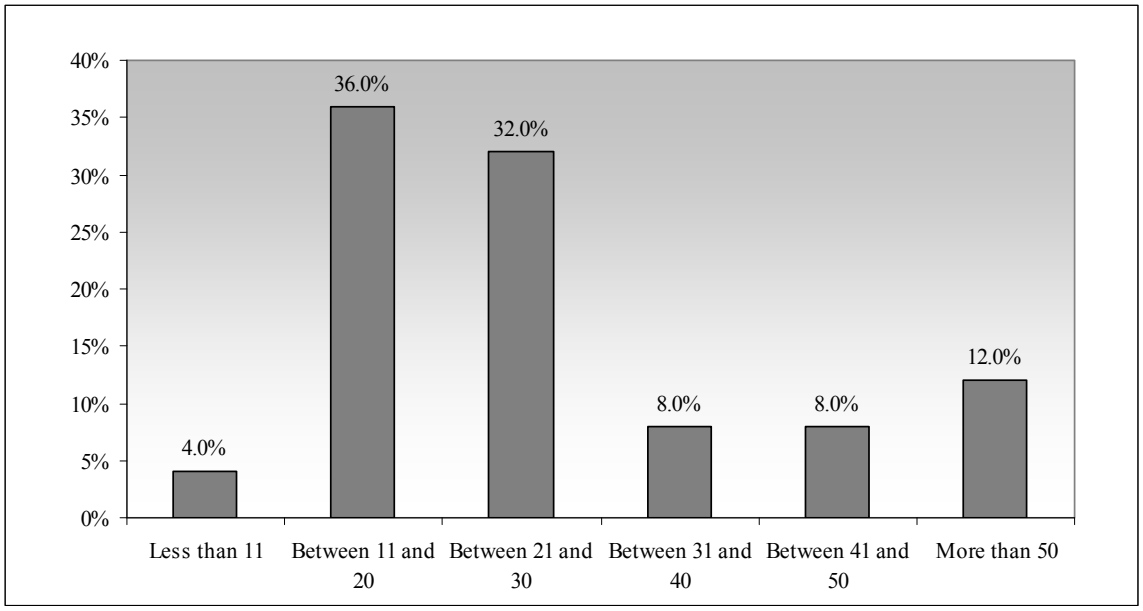
When respondents were asked if the functions and activities of an entrepreneurship center were clearly defined in the Portuguese context, 90% of the professors thought that this was not the case. This further demonstrates the assertion of the researchers that there is a necessity for the growth of knowledge and expertise in this area at Portuguese universities.

Figure 13 - Intention to Develop Promotion Initiatives at Portuguese Universities



Twelve percent of the courses are taught in English. Figure 14 shows the average class-size of Portuguese entrepreneurship courses. Seventy-two percent of the courses are taught in classes with 30 or less students.

Figure 14 - Average Entrepreneurship Class Size in Portugal (2005/2006)



Entrepreneurship professors frequently or very frequently use "business plan creation" (91.3%), "lectures" (73.9%) and market feasibility studies (73.9%) as pedagogical instruments. Activities such as "role-playing" (60.9%), "computer simulations" (60.9%) and "internships" (56.5%), were in many cases rarely or never used in the courses.

Almost all entrepreneurship courses teach "opportunity identification" and "opportunity assessment" (92%). Subjects such as, "internationalization" (38%) "competences in knowledge transmission" (35%), "patents registration" (27%) and "processes optimization" (19%) are all issues that the Portuguese government mentions as priorities for businesses to improve (Plano Tecnológico, 2005). However, they are not approached in very many courses. Bankruptcy control and prevention" (4%) is something that only one course offers to its students. In a country where "failure" is rarely accepted as a positive learning experience, perhaps teaching and discussing the subject of bankruptcy control and prevention could contribute to changing the societal bias against risk-taking (Hofstede, 1994) and the stigma of failure.

Table 59 - Areas of Curricular Focus in Portuguese Entrepreneurship Courses

	Number of Answers	Percentage
Opportunity identification	24	92%
Opportunity assessment	24	92%
Business plan development	22	85%
Market analysis	20	77%
Company creation and registry	19	73%
Private financing / Venture Capital	19	73%
Public financing in the creation of companies	17	65%
Financial Management	16	62%
Networking	15	58%
Marketing	14	54%
Evaluation of initiatives/projects of entrepreneurship fostering	13	50%
Intrapreneurship	12	46%
Production processes	11	42%
Internationalization	10	38%
Competences in knowledge transmission	9	35%
Patents registration	7	27%
Process optimization	5	19%
Other	5	19%
Bankruptcy control and prevention	1	4%

According to 92.3% of the professors, the students attending their courses have a positive opinion of the courses. On the other hand, students not attending the courses are thought to hold a favorable opinion in only 43.4% of the cases while 56.5% held a neutral opinion of them. The university administration had a favorable opinion in 80% of the cases. It is notable that the respondents feel that neither students, nor professors nor the university administration have unfavorable opinions of their courses.

These numbers seem to indicate that there is a need to better "market" entrepreneurship programs to students who are not currently enrolled in these courses in order to positively influence student perceptions towards them. The results of the survey show that only 42.3% of respondents developed activities to promote or communicate their discipline.

The reading material most often used is academic in character (see table 60) with books written by academics (66.7%), course manuals (66.7%) and academic journal articles (50%) being used frequently or very frequently by the respondents. The majority of the reading material (54.8%)

originates from the US. Twenty-nine percent comes from Portugal, while material from the UK accounts for 9.7%.

Table 60 - Frequency of Use of Reading Materials in Portuguese Courses

Reading Materials	Frequency				
	Very Frequently	Frequently	Usually	Occasionally	Never
Academic journal articles	5	8	5	5	3
Books written by academics	5	11	3	3	2
Books written by entrepreneurs	3	7	2	11	2
Books written by the course professor	2	2	1	4	12
Course manuals	7	9	4	0	4
Magazines and newspapers	4	6	5	10	1
Multimedia	3	7	3	6	3
Other	2	1	1	0	6

Entrepreneurship students are required to complete web-based assignments in the majority of courses, (i.e.72%). Despite this fact, half of the universities surveyed still do not offer information on the Web regarding entrepreneurship, new venture creation, or small business management to either students or entrepreneurs. None of the participating universities offer distance learning entrepreneurship courses over the Internet. Seventy-five percent (75%) of the universities included in this study do not present online technical and management assistance to entrepreneurs. The possibility of offering this type of information could be part of a greater link that, in the opinion of this researcher, needs to be forged between the theory taught in Portuguese entrepreneurship courses and the actual needs of entrepreneurs in the country.

When the professors were asked in which way they differentiated their course curricula from those of their peers who teach entrepreneurship, they focused on the fact that they give practical knowledge and specialize their course in specific areas (see table 61). Some courses are differentiated through their focus on business creation, the design of the course or looking to change student mindsets.

Table 61 - Entrepreneurship Course Differentiation in Portugal

Categories (times mentioned)	Example of Quotes
Practical Knowledge (4)	"essentially practical"
	"practical application"
	"a very practical program"
Specialization (4)	"this course exists only in this university"
	"relationship between knowledge society and entrepreneurship"
	"technological business ideas"
	"aimed at educating teachers in the entrepreneurship area"
Business Creation (3)	"the creation and analysis of businesses by students"
	"create their own business plans in all aspects"
	"the students actually create businesses"
Course Design (3)	"emphasis on the process"
	"former students that participate as mentors to the students"
	"taking an individual path"
Mindset (1)	"aimed at changing mentalities and mindsets"

Many times, tracking alumni careers is a way of measuring a course's or university's success. Portuguese universities are only now developing alumni associations and centers. The universities that offer entrepreneurship courses are tracking their alumni that started businesses in 33% of the cases.

Professors also addressed future trends in the area of entrepreneurship education that they expected to be implemented in Portugal over the next five years (see table 62). Respondents predict that the importance of entrepreneurship education will increase in the future. According to them, entrepreneurship courses will not only be taught to all university students, but they will also be extended to primary and secondary school students.

A content analysis of the open-ended questions in the survey was carried out considering the procedures explained in Chapter III: Research Strategy and Methods, and used the categories presented in table 62. It revealed that the Professors expect that the content of entrepreneurship education will go through a substantial transformation during the next five years. Professors anticipate that courses will see a shift away from theoretical content to a more practical approach. The target audience will increasingly be multidisciplinary with more cooperation between people from different backgrounds. The respondents felt that the private sector will have a bigger role in entrepreneurship education and that support services for entrepreneurs will continue to grow. They

also expect to see educational offerings incorporating better use of technology with computer simulation as part of course pedagogy as well as using e-learning to reach other potential students.

Table 62 - Future Trends in Entrepreneurship Education in Portugal

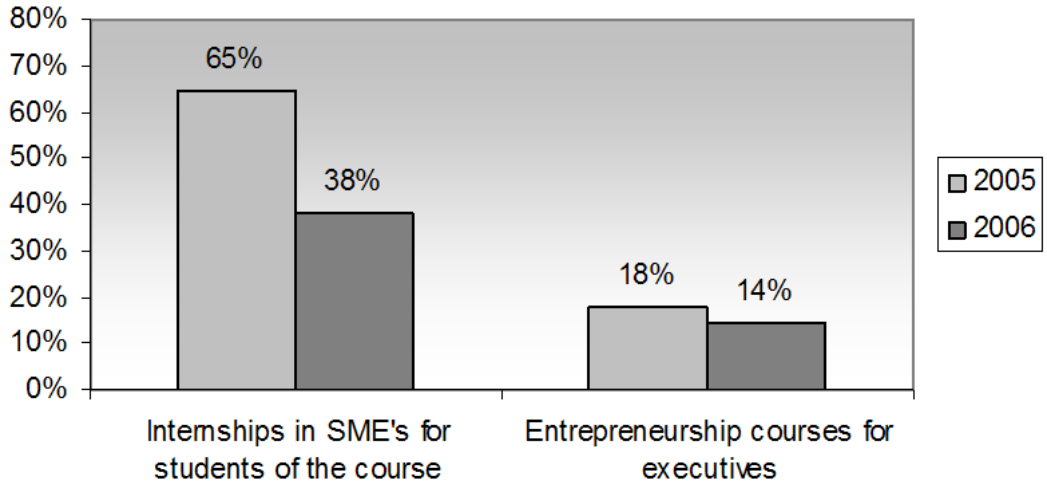
Categories	Analysis (times mentioned)	Example of Quotes
Increased importance	In universities (9)	"bigger awareness of the subject among university responsible"
		"entrepreneurship a required course for management students"
		"entrepreneurship a mandatory course"
		"increase in courses"
		"dissemination of discipline in higher education"
	In primary and secondary education (3)	"extension of entrepreneurship to the secondary level programs"
		"extension to the first school years"
		"activities that promote entrepreneurship from the primary school on"
Content	Shift from theory to practice (4)	"creation of junior companies in universities"
		"the creation of actual businesses at schools"
		"all management students required to make a business plan"
		"tendency to go from theory to practice"
Use of Support Technologies	Computer simulation (1)	"broader use of management simulators"
	Distance learning (1)	"education at a distance"
Other	Involvement of private sector (3)	"risk capital invests in student companies"
		"bigger involvement of companies"
	Multidisciplinary (3)	"multidisciplinary target groups"
		"bringing people from different backgrounds together"
	Support Services (2)	"appearance of centers, incubators, pre-incubators"
		"support services to entrepreneurs"

Complete educational programs such as certificate-granting post-graduate and masters programs are another area where universities are investing. During the 2005/2006 academic year six post-graduate certificate-granting programs and one masters program were offered.

4.4 Comparison between 2004/2005 & 2005/2006 Professor Surveys

The results of the 2004/2005 and the 2005/2006 Professor surveys indicated general consistency in the responses given as well as general views of the development of this area. This is so because the two studies were completed in close proximity of each other and used similar samples. There were a few notable differences. Among these in that there was over this period of time a slight positive evolution of entrepreneurship education in Portugal (i.e. several new courses in academic year 2005/2006 from 2004/2005). Variances between the two surveys are best demonstrated in the differences as depicted in the various figures presented below.

Figure 15 - Differences in Responses between 2004/2005 & 2005/2006 Surveys



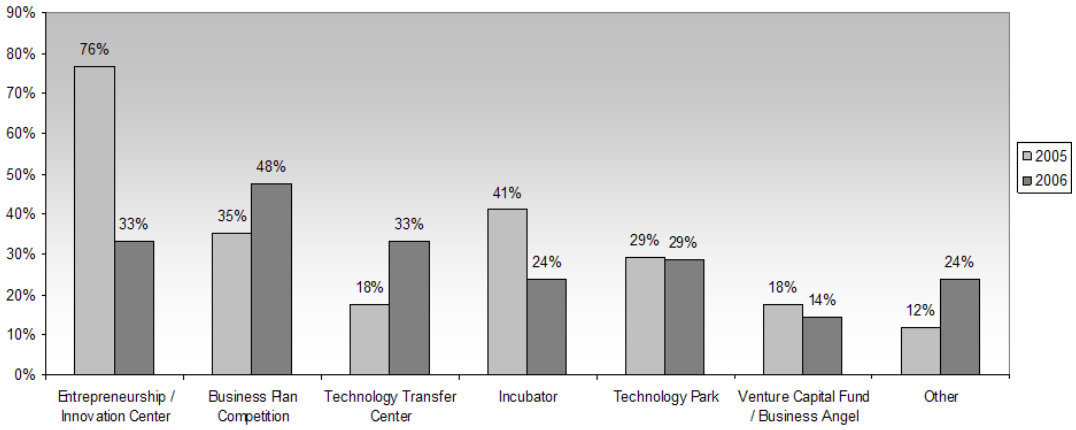
In an effort to improve the survey instrument, several questions were changed in the questionnaire (see section 3.7 for full details related to changes between the 2004/2005 and 2005/2006 surveys). An example of these changes can be seen through the use of more specific wording in the "yes" or "no" answers to the following question: "Does your institution offer any of the following:" "Internship opportunities with small local companies?" (2004/2005) versus "Internships in SMEs for students that attend your course?" (2005/2006). This specificity between more generally offering internship and internships related to the entrepreneurship courses explains the differences in the answers above (see Method and Research Strategy for full discussion of changes made).

Other questions that remained consistent such as, "Executive development courses in Entrepreneurship?" demonstrate a percentage change that is representative of having a larger

sample size in the 2005/2006 survey (i.e. the same number of institutions still offering executive development in this area but with more institutions in the 2005/2006 sample).

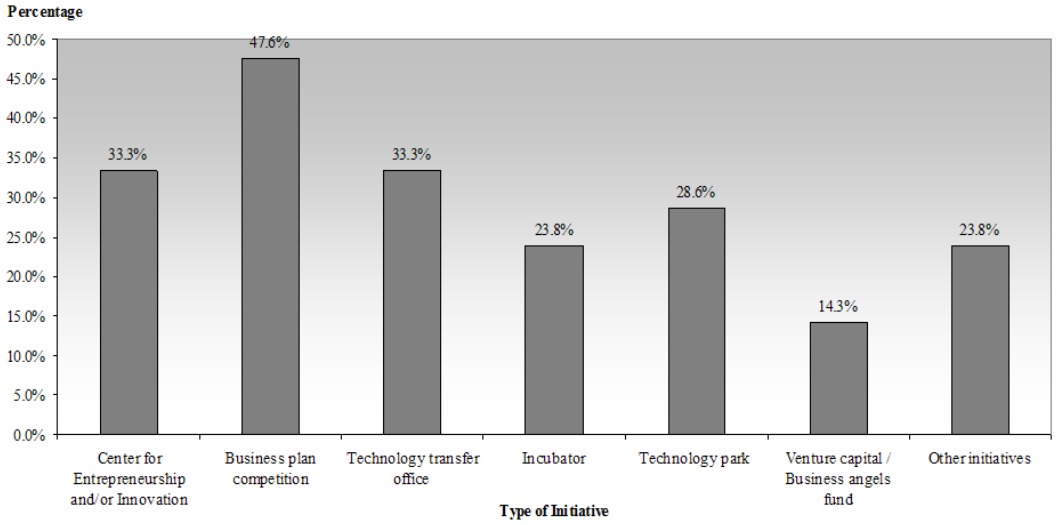
Other questions were split into two to make them able to test more specific aspects of specific areas. The question related to parallel support initiatives below represent these type of changes – having the question in the 2005/2006 survey split into what universities already had and what they intend to do in the future.

Figure 16 - Intention to Develop Promotion Initiatives at Portuguese Universities



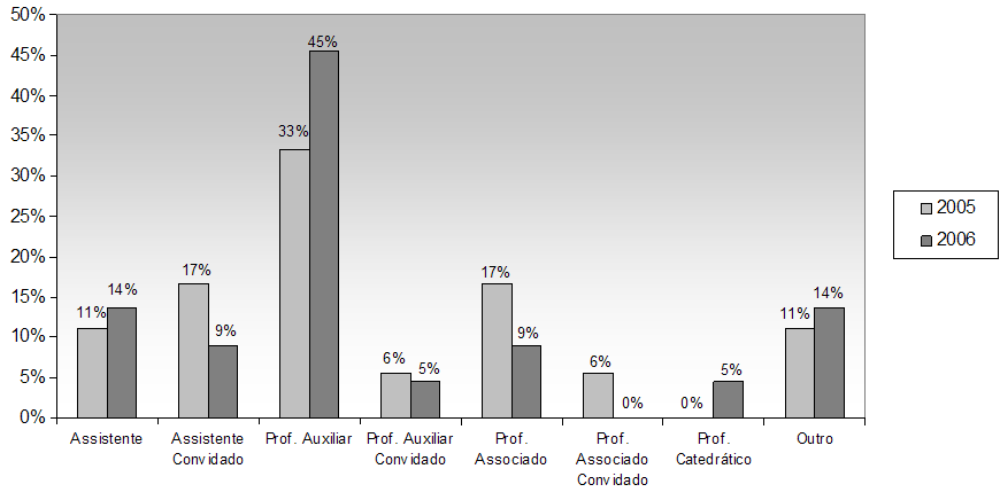
The figure below demonstrates what was already developed at Portuguese universities by the 2005/2006 academic year. By combining the results between developed initiatives and intended initiatives one can observe that for the most part, a positive evolution resulted with an increase in many areas of entrepreneurial support. The option "other" in 2005/2006 had more responses as professors shared several different inatitives related to the area of entrepreneurship education but no pattern was dissernable. The development business plan competitions has been extremely positive for the sector and more recently competitions that have a national reach have been developed by COTEC Portugal, Universidade Nova and PoliEmpreende (national Polytechnic Business Plan Competition which has participation from almost all Polytechnic Institutes in Portugal). Likewise, technology transfer offices have gained ground with technology commericialization which hold great prominence in the MIT-Portugal and CMU-Portugal Programs.

Figure 17 - Promotion Initiative Developed at Portuguese Universities 2005/2006



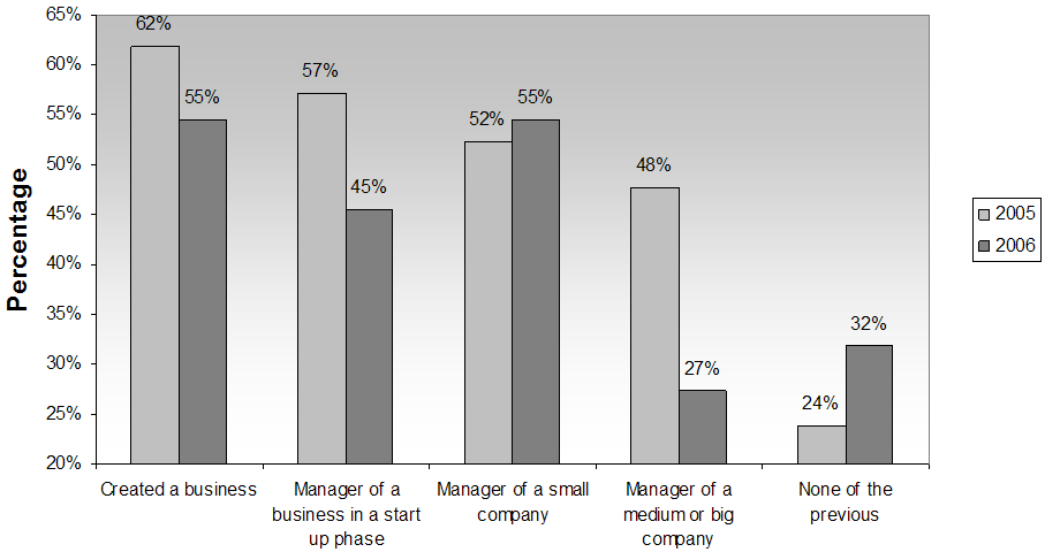
Other questions that remained the same indicate continuing trends as well. It was noted in both surveys that the professors in charge of teaching entrepreneurship courses tend to be at a more junior academic rank. It appears most likely that as this area matures and expands will the seniority of the faculty that teaches it. This phenomenon has been observed in other countries (Kent, 1990; Kuratko, 2003; Solomon, 2005; Kruger, 2007).

Figure 18 - Academic Titles of Respondents - 2004/2005 & 2005/2006



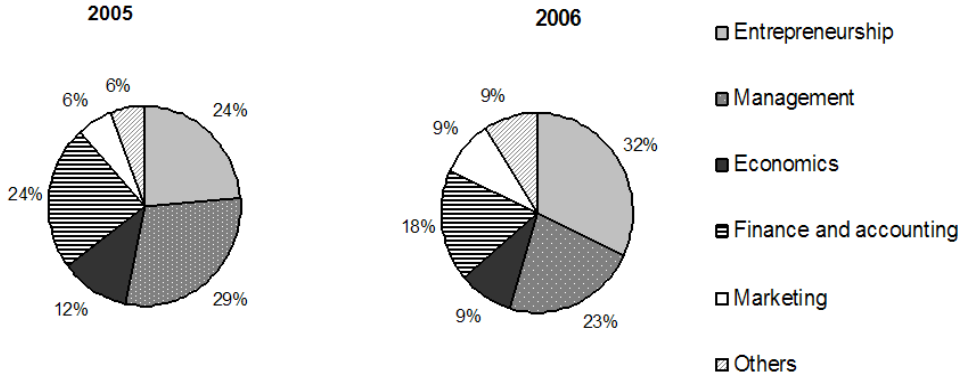
As more professors come into the field of entrepreneurship, their background of experience will vary. In 2005/2006, for example, less had actual experience in creating and managing a start up as can be seen in the figure below.

Figure 19 - Respondent Background Experience - 2004/2005 & 2005/2006



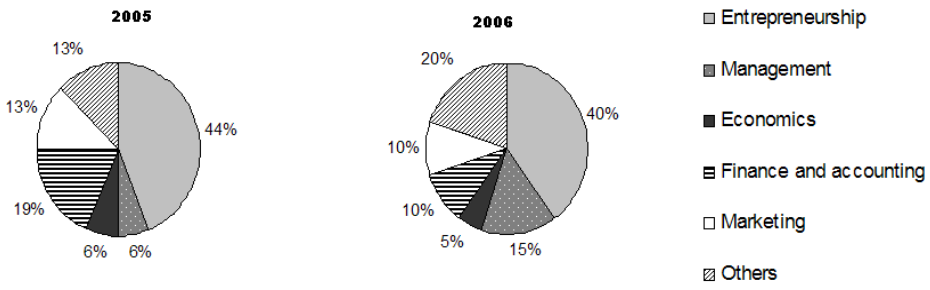
It is encouraging that there are greater numbers of professors whose main area of teaching is entrepreneurship as it is important that this area develop as a specific area in higher education institutions in Portugal. On the otherhand, it seems that less people who are teaching entrepreneurship have had previous partical experience in the process of creating a business themselves during their career.

Figure 20 - Main Teaching Area of the Respondents - 2004/2005 & 2005/2006



It is interesting to note that the number of professors whose primary research area is entrepreneurship is not, as of yet, keeping pace with the increased teaching focus in this area as can be seen in the figure below. Of course, knowledge development take more time than course development so this might also be expected in the short-term but it is desirable that research in this area develop over the long-term to assure that what is being taught in Portugal is relavent to the country and a great understanding of the area is developed.

Figure 21 - Main Research Area of the Respondents - 2004/2005 & 2005/2006



The fact that fewer professors focus on entrepreneurship as their primary research area might be because the area is so new in Portugal. This would also account for professors being recruited with different academic backgrounds.

In other aspects of pedagogy and course content, it was observed that there was little change between the two academic terms. The consistency between the two surveys enabled certain conclusions to be made about of entrepreneurship education from the perspective of the institutions and professors that teach in this area.

4.5 Conclusions from the 2004/2005 & 2005/2006 Professor Surveys

Drawing from the literature, the official documentation and the survey results examined in this study one conclusion is that entrepreneurship education still has a long way to go in Portugal's post-secondary education. In terms of policymaking this area has yet to have a larger debate on how higher education can serve the country and create more and better entrepreneurs. Initaitives such as those with American universities are an important step but do not encompass entrepreneurship in its broadest sense. The country needs to have entrepreneurship not only at the level of the elite few that might be choosen to participate in the advanced degrees that are being promoted but also with the polytechnic students and other that do not go aboard for their education. This being said, professors at Portuguese institutes seem to be one of the main driving force behind the entrepreneurship education movement at the post-secondary level. Many have entered this area out of personal interest whereas others have answered the call of the market. Whatever their motivation there are now courses at institutions that were never there before. This beginning is extremely significant but it can only be viewed as a point of departure with so few students still having the option to take an entrepreneurship course. As a way to close existing gaps, professors at Portuguese institutions need

to continue to look towards other countries that have developed entrepreneurship education offerings as they grow this area of specialty. As early as 2000, Erkkilä observed that, "The US and the UK can be considered the leading countries in the trend. They were the first two countries to extensively pursue entrepreneurship education" (p.10). Beyond the observations regarding the Anglo-American examples, there are other countries that have made great strides in the development of entrepreneurship education and curricula and could also serve as possible models for Portugal such as Norway or the Netherlands (Commission, 2007).

Entrepreneurship in Portugal is still an area very much connected to the management domain. Those responsible for entrepreneurship education are in 90.5% of the cases either in the management department or in the business school. Forty-six percent of the degrees that *have or will have* entrepreneurship as a required course are in the management area.

Only 33% of the universities included in the survey have a center for entrepreneurship and innovation. A small number of universities (23.8%) indicated that they planned to develop one on their campus following the 2005/2006 academic year (see figure 17). Many American and British universities have entrepreneurship courses that are accompanied by an entrepreneurship center. However, according to the professors surveyed in 2005/2006, this concept still needs to be better understood and defined in the Portuguese educational context.

Use of technologies, such as the Internet, need to be further developed in Portuguese entrepreneurship courses. Half of the universities provide information to students and entrepreneurs on entrepreneurship, new venture capital and small business development via the Internet. In contrast, in the United States 79% of universities have these offerings (Solomon, 2005). When it comes to offering online management and technical support for students and entrepreneurs, only 25% of Portuguese universities provide this type of assistance in comparison to 80% of universities in the United States.

In recent years there has been considerable investment in the promotion of entrepreneurship by the European Union and the Portuguese government. Getting this investment translated into promoting entrepreneurship at universities has the possibility of making a profound long-term impact at a minimal cost because of the "captive market" students represent and the ability to reach young people who, in many cases, are searching for new ideas and future career possibilities. Moving students from what professors see as a "neutral bias" to one that is positive will take continued commitment on the part of the government as well as the universities themselves.

V. CONCLUSIONS & RECOMMENDATIONS

As discussed, policymaking in this area is complex and transversal, cutting across various government ministries as well as different parts of society (see section 1.5, 1.6 and appendix 7.1). As this study is primarily concerned with contributing to the knowledge *in* the policy process the conclusions and recommendations highlight various results from the study.

Portugal's nascent entrepreneurship education system at the post-secondary level aims to address several areas within the European Union policy context. One of the driving forces behind the European Commission push for entrepreneurship education is the employment opportunities it offers young people. The findings also show that Portuguese educators have a desire to promote entrepreneurship as a career choice for their students.

This study finds that there are differences in student attitudes and beliefs across Portugal's regions and associated with their socio-economic status (e.g. risk taking and regional differences - see table 42; possibility of owning their own business and family income/background - see table 39). In developing entrepreneurship education policy gender considerations are also important, as is the prominence of the "public sector" mindset of post-secondary students as relates to their first job experience (see section 2.7 and 2.9). In short, several factors are involved in restricting entrepreneurship mindsets and skill sets in educated Portuguese young people, not least of which is the low percentage of students who get the opportunity to take entrepreneurship courses during their undergraduate and graduate studies.

The following table summarizes a selection of the research results included in the findings of this thesis. It indicates which level of analysis the data might assist in the policymaking process and gives a suggested course of action with a few brief examples. Macro-level issues need to be addressed by politicians, governmental departments/agencies and national councils (e.g. Council of Rectors of Portuguese Universities (CRUP)). The meso-level problems and opportunities need to be dealt within and between post-secondary institutions. And micro-level matters need to be dealt with primarily by the professors who teach entrepreneurship courses.

Table 63 - Summary of Research Results & Suggested Actions

Level of Analysis /Action	Research Results	Suggested Course of Action
All	Change the culture to be more entrepreneurial through changing mindsets and skill sets	Responsibility spread throughout the educational and training system (e.g. Start entrepreneurship education earlier in primary and secondary schools; Awareness building through media, conferences, business plan competitions; Discuss dealing with failure and bankruptcy in entrepreneurship classes; Create more training offerings in this area; Get local communities involved)
Macro	28 courses, 826 students (0.2% of total) = Low participation rates	Increase numbers of course offerings through development a national strategy (e.g. Norway, Wales, etc), national benchmarking, EU policy convergence and use of civil society organizations
Meso	33% of institutions have centers for entrepreneurship; several more (23.8%) plan to develop	Assist network of post-secondary institutions (e.g. technology commercialization UTEN program - UT-Austin-Portugal Program)
Meso	90.5% of the respondents' courses are in the university's department of management or business schools	Assist non-business related programs especially in the areas related to science and technology (e.g. US University Partnership Programs)
Meso & Micro	Minimize predominant use of business plan creation and lecture formats, instead make use of experiential-based learning techniques; move from teacher-centered to learner-centered modes of teaching	Encourage further research and education on entrepreneurship education in this area (e.g. ISCTE-Audax; outreach to entrepreneurship educators; COTEC; Conferences with best practices; make internships available for entrepreneurship students; exchange between educators)
Micro	Requirement of entrepreneurship courses for certain degrees in post-secondary institutions	Entrepreneurship courses could be made part of the core curriculum in some degree areas not just management; Entrepreneurship professors indicate that 46% of degrees that *have or will have* entrepreneurship as a required course are in the management area; Further diversification could assist in increasing technology-based entrepreneurship
Micro	In entrepreneurship courses address some of the obstacles in entrepreneurship and aspects of risk aversion	Teach aspects of failure as a positive aspect of learning through trail-and-error, bankruptcy as well as addressing financial issues related to start-ups
Micro	Use of technology in teaching entrepreneurship	Use the Internet related to assignments and course modules as well as in promoting courses and disseminating information for entrepreneurs

The research in this thesis also provides some preliminary benchmarks for the development of entrepreneurship education in Portugal within the European Union framework. The table below categorizes the benchmarks and the related research results that can be used for macro-level tracking of the development of this sector.

Table 64 - Benchmarks & Research Results

Benchmark	Research Results
Educational System & Entrepreneurship	Only 14.8% of students believe the Portuguese educational system develops a state of mind that encourages the creation of new firms
Capacity Building of Entrepreneurship Education	63.7% of post-secondary students believed in the possibility of owning their own business in the future
Post-Secondary System & Education System – Entrepreneurship Offerings	20 years behind the United States; many years behind other EU countries - only country in the EU not to have a program or offering in primary or secondary schools in 2002
Track Students Attitudes towards Entrepreneurship	81.2% want to work for others and only 16.1% want to create their own business
Track Students Attitudes related to Risk and Obstacles	49.9% of the respondents point to the bureaucracy of governmental entities and fears going bankrupt (58%)

This section draws upon relevant parallels to other research done with Portuguese samples in this area to compare and contrast and put into context the findings of this study. At the end of this section, several suggestions are made for further research that can be made in this area and to build upon the findings and analysis of this study.

Youth Employment & Entrepreneurship in Portugal

It has been recognized that young adults (25-34 years old) are the most active in creating entrepreneurial endeavors (Acs, 2005, p. IV). The challenge of entrepreneurship education is to prepare these young entrepreneurs with the mindset and skill set necessary for them to succeed. At a macroeconomic level entrepreneurship has been shown to yield positive economic outcomes on economy growth (see section 2.4).

Official Portuguese government statistics indicate that the overall unemployment rate for the first half of 2007 was 8.4% (MTSS, 2007, p.9). In terms of the total working population, 9.9% of women were unemployed in contrast to 7.1% of the male workforce (MTSS, 2007, p.9). One of the reasons why the promotion of youth entrepreneurship is so important is because youth unemployment rates for both males and females are much higher (18.1%) than the overall workforce (MTSS, 2007, p.9). According to the Global Entrepreneurship Monitor, Portugal

displays relatively high levels of "necessity-based" entrepreneurship versus the type of entrepreneurship that is pursued because of perceived "opportunity" when compared with other developed countries (Acs *et al.*, 2005). Necessity-based entrepreneurship is more characteristic of developing countries because there is a general lack of other employment opportunities.

In this study, 63.7% of students surveyed believe in the possibility of owning their own business in the future. These findings are consistent with the results of the Eurobarometer findings of 2003 and 2004 which found Portugal had one of the highest percentages of individuals who wished to work for themselves (67% and 62% respectively) (Eurobarometer, 2003, p.20; Eurobarometer, 2004, p.22). Regrettably, only 17% of Portuguese (Eurobarometer, 2003, p.42) believe that the school system in the country promotes the entrepreneurial spirit versus 23% of people from the EU-15 and 39% of Americans (Eurobarometer, 2003, p.40). According to this study, even fewer young people (14.8%) in Portugal believe that the Portuguese educational system develops a state of mind that encourages the creation of new firms (see section 4.2).

This study underlines the fact that the younger generation feels that entrepreneurship is not being encouraged in Portuguese schools. To remedy this it would be necessary for administrators, educators, parents and other stakeholders to assist in the development of entrepreneurial attributes in young people in Portugal at an early level in grade and high school. To this effect, following a pilot program during academic year 2006/2007, a national program was implemented by the Ministry of Education in Portugal for primary and secondary schools in academic year 2007/2008. The *Projecto Nacional de Educação para o Empreendedorismo*[12] included 98 schools, 380 projects and around 4,700 pupils in both primary and secondary schools. Although this national program represents only 0.003% of the total student population it at least represents a start at developing an articulated national strategy for the development of an entrepreneurship education and training policy in Portugal, if the government is serious in supporting entrepreneurship in the next generation. As to higher educational institutions, out of the approximately 381,000 students that were enrolled in Portugal during academic year 2005/2006, only 826, or 0.2%, of students participated in an entrepreneurship class (Dimas, 2006, p.33).

[12] As of April, 2008 – email from Director Vitor Figueiredo of the National Program for Entrepreneurship Education, DGIDC, Ministry of Education

Regional and Socio-Economic Differences in Portugal

Students from less developed regions of Portugal such as the Alentejo look more towards working in the Public sector as their first option. Entrepreneurship education should help to provide students from less developed areas with further career options through the possibility of starting their own business.

"Research has shown that age, work status, education, income, social ties and perceptions are all significant socioeconomic factors in a person's decision to start a business" (Allen, *et al.*, 2008, p.8). Curiously, even though those from higher socio-economic backgrounds demonstrate a greater sensitivity to the risks of starting their own business they are able to overcome these fears and show greater inclination towards being entrepreneurial. Thus, when considering the development of policy, attention to these differences demands rigorous and direct attention.

Gender Consideration in Entrepreneurship in Portugal

The conclusions related to women in this study generally concur with other research on female entrepreneurship. The Global Entrepreneurship Monitor sees women as an under-tapped source of entrepreneurial potential. Across the world rates of self-employment are generally higher for men than women and men are twice as likely to be involved in early-stage entrepreneurial activity (Acs *et al.*, 2004, p. IV). Another study (Pereira, 2001) found that women entrepreneurs tended to start their businesses at an older age than men.

According to this study, female students appear to be more risk adverse and opt to work in the public sector significantly more than their male colleagues. Differences in risk tolerance have also been cited in other studies (Jianakoplos & Bernasek, 1998). Of those who wish to start their own company, female students prefer the local market and are more sensitive to the risk of suffering personal failure. This is in contrast to male students who look towards European and global markets and worry somewhat less about personal failure.

As women experience higher levels of unemployment in Portugal than their male counterparts (MTSS, 2007, p.9), entrepreneurship can offer a possible solution to unemployment. Of course, entrepreneurship cannot be seen as a cure-all for women (Heilman & Chen, 2003), although in the United States female entrepreneurship was found to account for the majority of entrepreneurial growth in recent years (SBA, 2001). In Portugal, "official statistics of student enrollment in public universities indicate that the percentage of women in higher education has been above 55% for over

a decade….Furthermore, the gender gap widens when it comes to actual graduates, suggesting a higher rate of male students underperforming or dropping out of the system. Women represent about 63% of all graduates." (Cabral-Cardoso, 2004, p.86) This is a sizable group of people who are being underserved and have not had the opportunity to learn about the possibilities available through entrepreneurship. It has also been shown that men and women tend to react similarly to an identical set of incentives, including entrepreneurial drivers in the early stages (Langowitz & Minniti, Forthcoming); and, that after correcting for changes in some socio-economic conditions, much of the gender difference disappears (Lefkowitz, 1994).

This said, in Portugal the Global Entrepreneurship Monitor in 2001 indicated that "Portuguese men are more than twice as likely to be involved in entrepreneurial activity than Portuguese women", (Medina & Lobo, 2001, p.15) although in the 2004 study of Portugal it found near gender equality of Portuguese entrepreneurs (Baganha, *et al.*, 2005, p. V). More recently, Teixeira (2007) found in her sample of 2,430 students from the University of Porto that only 18% of female students wanted to start their own business after graduation versus 29% of male students (p.6). GEM also found that women are under-represented as users of small business support services (Acs *et al.*, 2004) and thus it was suggested that in the development of entrepreneurship education policy in Portugal particular attention be paid to this group.

Prominence of the Public Sector in the Mindset of Post-Secondary Students

Today, the prevailing social attitude of post-secondary students in Portugal is a desire to work in the public sector (38.6%). The desire to work in the public sector is also prevalent in other European countries such as France (BBC, 2008) Entrepreneurship is neither an expected nor respected career choice, and failure that may result from its pursuit is deemed unacceptable in Portugal (GEM, 2001). Perhaps attitudes of this nature are established in the Portuguese psyche as Hofstede (2004) observed: "Every person carries within him- or herself patterns of thinking, feeling, and potential acting that were learned throughout their lifetime. Much of it has been acquired in early childhood, because at that time a person is most susceptible to learning and assimilating." (pp.2-3).

Further, one of the main tenets of the European Commission's policy on building an entrepreneurial capability in society is through the use of entrepreneurship education (Commission, 2003). This exposure to entrepreneurship through education allows the seeds of entrepreneurship to be planted even if a student does not have examples of entrepreneurship in his or her family or among friends. A study of French entrepreneurs found that 66% of entrepreneurs interviewed had at least one close

relative who was self-employed or was an entrepreneur (Rasse & Parisot, 1989). In yet another French study it was found that many entrepreneurs knew someone who was an entrepreneur (family member, 41 %; friend, 21 %; or both, 10 %) (Bonneau & Francoz, 1996). The possibility of changing the predominant "public sector" mindset of post-secondary students can be accomplished by following the recommendations of the European Commission's "Green Paper" on Entrepreneurship through raising the awareness and encouraging "more positive attitudes towards entrepreneurship" across society (Commission, 2003). It is necessary to promote positive examples, show role models and develop entrepreneurial skills and capabilities through educational offerings (Commission, 2003).

The undergraduate students survey found that after the conclusion of their studies, 38.6% of them would like to work in public services and 28.0% in a multinational company. In total, 81.2% want to work for others and only 16.1% want to create their own business after graduating. Public policy in Portugal needs to aid the 63.2% of students who believe in the possibility of *ever* owning their own business in the future. The encouragement and education of this group of potential entrepreneurs highlights the necessity for education in this area.

Advancing Portuguese Post-Secondary Entrepreneurship Education

Portuguese universities are 20 years behind the United States on the year the majority of entrepreneurship courses were started (i.e. 2002 for Portugal and 1982 for the United States) (Solomon, 2005). The European Union has made great strides in development entrepreneurship education and training as a part of the overall Lisbon Strategy for growth and development many times benchmarking EU development with the United States. There are other countries that have made great progress in developing entrepreneurship education beyond the Anglo-American examples. The European Union has gone to great lengths to catalogue a number of good practices from across Europe (Commission, 2006a).

Beyond looking at other models and adapting them to the Portuguese reality, pedagogies need to evolve by utilizing more experiential learning techniques. The evolution of courses must move from teacher-centric to learner-centric (that is to say, from teachers transmitting knowledge to passive students based on memorization to problem-based learning, e.g. self-managed field projects) (Kruger, 2007). Courses must be based less on the typical business school market approach and more on entrepreneurial methods of approaching a problem (Sarasvathy, 2001). Current programs in Portugal focus too heavily on teaching business plan development. They rely on lecture formats

instead of utilizing computer simulation, role-playing or inviting entrepreneurial role models into the classroom.

Entrepreneurship in Portugal is still an area very much connected to the management domain. The vast majority (90.5% in 2005/2006) of those who are responsible for entrepreneurship education are either from the management department or the business school. Forty-six percent of the degrees that *have or will have* entrepreneurship as a required course are in the management area.

This research revealed that only 33% of the universities included in the 2005/2006 survey have a center for entrepreneurship and innovation. A small number of universities (23.8%) currently plan to develop one on their campus. In contrast, many American and British universities have entrepreneurship courses that are accompanied with an entrepreneurship center. It is believed, however, that this concept still needs to be better understood and defined in the Portuguese educational context (Redford & Trigo, 2006).

Use of technology, such as the Internet, needs to be further developed in Portuguese entrepreneurship courses. Half of the universities provide information to students and entrepreneurs on the subject of entrepreneurship, new venture capital and small business via the Internet. In contrast, in the United States 79% of universities have these offerings (Solomon, 2005). When it comes to providing online management and technical support for students and entrepreneurs only 25% of Portuguese universities give this type of assistance, in comparison to 80% of universities in the United States (Solomon, 2005).

In recent years there has been considerable investment in the promotion of entrepreneurship by the European Union and the Portuguese government. Getting this investment translated into promoting entrepreneurship at universities offers the possibility of a profound long-term impact at a minimal cost. This is because of the "captive market" students represent with the universities' ability to reach young people who, in many cases, are searching for new ideas and future career possibilities. This study revealed that moving students from what professors see as a "neutral bias" to one that is positive will take continued commitment on the part of the government as well as the universities themselves.

Future Research in Entrepreneurship Education in Portugal

More extensive longitudinal research that could build on the work done in this thesis is needed to track the development of entrepreneurship education in post-secondary institutions in Portugal. This research could be designed to examine the positive evolution (or stagnation) of this area in post-secondary education. The researcher would like to repeat the study from the professors' perspective over a limited period of time (five years). Likewise, from the student perspective it would be interesting to learn if the national program in primary and secondary schools affects student opinions in post-secondary education over the next 5 to 10 years. A project that benchmarked Portuguese entrepreneurship education against other European countries has already been developed by several organizations including the European Commission. These types of benchmark studies will be helpful in the further development of entrepreneurship education in Portugal.

The scope of the studies in this thesis incorporates only undergraduate and graduate students and excludes primary and secondary students as well as those who are participating in continuing education. Likewise, the studies only investigated university and polytechnic professors regarding the course content in specific entrepreneurship courses. It is possible that there are aspects of entrepreneurship that are being taught in classes that are not directly called or related to entrepreneurship although this is extremely difficult to assess as it could be from group project work (e.g. something equivalent to entrepreneurial teams) to leadership development (e.g. entrepreneurial mindset that might be espoused). A study of a representative sample of professors in the postsecondary context might test other ways that entrepreneurial mindset and skill set are being transmitted to students and could prove very valuable to understanding this area more broadly.

Further research needs to be done to track and measure the post-program outcomes of the students who attend entrepreneurship education in Portugal. The goal would be to gain a better understanding of the course content and effectiveness, and to see if the entrepreneurial intention of students indeed leads to business activities several years after graduation. A study that would create a better understanding in the shift in mindsets and skill sets of students who have attended these courses could aid administrators, professors and others in further developing the area in general and the curriculum in particular.

Beyond the university context it would be helpful in the development of skill sets to understand what others, such as venture capitalists and people who work with incubators, regard as needed in Portugal. They could critically assess whether entrepreneurship education courses are providing

knowledge in their areas of interest. Enlarging the breadth of input from various stakeholders in entrepreneurship promotion could provide valuable insight into entrepreneurship education.

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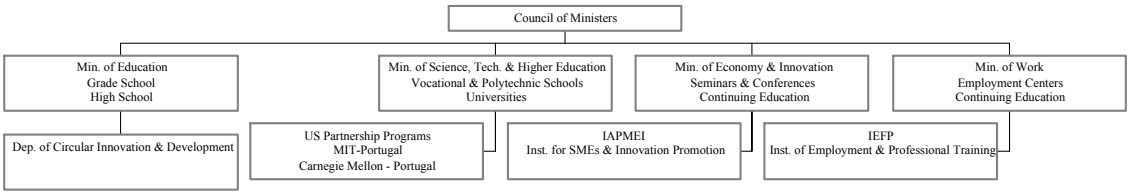
VII. APPENDIX

7.1 Government Entities Responsible for Entrepreneurship Education



7.2 Experts Consulting during First Phase of Field Research

(April, 2005 to August, 2006)

Government:

Ana Maria Moreira – Assessora Principal, Ministério das Actividades Económicas e do Trabalho

Manuel Heitor – Secretario de Estado da Ciência, Tecnologia e Ensino Superior

Organizations:

Charles Buchannan – Administrador, Fundação Luso-Americana para o Desenvolvimento

Douglas Thompson – Consultor (in charge of GEM Project Portugal), Sociedade Portuguesa de Inovação - Consultadoria Empresarial e Fomento da Inovação, SA

Francisco Banha – CEO, Gestventure

Francisco Murteira Nabo – President, COTEC Portugal - Associação Empreserial para a Inovação

Jaime Prudente – Director, Instituto de Apoio às Pequenas e Médias Empresas e ao Investimento (IAPMEI)

Pedro Vilarinho – Director, COTEC Portugal - Associação Empreserial para a Inovação

João Vicente Ribeiro – CEO, PME Investimentos

Jose Cottim Oliveira – Conselho de Gestão, Associação Nacional de Jovens Empresários

Universities:

University Professors Consulted:

João Jose Ferreira – Faculdade de Engenharia, Universidade do Porto

Pedro Oliveria – Universidade Católica

Rui Baptista – Director, IN+, Instituto Superior Tecnico

PhD Candidates Consulted:

Ana Luísa Veloso – Universidade do Minho, Instituto de Educaçao e Psicologia, Departamento de Psicologia

Joana Mendonça – Investigadora, Centro de Investigações Regionais e Urbanas – ISEG

Miguel Amaral – Investigador, Centro de Estudos em Inovação, Tecnologia e Políticas de Desenvolvimento – Instituto Superior Técnico

Miguel Torres Preto – Investigador, Centro de Estudos em Inovação, Tecnologia e Políticas de Desenvolvimento – Instituto Superior Técnico

Patricia Palma – Instituto Superior de Psicologia Aplicada (ISPA)

Media:

Cátia Mateus – Jornalista (autora do livro *Mestres da Geração Start.Up*), Expresso

Erik Burns – Bureau Chief, Dow Jones News Service

James Silver – Bureau Chief, Bloomberg News Agency

7.3 "Universe" of Entrepreneurship Promotion Entities in Portugal, 2005

1. Abreu, Cardigos & Associados - Sociedade de Advogados
2. ACIME - Alto Comissário para a Imigração e Minorias Étnicas
3. ADFP - Associação para o Desenvolvimento e Formação Profissional de Miranda do Corvo
4. ADI - Agência de Inovação
5. ADIBER - Associação de Desenvolvimento Integrado da Beira Serra
6. ADRAL - Agência para o Desenvolvimento Regional do Alentejo
7. ADRAVE - Agência de Desenvolvimento Regional do Vale do Ave
8. AEP - Associação Empresarial de Portugal
9. AERSET - Associação Empresarial da Região de Setúbal
10. AGEP - Agência para o Empreendedorismo em Portugal
11. AIDA - Associação Industrial do Distrito de Aveiro
12. AIDLearn
13. AIESEC
14. AIP - Associação Industrial Portuguesa
15. AirLuxor
16. AITEC
17. AJEC - Associação Juvenil de Estudos e Comunicação
18. AJEM - Associação de Jovens Empresários Madeirenses
19. Alta Lógica
20. AMBELIS - Agência para a Modernização Económica de Lisboa, S.A.
21. Amorim Desenvolvimento
22. ANACOM - Autoridade Nacional de Comunicações
23. ANDC - Associação Nacional de Direito ao Crédito
24. ANE - Associação Nacional de Empresárias
25. ANJE - Associação Nacional de Jovens Empresários
26. APCER - Associação Portuguesa de Acreditação
27. APCRI
28. APG - Associação Portuguesa dos Gestores e Técnicos dos Recursos Humanos
29. API
30. APME - Associação Portuguesa de Mulheres Empresárias
31. Associação Industrial do Minho
32. Associação Portuguesa de PME
33. Banco Efisa
34. BBVA – Banco Bilbao Vizcaya Argentaria
35. BCP Capital SA
36. BES
37. BES.com, SGPS,SA
38. BIG Capital, SGPS, SA
39. BNU Capital, Sociedade de capital de risco,SA
40. BP - Banco de Portugal
41. BPI Private Equity
42. CACE da Beira Interior
43. CACE de Mirandela
44. CACE de Setúbal
45. CACE do Algarve
46. CACE do Alto Alentejo

47. CACEAVE - Região do Vale Ave
48. Caixa Investimentos - Sociedade de Investimentos, SA
49. Câmara Municipal de Abrantes
50. Câmara Municipal de Castelo Branco
51. Câmara Municipal de Coimbra (Gabinete de Desenvolvimento Económico e Política Empresarial)
52. Câmara Municipal de Évora
53. Câmara Municipal de Mortágua
54. Câmara Municipal de Sines
55. Câmara Municipal do Montijo
56. Cap Gemini Ernst & Young Portugal - Serviços de Consultadoria e Informática, SA
57. CCDR-Algarve – Comissão de Coordenação e Desenvolvimento Regional do Algarve
58. CCDR-C - Comissão de Coordenação e Desenvolvimento da Região do Centro
59. CCDR-LVT - Comissão de Coordenação e Desenvolvimento Regional de Lisboa e Vale do Tejo
60. CCDR-N – Comissão de Coordenação e Desenvolvimento Regional do Norte
61. CDED - Centro de Demonstração em Economia Digital
62. CEIM – Centro de Empresas e Inovação da Madeira, Lda. / BIC Madeira
63. CENTIMFE - Centro Tecnológico da Indústria de Moldes, Ferramentas Especiais e Plásticos
64. Central Business, Apoio à Criação e Desenvolvimento de Empresas, Lda
65. Centro de Biologia e Patologia Molecular (CEBIP), Instituto de Medicina Molecular
66. Centro de Biotecnologia e Química Fina
67. Centro de Estudos do Ambiente e do Mar - Universidade de Aveiro
68. Centro de Estudos Sociais (CES) - Univ. Coimbra
69. Centro de Fusão Nuclear (CFN) - IST
70. Centro de Incubação e Desenvolvimento Lispolis - Pólo tecnológico de Lisboa
71. Centro de Investigação em Materiais Cerâmicos e Compósitos (CICECO)
72. Centro de Investigação Marinha e Ambiental (CIMAR) - Univ. Algarve
73. Centro de Malária e Outras Doenças Tropicais
74. Centro de Neurociências de Coimbra (CNC) - Univ. Coimbra
75. Centro de Química Fina e Biotecnologia (CQFB), Laboratório Associado de Química Verde – Tecnologias e Processos Limpos
76. Centro Empresarial da Maia (ANJE)
77. Centro Empresarial da Trofa (ANJE)
78. Centro Empresarial de Aveiro (ANJE)
79. Centro Empresarial de Faro (ANJE)
80. Centro Empresarial de Matosinhos (ANJE)
81. Centro Português de Inovação
82. CERTFORM - Escola de Formação Prática
83. CGD - Caixa Geral de Depósitos
84. CGInternational
85. Change Partners - Investimentos e consultoria, SA
86. Chip7
87. Chipidea
88. CIEBI - Centro de Inovação Empresarial da Beira Interior
89. CIMPOR

90. CINTEC - Associação centro de incubação de empresas do parque tecnológico da Mutela
91. CIP - Confederação da Indústria Portuguesa
92. Clube Business Angels Portugal
93. CML - Câmara Municipal de Lisboa
94. Colégio Vasco da Gama
95. Conselho Empresarial do Centro
96. COTEC PORTUGAL – Associação Empresarial para a Inovação
97. CPIN - Centro Promotor de Inovação e Negócios
98. CPINAL - Centro Promotor de Inovação e Negócios do Algarve (BIC Algarve - Huelva)
99. Cruz Vermelha Portuguesa
100. Deltaper, SGPS
101. Dep. de Engenharia Informática - Pólo II da Universidade de Coimbra
102. Departamento de Engenharia Química - Universidade de Coimbra
103. DET - Desenvolvimento Empresarial e Tecnológico, SA (BIC de Santarém)
104. DGEEP - Direcção-Geral de Estudos, Estatística e Planeamento
105. Diário de Aveiro
106. Diário Económico
107. Direcção Geral da Empresa
108. DRIE - Direcção de Relações Internacionais, Estágios, Emprego e Empreendedorismo
109. EGP – Escola de Gestão do Porto
110. Elidev – Desenvolvimento Electrónico, S.A
111. Entrepreneurs' Organization
112. ESAD - Escola Superior de Artes e Design
113. ESB - Escola Superior de Biotecnologia
114. ESCE - Escola Superior de Ciências Empresariais
115. Escola Profissional Fialho de Almeida
116. Escola Secundária 3º Ciclo Oliveira Martins
117. Escola Superior de Tecnologia e Gestão do Instituto Politécnico de Portalegre
118. Espigueiro - Central de Informações Regionais
119. ESTM - Escola Superior de Tecnologia do Mar
120. Euro Info Centre PME - Eurogabinete - IAPMEI
121. Euronext Lisbon, S.A.
122. Expresso Emprego
123. Faculdade de Ciências e Tecnologia da Universidade de Coimbra
124. Faculdade de Economia da Universidade do Algarve
125. Faculdade de Economia do Porto
126. Faculdade de Engenharia da Universidade do Porto
127. Faculdade de Farmácia da Universidade do Porto
128. FCT - UNL - Faculdade de Ciências e Tecnologia da Universidade Nova de Lisboa
129. FIEP - Fundo para a Internacionalização das Empresas Portuguesas
130. FLAD
131. Fujitsu-Siemens Computers
132. Fundação para a Ciência e a Tecnologia
133. GATS-UC - Gabinete de Apoio às Transferências do Saber da Universidade de Coimbra
134. Gesbanha
135. GestLuz Consultores

136. Gesventure
137. GIEM (ISCTE)
138. Glocal - empresas locais com orientação global
139. Grupo Lena
140. Grupo STAB
141. GrupUnave
142. IAPMEI - Instituto de Apoio às Pequenas e Médias Empresas e ao Investimento
143. ICBAS - Instituto de Ciências Biomédicas Abel Salazar
144. IDD - Associação para o Desenvolvimento do Empreendedorismo, Inovação e Novas Tecnologias
145. IEBA – Centro de Iniciativas Empresariais Beira Aguieira
146. IEESF-Instituto Europeu de Estudos Superiores e Formação
147. IEFP - Instituto de Emprego e Formação Profissional
148. IEP Capital
149. IESF - Instituto de Estudos Superiores Financeiros e Fiscais
150. IFDEP - Instituto de Fomento e Desenvolvimento do Empreendedorismo em Portugal
151. IFEA - Instituto de Formação Empresarial Avançada (ISEG)
152. IN + (relacionado com o IST)
153. INA - Instituto Nacional de Administração
154. Incubadora D. Dinis
155. Incubadora de Empresas da Universidade de Aveiro
156. INDEG - Instituto para o Desenvolvimento da Gestão Empresarial (ISCTE)
157. INESC PORTO – Instituto de Engenharia de Sistemas e Computadores do Porto
158. INESC-ID-Instituto de Engenharia de Sistemas e Computadores: Investigação e Desenvolvimento em Lisboa
159. INETI
160. INOVAR - Departamento de Engenharia Química, Pólo II da Universidade de Coimbra
161. INPI
162. Instituto Bissaya Barreto
163. Instituto D. Dinis
164. Instituto de Biologia Molecular e Celular (IBMC)
165. Instituto de Ciências Sociais (ICS)
166. Instituto de Engenharia de Sistemas e Computadores do Porto (INESC PORTO)
167. Instituto de Estudos Financeiros e Fiscais
168. Instituto de Gestão do Fundo Social Europeu
169. Instituto de Patologia e Imunologia da Universidade do Porto (IPATIMUP)
170. Instituto de Sistemas e Robótica - Lisboa (ISR-LISBOA)
171. Instituto de Tecnologia Química e Biológica (ITQB)
172. Instituto de Telecomunicações (IT)
173. Instituto Politécnico de Beja
174. Instituto Politécnico de Coimbra
175. Instituto Politécnico de Leiria
176. Instituto Politécnico de Setúbal
177. Instituto Politécnico de Viseu
178. Instituto Superior da Maia
179. Instituto Superior de Agronomia
180. Instituto Superior de Entre Douro e Vouga

181. Instituto Superior de Gestão
182. Instituto Superior de Gestão Bancária
183. Instituto Superior de Paços Brandão
184. Instituto Superior Politécnico de Tomar
185. Instituto Turismo de Portugal
186. INTELI – Inteligência em Inovação
187. INUAF - Instituto Superior D. Afonso III
188. IPCB – Instituto Politécnico de Castelo Branco
189. IPG - Instituto Politécnico da Guarda
190. IPJ - Instituto Português da Juventude
191. IPN - Instituto Pedro Nunes
192. IRICUP - Instituto de Recursos e Iniciativas Comuns da Universidade do Porto
193. ISCTE - Instituto Superior de Ciências do Trabalho e da Empresa
194. ISEC - Instituto Superior de Engenharia de Coimbra
195. ISEG
196. ISEL - Instituto Superior de Engenharia de Lisboa
197. ISLA - Instituto Superior de Administração e Línguas
198. IST - Instituto Superior Técnico
199. ITP - Instituto de Turismo de Portugal
200. Jornal de Negócios
201. Jornal de Notícias
202. JUNITEC
203. Juventude.gov.p
204. Kmedia,Lda.
205. Laboratório de Instrumentação e Física Experimental de Partículas (LIP)
206. Laboratório de Processos de Separação e Reacção - Univ. Porto
207. LP - Brothers
208. Lusomatrix
209. Madan Parque - Parque de Ciência e Tecnologia Almada/Setúbal
210. Microsoft
211. Millennium BCP
212. Ministro da Economia e Inovação
213. Mota Campos & Cunha, S.A
214. NAE Univ. Évora - Núcleo de Apoio ao Estudante da Universidade de Évora
215. National Science Foundation
216. NER - Associação Empresarial
217. NERCAB – Núcleo Empresarial da Região da Guarda
218. NERE - Núcleo Empresarial da Região de Évora
219. NERGA – Núcleo Empresarial da Região da Guarda
220. NERLEI – Associação Empresarial da Região de Leiria
221. NET – Novas Empresas e Tecnologias, SA (BIC Porto)
222. Ninho de Empresas de Faro
223. Ninho de Empresas do Porto
224. NIT - Negócios, Inovação e Tecnologias (BIC Viseu)
225. Novabase Capital
226. Núcleo do Empreendedorismo do Inatel
227. Oficina de Inovação (BIC Minho)
228. OPEN – Associação para Oportunidades Específicas de Negócio
229. Ordem dos Economistas
230. Ordem dos Engenheiros
231. OutSystems

232. PA Innovation
233. Paleta de Ideias
234. ParqueExpo
235. PME Capital - Sociedade Portuguesa de Capital de Risco, SA
236. PME Investimentos
237. PME Portugal
238. POE - Programa Operacional de Economia
239. Pólo de Software do Minho
240. Pólo Ernesto Cruz da UBI
241. Portal Executivo
242. Porto Business School (Escola de Gestão do Porto)
243. Portugal em Acção
244. Primavera Software
245. PRIME JOVEM - Ministérios da Economia
246. PRODEQ - Associação para o Desenvolvimento da Engenharia Química na Universidade de Coimbra
247. Profem - Universidade de Coimbra
248. PT Investimentos Internacionais
249. Rede Dinamica XXI - Isto é uma entidade??!
250. Rede Freelancer
251. Secretario Adjunto da Industria e Inovacao
252. SEDES - Associação para o Desenvolvimento Económico e Social
253. Segurança Social
254. Select/Vedior
255. Semanário Empreendedorismo
256. SEQ TEC
257. Sogist - Sociedade gestora de incubadoras sectoriais, Fundação do Instituto Politécnico do Porto
258. Solvay Portugal
259. Soprofor, (Sociedade de Promoção e Formação Lda)
260. SPI - Sociedade Portuguesa de Inovação
261. SPIDouro
262. Taguspark
263. Tecmaia - Centro de Demonstração em Economia Digital
264. TECMINHO
265. Totta
266. UAL - Universidade Autónoma de Lisboa
267. UCP – Universidade Católica Portuguesa
268. UMIC - Agência para a Sociedade do Conhecimento
269. Unipessoal, Lda.
270. Univeridade Moderna do Porto
271. Universidade Atlântica
272. Universidade Autónoma de Lisboa
273. Universidade Católica Caldas da Rainha (Escola Superior de Biotecnologia)
274. Universidade Católica Porto
275. Universidade Católica Viseu (Beiras)
276. Universidade da Beira Interior
277. Universidade da Beira Interior - Departamento de Gestão e Economia
278. Universidade da Madeira
279. Universidade de Aveiro
280. Universidade de Coimbra
281. Universidade de Évora

282. Universidade de Trás-os-Montes
283. Universidade do Algarve
284. Universidade do Minho
285. Universidade do Porto
286. Universidade do Porto - Inovação
287. Universidade dos Açores
288. Universidade Fernando Pessoa
289. Universidade Independente
290. Universidade Internacional
291. Universidade Lusíada
292. Universidade Lusíada Porto
293. Universidade Lusíada Vila Nova de Famalicão
294. Universidade Moderna
295. Universidade Moderna Porto
296. Universidade Nova de Lisboa
297. Universidade Portucalense
298. Vida Económica - CentroAtlântico.PT
299. VLM Consultores

7.4 2004/2005 Entrepreneurship Professors Survey (English)

1) Name of University:

2) Your name is Name:

3) Academic Title:
    1. Assistant
    2. Invited Assistant
    3. Auxiliary Professor
    4. Invited Auxiliary Professor
    5. Associate Professor
    6. Invited Associate Professor
    7. Associate Professor with Aggregation
    8. Aggregate Professor
    9. Cathedra Professor

4) Mailing Address:

5) Email Address:

6) Website Address (if any) for the course:

7) If you have currently any Office in your university besides being a professor please state which (Department director, etc.):

8) Are you the Professor responsible for the course:
Yes
No

9) If you are not the responsible professor for the course please indicate the name of the responsible professor.

10) What is your primary teaching focus?

11) What is your primary research focus?

12) Are you aware of any academic research that has been developed in the Area of Entrepreneurship Education in Portugal? If you do please identify the researcher and the research itself.

13) Check any of the following activities that you have done in your career:
    - Founded a business
    - Managed a new/early-stage business
    - Managed a small business
    - Managed a medium sized or large business

14) Does your University have or have plans to develop any of the following to promote entrepreneurship and innovation (select as many as applicable):
    - Center for Entrepreneurship and/or Innovation

- Business Plan Competition
- Technology Transfer Office
- Incubator
- Technology Park
- Venture Capital / Business Angels Fund
- Other (please specify)

15) Please describe the course(s) you have at your University in the area of entrepreneurship and indicate if it is part of an undergraduate, graduate or post-graduate program.
Open-ended paragraph

16) Your course is:
- Taught by one primary faculty member
- Taught by a group of faculty members

17) What was the primary reason the entrepreneurship course was developed
- Request from students
- Response to the "market" / Request from firms
- Pursuing Portuguese government policies
- Pursuing European Union policies
- Personal interest of the professor
- Result of a PhD thesis / PhD program
- Modeled after a course in another university (please specify)_____

18) What year did you first start offering your course(s) on entrepreneurship?
Drop down from 1985 to current

19) Under which department is your course offered?
Drop-down with common department names

20) What was the average class size of your Entrepreneurship courses in 2005?
Open-ended one-line

21) What areas are focused on during the course? (NOTE: we need to consolidate these)

Opportunity identification
Opportunity assessment
Competences in entrepreneurial behavior and interpersonal relations
Competences in knowledge transmission
Competences in intercultural relationships
Company creation and registry
Market analysis
Marketing
Production Processes
Processes Optimization
Management
Financial Management
Bankruptcy control and prevention
Financing

Legal aspects, including patents
Business plan development
Public financing in the creation of companies
Private financing / Venture Capital
Evaluation of initiatives/projects of entrepreneurship fostering
Other please specify _____

22) What is the frequency with which you use the following exercise-based learning?

(1 = Very Frequently 5 = Never)

Business plan creation	1	2	3	4	5
Case studies analysis	1	2	3	4	5
Computer business simulations	1	2	3	4	5
Role-playing	1	2	3	4	5
Research projects	1	2	3	4	5
Market feasibility studies	1	2	3	4	5
Internships	1	2	3	4	5
On-site visits with a small business/new venture	1	2	3	4	5
Lectures					
Other (please specify)	1	2	3	4	5

23) If you answered other please specify.

24) What is the frequency with which you use the following in your class? (1 = Very Frequently 5 = Never)

Guest speakers: Entrepreneurs	1	2	3	4	5
Guest speakers: Others	1	2	3	4	5
Discussions	1	2	3	4	5

25) How do you think the course is perceived by the following groups as a whole?
(Please check one box per row.)

Students taking the course	Favorably	neutral	Unfavorably
Students NOT taking the course	Favorably	neutral	Unfavorably
Other academics in this institution	Favorably	neutral	Unfavorably
University/college administration	Favorably	neutral	Unfavorably

26) What is the frequency in which you use the following types of reading materials in your course?
Academic journal articles
Portuguese case studies (written in Portuguese)

Foreign case studies (translated into Portuguese)
Foreign case studies (written in English)
Foreign case studies (written in another language)
Textbook
Other books written by academics
Books written by entrepreneurs
Magazines and newspapers
Other (please specify)_____

27) If you answered other please specify.

28) Has your University applied and received any State funding (Portuguese Government or European Commission) to develop initiatives in entrepreneurship or innovation?
It has applied and financing has been conceded
It has applied but financing wasn't conceded
It hasn't applied for financing

29) If you answered yes in the previous please indicate the source of the financing:

30) Has your University applied and received any private funding to develop initiatives in entrepreneurship or innovation
It has applied and financing has been conceded
It has applied but financing wasn't conceded
It hasn't applied for financing

31) If you answered yes in the previous please indicate the source of the financing:

32) Do you require web-based assignments as part of your curriculum?
Yes
No

33) Does your school offer Entrepreneurship courses on the Internet?
Yes
No

34) Does your school/center offer information on the web regarding Entrepreneurship, New Venture Creation, and Small Business to both students and entrepreneurs?
Yes
No

35) Do you offer management and technical assistance on-line for students and entrepreneurs?
Yes
No

36) Does your college or university offer any of the following (check all that apply)
Internship opportunities with small local companies?
Executive development courses in Entrepreneurship?
Continuing education programs in Entrepreneurship?
Distance Learning in Entrepreneurship via the Internet?

37) Does your school keep track of alumni who have started their own businesses?
Yes
No

38) What distinguishes your Entrepreneurship program from other schools (i.e. Internet based courses, community projects)?
Open-ended paragraph

39) List three trends in entrepreneurship education you see will evolve in the next five years in Portugal:

7.5 2004/2005 Entrepreneurship Professors Survey (Portuguese) (i.e. Courses - *Disciplinas*)

1) Nome da Universidade / Instituição:
2) O seu nome:
3) Título Académico:
   - Assistente
   - Assistente Convidado
   - Professor Auxiliar
   - Professor Auxiliar Convidado
   - Professor Associado com Agregação
   - Professor Catedrático
   - Outro, por favor especifique
4) Morada de correio
5) Email
6) Nome da disciplina e Página de Internet (se existente):
7) Se ocupar algum cargo na Universidade para além de professor(a), por favor indique qual: (por exemplo, Director de departamento, etc.)
8) É o Professor responsável pela disciplina?
   - Sim
   - Não
9) Se não é o(a) professor(a) responsável pela disciplina, por favor indique o nome do(a) professor(a) responsável:
10) Qual a sua principal área de ensino?
11) Qual a sua principal área de investigação?
12) Tem conhecimento de alguma investigação académica (teses, dissertações, *papers*, livros, etc.) que tenha sido desenvolvida na área Educação do Empreendedorismo em Portugal? Se souber, por favor identifique o investigador e o nome da sua investigação.
13) Quais as actividades que já desenvolveu durante a sua carreira?
   - Criou um negócio
   - Foi gerente duma empresa em fase de arranque
   - Foi gerente de um pequeno negócio
   - Foi gerente de uma media ou grande empresa
   - Nenhuma das anteriores

14) A sua Universidade / Instituição pretende desenvolver alguma das seguintes iniciativas para promover o empreendedorismo e a inovação? (Assinale todas as necessárias)
   - Centro para o Empreendedorismo e/ou Inovação
   - Competição de planos de negócios
   - Centro de transferência de tecnologia
   - Incubadora
   - Parque tecnológico
   - Fundo de capital de risco / *Business angel*
   - Outro (por favor especifique)

15) Por favor nomeie a(s) disciplina(s) existente(s) na sua Universidade / Instituição na área do Empreendedorismo e indique se fazem parte de um Bacharelato,

Licenciatura, Pós-Graduação, Mestrado, Doutoramento ou outro programa de formação:.

16) A sua disciplina é leccionada por:
    - Um professor
    - Um grupo de professores

17) Qual a principal razão que ditou a criação da disciplina sobre Empreendedorismo?
    - Pedidos dos alunos
    - Resposta ao Mercado / Pedidos de empresas
    - Ir de encontro às politica do governo português
    - Ir de encontro às politicas da União Europeia
    - Interesse pessoal do professor
    - Resultante de uma tese/programa de Doutoramento
    - Estruturado a partir da disciplina de uma outra Universidade
    - Outra (Por favor especifique)

18) Em que ano foi oferecida formação em empreendedorismo pela primeira vez?
    - Opções de 1985 ao presente

19) Qual o departamento responsável pela(s) oferta(s) de formação em empreendedorismo?

20) Qual a dimensão média dos grupos de estudantes/turmas que frequentaram as disciplinas de Empreendedorismo no ano lectivo de 2004/2005?
    - Menos de 11
    - Entre 11 e 15
    - Entre 16 e 20
    - Entre 21 e 25
    - Entre 26 e 30
    - Entre 31 e 35
    - Entre 36 e 40
    - Mais de 40

21) Quais são as áreas abordadas pela disciplina de Empreendedorismo?
    - Identificação de Oportunidades
    - Avaliação de Oportunidades
    - Competências em Comportamento Empreendedor e Relações Interpessoais
    - Competências em Difusão de Conhecimento
    - Competências em Relações Inter Culturais
    - Criação e Registo de Empresas
    - Análise de Mercados
    - Marketing
    - Processos Produtivos
    - Optimização de Processos
    - Gestão
    - Gestão Financeira
    - Controlo e Prevenção de Falências
    - Financiamento
    - Aspectos Legais, Incluindo Registo de Patentes
    - Desenvolvimento de Plano de Negócios
    - Financiamento Público Para a Criação de Empresas

- Financiamento Privado / *Venture Capital*
- Avaliação de Iniciativas / Projectos de Fomento de Empreendedorismo
- Outro, por favor especifique

22) Qual a frequência com que usou estes tipos de actividade pedagógica durante a última edição da disciplina, considerando o tempo relativo necessário à sua execução? (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

- Criação de Planos de Negócio	1	2	3	4	5
- Análise de Casos de Estudo	1	2	3	4	5
- Simulações Informáticas de Actividade Empresarial	1	2	3	4	5
- *Role-playing*	1	2	3	4	5
- Projectos de Investigação	1	2	3	4	5
- Estudos de Viabilidade Económico-Financeira	1	2	3	4	5
- Estágios	1	2	3	4	5
- Visitas a Pequenos Negócios	1	2	3	4	5
- Lições Teóricas					
- Outro por favor especifique	1	2	3	4	5

23) Caso tenha seleccionado a opção "Outro" tipo de actividade pedagógica na pergunta anterior, por favor especifique qual:

24) Qual a frequência com que recorre na sua aula a: (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

- Oradores Convidados: Empreendedores	1	2	3	4	5
- Oradores Convidados: Outros	1	2	3	4	5
- Debates	1	2	3	4	5

25) Qual é a percepção da cadeira pelos seguintes grupos?

- Alunos da disciplina	Favoravelmente	neutral	desfavoravelmente
- Alunos que não têm a disciplina	Favoravelmente	neutral	desfavoravelmente
- Outros professores da instituição	Favoravelmente	neutral	desfavoravelmente
- Administração da universidade / instituição	Favoravelmente	neutral	desfavoravelmente

26) Qual a frequência com que usa estes tipos de materiais de leitura na sua disciplina? (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

- Artigos de Jornais Académicos	1	2	3	4	5
- Casos de Estudos portugueses (em Português)	1	2	3	4	5

- Casos de estudo estrangeiros (em Português)	1	2	3	4	5
- Casos de estudo estrangeiros (em Inglês)	1	2	3	4	5
- Casos de estudo estrangeiros (noutra língua)	1	2	3	4	5
- Manuais de disciplina	1	2	3	4	5
- Outros livros escritos por professores	1	2	3	4	5
- Livros escritos por empreendedores	1	2	3	4	5
- Revistas e jornais	1	2	3	4	5
- Outros (por favor especifique)	1	2	3	4	5

27) Caso tenha seleccionado a opção "Outro" na pergunta anterior, por favor especifique qual:

28) A sua Universidade / Instituição candidatou-se e recebeu algum financiamento estatal (do Governo Português e/ou da Comissão Europeia) para desenvolver iniciativas em Empreendedorismo e/ou Inovação?
    - Candidatou-se e recebeu o financiamento
    - Candidatou-se mas não recebeu o financiamento
    - Não se candidatou a nenhum financiamento

29) Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:

30) A sua Universidade / Instituição candidatou-se e recebeu algum financiamento privado para desenvolver iniciativas em Empreendedorismo e/ou Inovação?
    - Candidatou-se e recebeu o financiamento
    - Candidatou-se mas não recebeu o financiamento
    - Não se candidatou a nenhum financiamento

31) Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:

32) A sua disciplina requer trabalhos com recurso obrigatório à Internet?
    - Sim
    - Não

33) A sua escola oferece a(s) disciplina(s) de Empreendedorismo pela Internet?
    - Sim
    - Não

34) A sua Universidade / Instituição disponibiliza informação na Internet sobre Empreendedorismo, *Venture Capital* e pequenos negócios a estudantes e empreendedores?
    - Sim
    - Não

35) A sua Universidade / Instituição disponibiliza assistência técnica e de gestão para estudantes e empreendedores na Internet?
    - Sim
    - Não

36) A sua Universidade / Instituição oferece algum dos seguintes? (Assinale todas as necessárias)
    - Estágios em pequenas empresas
    - Cursos de Empreendedorismo para executivos
    - Programas contínuos sobre Empreendedorismo
    - Ensino à distância de Empreendedorismo

37) A sua Universidade / Instituição mantém registo dos ex-alunos que iniciaram a sua própria empresa?
    - Sim
    - Não

38) O que distingue o seu programa de Empreendedorismo dos outros programas oferecidos por outras Universidades / Instituições?

39) Liste três tendências em educação do Empreendedorismo que preveja virem a ser implementadas em Portugal nos próximos cinco anos.

7.6 2004/2005 Entrepreneurship Program Coordinators Survey (Portuguese)

(i.e. Degree and Non-Degree Granting Programs - *Cursos*)

1) Nome da Universidade / Instituição:
2) O seu nome:
3) Título Académico:
   - Assistente
   - Assistente Convidado
   - Professor Auxiliar
   - Professor Auxiliar Convidado
   - Professor Associado com Agregação
   - Professor Catedrático
   - Outro, por favor especifique
4) Morada de correio:
5) Email:
6) Nome do curso de Empreendedorismo (Pós-Graduação, Mestrado, Doutoramento, etc.) e respectiva Página de Internet:

No caso de leccionar alguma disciplina deste curso de Empreendedorismo, por favor indique o nome:

7) Se ocupar algum cargo na Universidade para além de professor(a) e coordenador(a) deste curso, por favor indique qual (por exemplo, Director de departamento, etc):
8) Qual a sua principal área de ensino?
9) Qual a sua principal área de investigação?
10) Tem conhecimento de alguma investigação académica (teses, dissertações, *papers*, livros, etc.) que tenha sido desenvolvida na área Educação do Empreendedorismo em Portugal? Se souber, por favor identifique o investigador e o nome da sua investigação.

Quais as actividades que já desenvolveu durante a sua carreira?

- Criou um negócio
- Foi gerente duma empresa em fase de arranque
- Foi gerente de um pequeno negócio
- Foi gerente de uma media ou grande empresa
- Nenhuma das anteriores

11) A sua Universidade / Instituição pretende desenvolver alguma das seguintes iniciativas para promover o empreendedorismo e a inovação? (Assinale todas as necessárias)
    - Centro para o Empreendedorismo e/ou Inovação
    - Competição de planos de negócios
    - Centro de transferência de tecnologia
    - Incubadora
    - Parque tecnológico
    - Fundo de capital de risco / *Business angel*
    - Outro (por favor especifique)

12) Por favor nomeie a(s) disciplina(s) inserida(s) no programa curricular do curso que se incluam na área do Empreendedorismo:

13) Qual a principal razão que ditou a criação do curso de Empreendedorismo?

- Pedidos dos alunos
- Resposta ao Mercado / Pedidos de empresas
- Ir de encontro às politica do governo português
- Ir de encontro às politicas da União Europeia
- Interesse pessoal do professor
- Resultante de uma tese/programa de Doutoramento
- Estruturado a partir da disciplina de uma outra Universidade
- Outra (Por favor especifique)

14) Em que ano foi oferecida formação em empreendedorismo pela primeira vez?
    - Opções de 1985 ao present

15) Qual o departamento responsável pela(s) oferta(s) de formação em empreendedorismo?

16) Quantos alunos frequentaram o curso de Empreendedorismo no ano lectivo de 2004/2005?

- Menos de 11
- Entre 11 e 15
- Entre 16 e 20
- Entre 21 e 25
- Entre 26 e 30
- Entre 31 e 35
- Entre 36 e 40
- Mais de 40

17) Quais são as áreas abordadas pelo curso de Empreendedorismo?

- Identificação de Oportunidades
- Avaliação de Oportunidades
- Competências em Comportamento Empreendedor e Relações Interpessoais
- Competências em Difusão de Conhecimento
- Competências em Relações Inter Culturais
- Criação e Registo de Empresas
- Análise de Mercados
- Marketing
- Processos Produtivos
- Optimização de Processos
- Gestão
- Gestão Financeira
- Controlo e Prevenção de Falências
- Financiamento
- Aspectos Legais, Incluindo Registo de Patentes
- Desenvolvimento de Plano de Negócios
- Financiamento Público Para a Criação de Empresas
- Financiamento Privado / *Venture Capital*
- Avaliação de Iniciativas / Projectos de Fomento de Empreendedorismo
- Outro, por favor especifique

18) Qual a frequência com que foram usados estes tipos de actividade pedagógica durante a última edição do curso, considerando o tempo relativo necessário à sua execução? (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

- Criação de Planos de Negócio	1	2	3	4	5
- Análise de Casos de Estudo	1	2	3	4	5
- Simulações Informáticas de Actividade Empresarial	1	2	3	4	5
- *Role-playing*	1	2	3	4	5
- Projectos de Investigação	1	2	3	4	5
- Estudos de Viabilidade Económico-Financeira	1	2	3	4	5
- Estágios	1	2	3	4	5
- Visitas a Pequenos Negócios	1	2	3	4	5
- Lições Teóricas					
- Outro por favor especifique	1	2	3	4	5

19) Caso tenha seleccionado a opção "Outro" tipo de actividade pedagógica na pergunta anterior, por favor especifique qual:

20) Qual a frequência com que se recorre nas aulas: (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

- Oradores Convidados: Empreendedores	1	2	3	4	5
- Oradores Convidados: Outros	1	2	3	4	5
- Debates	1	2	3	4	5

21) Qual é a percepção do curso pelos seguintes grupos?

- Alunos da disciplina	Favorável	Neutral	Desfavorável
- Alunos que não têm a disciplina	Favorável	Neutral	Desfavorável
- Outros professores da instituição	Favorável	Neutral	Desfavorável
- Administração da universidade / instituição	Favorável	Neutral	Desfavorável

22) A sua Universidade / Instituição candidatou-se e recebeu algum financiamento estatal (do Governo Português e/ou da Comissão Europeia) para desenvolver iniciativas em Empreendedorismo e/ou Inovação?
    - Candidatou-se e recebeu o financiamento
    - Candidatou-se mas não recebeu o financiamento
    - Não se candidatou a nenhum financiamento

23) Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:

24) A sua Universidade / Instituição candidatou-se e recebeu algum financiamento privado para desenvolver iniciativas em Empreendedorismo e/ou Inovação?
- Candidatou-se e recebeu o financiamento
- Candidatou-se mas não recebeu o financiamento
- Não se candidatou a nenhum financiamento

25) Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:

26) A sua escola oferece a(s) disciplina(s) de Empreendedorismo pela Internet?
- Sim
- Não

27) A sua Universidade / Instituição disponibiliza informação na Internet sobre Empreendedorismo, *Venture Capital* e pequenos negócios a estudantes e empreendedores?
- Sim
- Não

28) A sua Universidade / Instituição disponibiliza assistência técnica e de gestão para estudantes e empreendedores na Internet?
- Sim
- Não

29) A sua Universidade / Instituição oferece algum dos seguintes? (Assinale todas as necessárias)
- Estágios em pequenas empresas
- Cursos de Empreendedorismo para executivos
- Programas contínuos sobre Empreendedorismo
- Ensino à distância de Empreendedorismo

30) A sua Universidade / Instituição mantém registo dos ex-alunos que iniciaram a sua própria empresa?
- Sim
- Não

31) O que distingue o seu programa de Empreendedorismo dos outros programas oferecidos por outras Universidades / Instituições?

32) Liste três tendências em educação do Empreendedorismo que preveja virem a ser implementadas em Portugal nos próximos cinco anos.

7.7 Entrepreneurship Researchers in and/or on Portugal

Entrepreneurship Research that also teach Entrepreneurship Courses[13]:

Rui Baptista, PhD - IST

Anabela Dinis, PhD - Universidade da Beira Interior

Pedro Dominguinhos, PhD Candidate - Instituto Politécnico de Setúbal

Vasco Eiriz, PhD - Escola de Economia e Gestão, da Universidade do Minho

José Paulo Esperança, PhD - ISCTE

Fernando Gaspar, PhD - Escola Superior de Gestão de Santarém

Nuno Leitão - Universidade Catolica Lisboa

Stefan Meisiek, PhD - Faculdade de Economia e Gestao, Universidade Nova de Lisboa

Soumodip Sarkar, PhD - Universidade de Évora

Virgínia Trigo, PhD - ISCTE

Ana Maria Ussman, PhD - Universidade da Beira Interior

Other Researcher that have written on Portugal[14]:

Suzana Alípio - ANJE - Associação Nacional de Jovens Empresários (Masters student Universidade Aveiro)

Miguel Amaral (PhD Candidate) - Instituto Superior Técnico

Luísa Margarida Cagica Carvalho (Masters) - Escola Superior de Ciências Empresariais - Instituto Politécnico de Setúbal

Vítor Escária, PhD - CIRIUS, Instituto Superior de Economia e Gestão, Technical University of Lisbon

Joao Ferrão, PhD (Geography) - Instituto de Ciencias Sociais (University of Lisbon)

Maria de Fátima Ferreiro, PhD - ISCTE

João José de Matos Ferreira, PhD - Universidade da Beira Interior

Margarida Fontes (Masters) - Universidade Minho - (works at INETI)

Manuel Heitor, PhD - IST - Secretário de Estado da Ciência, Tecnologia e Ensino

Raul Lopes, PhD (Regional Economics) - ISCTE

[13] This is as of academic year 2004/2005; Academic degrees reflect the highest known degree achieved as of this time period.

[14] The majority of these researchers have published articles on the subject or it was known to the researcher that they were in the process of publishing articles on this area.

Paulo Madruga, PhD - CIRIUS, Instituto Superior de Economia e Gestão, Technical University of Lisbon

Jose Mata, PhD - Universidade Nova

Rute Lago Matos (Masters) - ISPA

Joana Mendonca (PhD Candidate) - Instituto Superior Técnico

Miguel Torres Preto (PhD Candidate) - Instituto Superior Técnico

Mário Raposo, PhD - Universidade da Beira Interior

Boguslawa Maria Barszczak Sardinha (Masters) - Escola Superior de Ciências Empresariais - Instituto Politécnico de Setúbal

Ricardo Gouveia Rodrigues, PhD - Universidade da Beira Interior

Maria José Silva, PhD - Universidade da Beira Interior

Roy Thurik, PhD - Rotterdam School of Economics - Erasmus University Rotterdam

Ana Luisa Veloso, PhD - Universidade do Minho

7.8 2005/2006 Entrepreneurship Professors Survey (English)

Questionnaire number: _____

This survey is part of a larger study entitled "Fostering and Promoting Entrepreneurship in Portugal" being developed by PhD candidate Dana T. Redford under the direction of Professors Virgínia Trigo and Nelson António at ISCTE Business School.

The goal of this questionnaire is to collect information about all entrepreneurship lectured in Portugal during the academic year 2005/2006. The following survey explores issues relating to pedagogic methodologies, characterization of the groups of students and trends in entrepreneurship education.

It is also our aim to implement this survey on a periodic basis, making possible to analyze the evolution of entrepreneurship education in Portugal. Any information provided will be considered as strictly confidential, and will only be used for the aims of this research project.

Questionnaire

Identification

Name of the Institution (University or Institute):

_____
_

1. Respondent's name:

_____
_

2. Academic Title:

☐ Assistente
☐ Assistente Convidado
☐ Professor Auxiliar
☐ Professor Auxiliar Convidado
☐ Professor Associado com Agregação
☐ Professor Catedrático
☐ Other, please specify: _____

3. Mailing address:

_____
_

4. Email:

_____
_

5. Name of the entrepreneurship course and website address (if any) for the course:

_____
_

6. If you have any other position at this institution besides being a professor, please indicate which (e.g. Department Director, etc.):

_____
_

7. Are you the professor responsible for the course?

☐ Yes ☐ No

8. If you are not the professor responsible for the course, please specify the name of the responsible professor:

_____

9. What is your primary teaching focus?

_____

10. What is you primary research focus?

_____

11. Check any of the following activities that you have done in your career: (select as many as applicable)

☐ Founded a business
☐ Managed a new/early-stage business
☐ Managed a small business
☐ Managed a medium sized or large business
☐ None of the previous

12. Have you published any work (opinion article, scientific article, presentation, books or chapters) on entrepreneurship?

☐ Yes ☐ No

Entrepreneurship Promotion

13. Did your institution develop any of the following to promote entrepreneurship and innovation during the academic year 2005/2006 (select as many as applicable):

☐ Center for Entrepreneurship and/or Innovation
☐ Business plan competition
☐ Technology transfer office
☐ Incubator
☐ Technology Park
☐ Venture Capital / Business Angels fund
☐ Other (please specify): _____

14. Does your institution intend to develop any of the following to promote entrepreneurship and innovation in the future (select as many as applicable):

☐ Center for Entrepreneurship and/or Innovation
☐ Business plan competition
☐ Technology transfer office
☐ Incubator
☐ Technology Park
☐ Venture Capital / Business Angels fund
☐ Other (please specify): _____

15. Do you think that the functions and activities of an Entrepreneurship Center are concepts that are clear for those who are responsible for the direction of your intuition?

☐ Yes ☐ No

16. Do you think that the functions and activities of an Entrepreneurship Center are clear concepts in the Portuguese context?

☐ Yes ☐ No

Entrepreneurship Course

17. What is the primary language used during classes?

☐ Portuguese ☐ English ☐ Other: _____

18. What type of educational program is your entrepreneurship course included in?

☐ Bacharelato
☐ Licenciatura
☐ Pós-graduação
☐ Mestrado
☐ Doutoramento

19. Your course is taught by:

☐ One primary faculty member
☐ A group of faculty members

20. What was the first year entrepreneurship training was offered?

1985/1986 to 2005/2006

21. Does your University / Institute require or have plans to require entrepreneurship courses for certain degree-granting programs?

☐ Yes – Please specify the specific degree-granting program(s): _____
☐ No

22. Which area of your University / Institution is responsible for entrepreneurship education?

☐ Management Department
☐ Entrepreneurship Department
☐ Entrepreneurship Center
☐ Business School
☐ Other (please specify): _____

23. What was the average class size of your courses during the academic year 2005/2006?

_____

24. What areas are focused on during the entrepreneurship course? (select as many as applicable)

☐ Opportunity identification
☐ Opportunity assessment
☐ Networking
☐ Competences in knowledge transfer
☐ Internationalization
☐ Company creation and registry
☐ Market analysis
☐ Marketing
☐ Production processes
☐ Processes optimization
☐ Financial management
☐ Bankruptcy control and prevention
☐ Patents
☐ Business plan development
☐ Public financing in the creation of companies
☐ Private financing / Venture capital
☐ Evaluation of initiatives/projects of entrepreneurship fostering
☐ Intrapreneurship
☐ Other, please specify:_____

25. What is the frequency with which you use the following pedagogical activities during your classes, considering the relative time needed for its execution? (1 = Very frequently 2 = Frequently 3 = Occasionally 4 = Rarely 5 = Never)

	1	2	3	4	5
- Business plan creation	☐	☐	☐	☐	☐
- Case studies analysis	☐	☐	☐	☐	☐
- Computer business simulations	☐	☐	☐	☐	☐
- Role-playing	☐	☐	☐	☐	☐
- Research projects	☐	☐	☐	☐	☐
- Market feasibility studies	☐	☐	☐	☐	☐

- Internships	☐	☐	☐	☐	☐
- On-site visits to a small business	☐	☐	☐	☐	☐
- Lectures	☐	☐	☐	☐	☐
- Debates	☐	☐	☐	☐	☐
- Guest speakers: Entrepreneurs	☐	☐	☐	☐	☐
- Guest speakers: Venture capitalists	☐	☐	☐	☐	☐
- Other (please specify) _____	☐	☐	☐	☐	☐

26. How do you think the course is perceived by the following groups?

	Favorably	Neutral	Unfavorably
- Students taking the course	☐	☐	☐
- Students NOT taking the course	☐	☐	☐
- Other academics in this institution	☐	☐	☐
- University / Institute administration	☐	☐	☐

27. How can the entrepreneurship education be better promoted for students?

_____

_____

28. What is the frequency in which you use the following types of reading materials in your course? (1 = Very frequently 2 = Frequently 3 = Occasionally 4 = Rarely 5 = Never)

	1	2	3	4	5
- Academic journal articles	☐	☐	☐	☐	☐
- Course manuals	☐	☐	☐	☐	☐
- Books written by you	☐	☐	☐	☐	☐
- Books written by other professors	☐	☐	☐	☐	☐
- Books written by entrepreneurs	☐	☐	☐	☐	☐
- Magazines and newspapers	☐	☐	☐	☐	☐
- Multimedia	☐	☐	☐	☐	☐
- Other (please specify) _____	☐	☐	☐	☐	☐

29. What is the country of origin of the majority of the reading materials used in the course?

_____

30. Did you develop any activity to promote / divulge your entrepreneurship course?

☐ Yes ☐ No

31. If yes, how do you promote your course? (select as many as applicable)

☐ Distribution of flyers and posters
☐ Through the Internet
☐ Periodicals (journals, magazines, etc.)
☐ Through other means (please specify): _____

Use of Technologies in Entrepreneurship Education

32. Do you require web-based assignments as part of your curriculum?

☐ Yes ☐ No

33. Does your institution offer information on the web regarding Entrepreneurship, New Venture Creation, and Small Business to either students or entrepreneurs?

☐ Yes ☐ No

34. Does your institution offer management and technical assistance on-line for students and entrepreneurs?

☐ Yes ☐ No

Entrepreneurship Education in Portugal

35. Does your institution offer any of the following? (select as many as applicable)

☐ Internships in SMEs for students that attend your course
☐ Internships in big companies for students that attend your course
☐ Executive development courses in Entrepreneurship
☐ Post-Graduations in Entrepreneurship
☐ Distance learning in Entrepreneurship via the Internet

36. Does your institution formally keep track of alumni of the entrepreneurship courses who have started their own businesses?

☐ Yes ☐ No

37. What distinguishes your Entrepreneurship course's curriculum from other Entrepreneurship courses' curricula lectured in other Institutions?

_____
_____
_____
_____
_____

38. List three trends in entrepreneurship education that you predict to be implemented in Portugal within the next five years:

_____
_____
_____
_____
_____

7.9 2005/2006 Entrepreneurship Professors Survey (Portuguese)

Número do questionário: _____

Este inquérito insere-se no âmbito da tese de doutoramento de Dana T. Redford, cujo título provisório é "Fostering & Promoting Entrepreneurship & Innovation in Portugal", a decorrer no ISCTE sob a orientação dos Professores Virgínia Trigo e Nelson António.

O objectivo deste questionário é recolher informação referente às disciplinas de empreendedorismo leccionadas em Portugal, durante o ano académico de 2005/2006. Explora temas como metodologias utilizadas, caracterização das turmas e tendências do ensino do empreendedorismo.

É também nosso objectivo poder vir a implementar o inquérito periodicamente, tornando possível uma análise da evolução do ensino do empreendedorismo em Portugal. Qualquer informação fornecida será considerada estritamente confidencial e só será usada para os objectivos deste estudo

Questionário

Identificação

39. Nome da Instituição (Universidade ou Instituto):
    _____
40. O seu nome: _____
41. Título Académico:
    - ☐ Assistente
    - ☐ Assistente Convidado
    - ☐ Professor Auxiliar
    - ☐ Professor Auxiliar Convidado
    - ☐ Professor Associado com Agregação
    - ☐ Professor Catedrático
    - ☐ Outro, por favor especifique: _____
42. Morada de correio:_____
43. Email: _____
44. Nome da disciplina de empreendedorismo leccionada e página de Internet (se existente):
    _____
45. Se ocupar algum cargo na instituição para além de professor(a), por favor indique qual: (por exemplo, Director de departamento, etc.) _____
46. É o Professor responsável pela disciplina? ☐ Sim ☐ Não
47. Se não é o(a) professor(a) responsável pela disciplina, por favor indique o nome do(a) professor(a) responsável:
    _____
48. Qual a sua principal área de ensino? _____
49. Qual a sua principal área de investigação? _____
50. Quais as actividades que já desenvolveu durante a sua carreira?
    - ☐ Criou um negócio
    - ☐ Foi gerente duma empresa em fase de *start-up*
    - ☐ Foi gerente de um pequeno negócio
    - ☐ Foi gerente de uma media ou grande empresa
    - ☐ Nenhuma das anteriores

A Promoção do Empreendedorismo

51. A sua instituição desenvolveu alguma das seguintes iniciativas para promover o empreendedorismo durante o ano académico 2005/2006? (Assinale todas as necessárias)
    - ☐ Centro para o Empreendedorismo e/ou Inovação

☐ Competição de planos de negócios
☐ Centro de transferência de tecnologia
☐ Incubadora
☐ Parque tecnológico
☐ Fundo de capital de risco / *Business angels*
☐ Outro (por favor especifique): _____

52. A sua instituição pretende desenvolver alguma das seguintes iniciativas no futuro? (Assinale todas as necessárias)
☐ Centro para o Empreendedorismo e/ou Inovação
☐ Competição de planos de negócios
☐ Centro de transferência de tecnologia
☐ Incubadora
☐ Parque tecnológico
☐ Fundo de capital de risco / *Business angels*
☐ Outro (por favor especifique): _____

A Disciplina de Empreendedorismo

53. Qual a principal língua em que a disciplina é leccionada? ☐ Português ☐ Inglês ☐ Outra: _____

54. A sua disciplina de empreendedorismo é parte integrante de que tipo de curso?
☐ Bacharelato
☐ Licenciatura
☐ Pós-graduação
☐ Mestrado
☐ Doutoramento

55. A sua disciplina é leccionada por:
☐ Um Professor
☐ Um grupo de professores

56. Qual a principal razão que ditou a criação da disciplina sobre empreendedorismo?
☐ Pedidos dos alunos
☐ Resposta ao Mercado / Pedidos de empresas
☐ Ir de encontro às politica do governo português
☐ Ir de encontro às politicas da União Europeia
☐ Interesse pessoal do professor
☐ Resultante de uma tese/programa de Doutoramento
☐ Estruturado a partir da disciplina de uma outra Universidade
☐ Outra (por favor especifique):_____

57. Em que ano académico foi oferecida a disciplina de empreendedorismo pela primeira vez?

58. Qual a área (unidade orgânica) responsável pela gestão da oferta formativa em empreendedorismo?
☐ Departamento de Gestão
☐ Departamento de Empreendedorismo
☐ Centro de Empreendedorismo
☐ Escola de Gestão
☐ Outra (por favor, especifique): _____

59. Qual a dimensão média dos turmas que frequentaram disciplina de empreendedorismo no ano lectivo de 2005/2006?

☐ Menos de 11
☐ Entre 11 e 15
☐ Entre 16 e 20
☐ Entre 21 e 25
☐ Entre 26 e 30
☐ Entre 31 e 35
☐ Entre 36 e 40
☐ Mais de 40

60. Quais são as áreas abordadas pela disciplina de Empreendedorismo?
☐ Identificação de Oportunidades
☐ Avaliação de Oportunidades
☐ *Networking*
☐ Competências em Difusão de Conhecimento
☐ Internacionalização
☐ Criação e Registo de Empresas
☐ Análise de Mercados
☐ Marketing
☐ Processos Produtivos
☐ Optimização de Processos
☐ Gestão
☐ Gestão Financeira
☐ Controlo e Prevenção de Falências
☐ Financiamento
☐ Aspectos Legais
☐ Registo de Patentes
☐ Desenvolvimento de Plano de Negócios
☐ Financiamento Público para a Criação de Empresas
☐ Financiamento Privado / Capital de Risco
☐ Avaliação de Iniciativas / Projectos de Fomento de Empreendedorismo
☐ Outra, por favor especifique:_____

61. Qual a frequência com que usa estes tipos de actividade pedagógica durante a sua disciplina, considerando o tempo relativo necessário à sua execução? (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

	1	2	3	4	5
- Criação de Planos de Negócio	☐	☐	☐	☐	☐
- Análise de Estudos de Caso	☐	☐	☐	☐	☐
- Simulações Informáticas de Actividade Empresarial	☐	☐	☐	☐	☐
- *Role-playing*	☐	☐	☐	☐	☐
- Projectos de Investigação	☐	☐	☐	☐	☐
- Estudos de Viabilidade Económico-Financeira	☐	☐	☐	☐	☐
- Estágios	☐	☐	☐	☐	☐
- Visitas a Pequenos Negócios	☐	☐	☐	☐	☐
- Lições Teóricas	☐	☐	☐	☐	☐
- Debates	☐	☐	☐	☐	☐
- Oradores Convidados: Empreendedores	☐	☐	☐	☐	☐
- Oradores Convidados: Responsáveis de Empresas de Capital de Risco	☐	☐	☐	☐	☐
- Outro (por favor especifique) _____	☐	☐	☐	☐	☐

62. Qual é a percepção da disciplina pelos seguintes grupos?

	Favorável	Neutral	Desfavorável
- Alunos da disciplina	☐	☐	☐
- Alunos que não têm a disciplina	☐	☐	☐
- Outros professores da instituição	☐	☐	☐
- Administração da instituição	☐	☐	☐

63. Qual a frequência com que usa estes tipos de materiais de leitura na sua disciplina? (1 = Muito frequentemente 2 = Frequentemente 3 = Ocasionalmente 4 = Raramente 5 = Nunca)

1	2	3	4	5

- Artigos de Jornais Académicos	☐	☐	☐	☐	☐
- Manuais de disciplina	☐	☐	☐	☐	☐
- Livros escritos por si	☐	☐	☐	☐	☐
- Livros escritos por outros professores	☐	☐	☐	☐	☐
- Livros escritos por empreendedores	☐	☐	☐	☐	☐
- Revistas e jornais	☐	☐	☐	☐	☐
- Multimédia	☐	☐	☐	☐	☐
- Outros (por favor especifique) _____	☐	☐	☐	☐	☐

64. Qual o país de origem da maioria dos materiais de leitura utilizados na sua disciplina?
_____

65. Desenvolveu alguma acção de promoção/comunicação da sua disciplina de empreendedorismo? ☐ Sim ☐ Não

66. Se sim, de que forma promove a disciplina?
☐ Através da distribuição de folhetos ou cartazes
☐ Na Internet
☐ Através de publicações periódicas (jornais, revistas, etc.)
☐ Através de outros meios (por favor, especifique):
_____

Financiamento da Oferta em Empreendedorismo

67. A sua instituição candidatou-se e recebeu algum financiamento estatal (do Governo Português e/ou da Comissão Europeia) para desenvolver iniciativas na área do empreendedorismo?
☐ Candidatou-se e recebeu o financiamento
☐ Candidatou-se mas não recebeu o financiamento
☐ Não se candidatou a nenhum financiamento

68. Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:
_____

69. A sua instituição candidatou-se e recebeu algum financiamento privado para desenvolver iniciativas na área do empreendedorismo?
☐ Candidatou-se e recebeu o financiamento
☐ Candidatou-se mas não recebeu o financiamento
☐ Não se candidatou a nenhum financiamento

70. Se se candidatou por favor indique qual a fonte e o nome desse programa de financiamento:
_____

Tecnologia na Educação do Empreendedorismo

71. A sua disciplina requer trabalhos com recurso obrigatório à Internet? ☐ Sim ☐ Não

72. A sua instituição disponibiliza informação na Internet sobre empreendedorismo, capital de risco e pequenos negócios a estudantes e empreendedores? ☐ Sim ☐ Não

73. A sua instituição disponibiliza assistência técnica e de gestão para estudantes e empreendedores na Internet? ☐ Sim ☐ Não

Oferta Formativa da Instituição

74. A sua instituição oferece algum dos seguintes? (Assinale todas as necessárias)
☐ Estágios em PME's para alunos da sua disciplina
☐ Estágios em empresas de grande dimensão para alunos da sua disciplina
☐ Cursos de Empreendedorismo para executivos
☐ Pós-graduações em Empreendedorismo
☐ Ensino à distância de Empreendedorismo (*e-learning*)

75. A sua Instituição mantém registo dos ex-alunos de disciplinas de empreendedorismo que iniciaram a sua própria empresa? ☐ Sim ☐ Não

A Educação em Empreendedorismo em Portugal

76. O que distingue o seu programa da disciplina de Empreendedorismo dos restantes programas de disciplinas de empreendedorismo oferecidos por outras Instituições?

_____
_____
_____
_____
_____

77. Liste três tendências em educação do Empreendedorismo que preveja virem a ser implementadas em Portugal nos próximos cinco anos.

_____
_____
_____
_____
_____

7.10 National Undergraduate Student Survey (English)

Questionnaire Control

A. Control Number of Questonnaire_____
B. Course: _____
C. Faculity/Department/School: _____
D. University/Institute: _____
E. *Distrito* and *concelho* where the university/institute is located:
Distrito _____ *Concelho*_____

Individual Profile:

F. Gender (please indicate):
___ Female
___ Male

G1. *Distrito* and *concelho* where you usually live:
Distrito _____ *Concelho*_____
G2. *Distrito* and *concelho* where you live during the school year:
Distrito _____ *Concelho*_____

H. Indicated the year that you were born _____

I. How do you classify your family income (either your parents or you and your spouse / partner)?
___ Upper Income, Upper Middle Income (higher than the average)
___ Middle Income (equal to the average) Rendimentos médios (igual à maior parte)
___ Lower Income (less than the average)

J. What is the highest educational level attended by your parents (please indicate the highest level completed):

J1) Father	J2) Mother
___ Grade school/or less	___ Grade school/or less
___ Some high school	___ Some high school
___ High school Diploma	___ High school Diploma
___ Professional/technical school	___ Professional/technical school
___ Some College	___ Some College
___ *Bacharelato*	___ *Bacharelato*
___ *Licenciatura*	___ *Licenciatura*
___ *Mestrado*	___ *Mestrado*
___ *Doutoramento*	___ *Doutoramento*
___ Don't know	___ Don't know

Q1 – After finishing your course, what do you intend to do?

Work in public service ___
Work in a multinational company ___
Work in a SME ___
Create my own company ___
Other (please specify) _____

Q2 – Do you believe it is possible that you will ever own your own business?

Yes ___
No ___ (if not, go to question #5)

Q3 – If you answered yes, how much time do you think you would wait after finishing your course to start your own business?

Less than 2 years ___
Between 2 to 5 years ___
Between 6 to 10 years ___
More than 10 years ___

Q4 – The business you expect to create will serve the:

Local market ___
Portuguese market ___
Iberian market ___
European market ___
World market ___

Q5 – If you were to set up a business, which are the two risks you would be most afraid of?

The uncertainty of your income ___
Job uncertainty ___
The risk of loosing your property ___
The need to devote too much energy or time to it ___
The possibility of suffering a personal failure ___
The possibility of going bankrupt ___
Other (please specify) _____

Q6 – In your opinion, what are the main barriers for developing a company in Portugal?

Bureaucracy of governmental entities ___
Unfavorable economic climate ___
Lack of information available ___
Lack of financial support from the State ___
High amount of money required to create a company ___
Rigid labor market ___
Difficulties in obtaining funds from private investors / banks / venture capital ___
Other (please specify) _____
DK / NA ___

Q7 – In your opinion, where should basic knowledge of how to create and run a business be taught? (select those that you find most appropriate)

At secondary schools ___
At technical secondary schools ___
Tertiary education: Bachelors/Licenciatura ___
Tertiary education: Post-graduate/Masters ___
Seminars/workshops/executive courses ___
Professional Training ___
Elsewhere (please specify)_____
Nowhere, it cannot be taught ___
DK/NA ___

Q8 – Which of the following statements do you feel best represents your opinion?

As a student, I believe that our education system develops a state of mind that encourages us to create our own company. ___
As a student, I believe that our education system does not develop a state of mind that encourages us to create our own company. ___
DK/NA ___

Q9 – To what extent do you agree or disagree with each of the following statements?

1 = strongly agree 2 = agree 3 = neutral 4 = disagree 5 = strongly disagree

- After investing in my education I expect immediate return	1 2 3 4 5
- Most people can be trusted	1 2 3 4 5
- Contacts are important to have success in life	1 2 3 4 5
- *Cunhas** are important to have success in life	1 2 3 4 5
- For a project to be successful one must build partnerships	1 2 3 4 5
- After investing in the creation of a company I expect immediate return	1 2 3 4 5

* *Cunhas* – is best translated as "personal favors". It has a similar connotation to the English expression of "pulling strings" to achieve personal or professional advancement.

7.11 National Undergraduate Student Survey (Portuguese)

Controlo do Questionário

A. Controlo Numérico do Questionário_____
B. Curso: _____
C. Faculdade/Departamento/Escola: _____
D. Universidade/Instituto: _____
E. Distrito e concelho onde se encontra sediado o estabelecimento:
Distrito _____ Concelho_____

Perfil individual

F. Género (por favor indique):
___ Feminino
___ Masculino

G.1 Distrito e concelho de residência habitual: Distrito _____
Concelho_____
G.2 Distrito e concelho de residência em período lectivo:
Distrito _____ Concelho_____

H. Indique o ano em que nasceu _____

I. Como classificaria a sua família com base no rendimento dos seus pais ou no rendimento da sua esposo(a) / parceiro(a)?
___ Rendimentos altos, rendimentos médio/alto (mais alto do que a maior parte)
___ Rendimentos médios (igual à maior parte)
___ Baixos rendimentos (mais pobre que a maior parte)

J. Qual o nível de educação mais elevado obtido pelos seus pais (escolha o grau obtido mais elevado):

a) Pai	b) Mãe
___ Escola pública/básica ou menos	___ Escola pública/básica ou menos
___ Alguma frequência de ensino secundário	___ Alguma frequência de ensino secundário
___ Diplomado do ensino secundário	___ Diplomado do ensino secundário
___ Escola profissional/técnica	___ Escola profissional/técnica
___ Alguma frequência de ensino superior	___ Alguma frequência de ensino superior
___ Bacharelato	___ Bacharelato
___ Licenciatura	___ Licenciatura
___ Mestrado	___ Mestrado
___ Doutoramento	___ Doutoramento
___ Não sabe	___ Não sabe

Q1 – Depois de concluir o seu curso, o que tenciona fazer?

Trabalhar na função pública ___
Trabalhar numa empresa multinacional ___
Trabalhar numa PME ___
Criar uma empresa própria ___
Outro (por favor especifique) _____

Q2 – Acredita na possibilidade de alguma vez vir a ter o seu próprio negócio?
Sim ___
Não ___ (se não, passe para a pergunta #5)

Q3 – Se respondeu sim, quanto tempo pensa que irá esperar após a conclusão do curso para iniciar o seu negócio?

No máximo, 2 anos ___
Entre 2 a 5 anos ___
Entre 6 a 10 anos ___
Mais de 10 anos ___

Q4 – O negócio que pensa criar irá servir o mercado:

Local ___
Português ___
Ibérico ___
Europeu ___
Mundial ___

Q5 – Se fosse iniciar um novo negócio, quais são os dois riscos que mais receia?

A incerteza quanto ao rendimento ___
Insegurança no trabalho ___
A possibilidade de sacrificar bens pessoais ___
A necessidade de dedicar demasiada energia ou tempo nele ___
A possibilidade de falhar a nível pessoal ___
A possibilidade do negócio ir à falência ___
Outro (por favor especifique) _____

Q6 – Na sua opinião, quais são os dois principais entraves à criação de uma empresa em Portugal?

Burocracia de entidades governamentais ___
Clima económico desfavorável ___
Ausência de informação disponível ___
Ausência de apoios financeiros por parte do Estado ___
Elevado montante necessário para criar uma empresa ___
Rigidez do mercado de trabalho ___
Dificuldades em obter financiamento de privados / bancos /capital de risco ___
Outro (por favor especifique) _____
NS / NR ___

Q7 – Na sua opinião, onde deverão ser ensinados conhecimentos básicos sobre a criação e gestão de um negócio? (seleccione aqueles que ache mais apropriados)

Nas escolas secundárias ___
Nas escolas profissionais ___
No ensino superior: bacharelato/licenciatura ___
No ensino superior: pós-graduação/mestrado ___
Seminários/workshops/cursos para executivos ___
Formação profissional ___
Outro (por favor especifique)_____
Em nenhum lugar, não pode ser ensinado ___
NS/NR ___

Q8 – Qual das seguintes afirmações mais se adequa à sua opinião?

Enquanto estudante, acredito que o nosso sistema educativo desenvolve uma predisposição para criarmos a nossa própria empresa. ___
Enquanto estudante, não acredito que o nosso sistema educativo desenvolva uma predisposição para criarmos a nossa própria empresa. ___
NS/NR ___

Q9 Em que medida concorda ou discorda com as seguintes afirmações?
1 = concordo totalmente 2 = concordo 3 = indiferente 4 = discordo 5 = discordo totalmente

- Ao investir na minha educação espero obter benefícios imediatos	1 2 3 4 5
- Podemos confiar na maior parte das pessoas	1 2 3 4 5
- Os contactos são importantes para se vencer na vida	1 2 3 4 5
- As cunhas são importantes para se vencer na vida	1 2 3 4 5
- Para um projecto ter sucesso é importante construir parcerias	1 2 3 4 5
- Ao investir na criação de uma empresa espero obter retorno imediato	1 2 3 4 5

7.12 Experts Consulted during the Second Phase of Field Research (September, 2006 to October, 2007)

Government:

Antonio Castro Guerra – Secretary of State, Ministry of Economy and Innovation

Alfred Hoffman, Jr. – Ambassador, United States Embassy - Lisbon

Jaime Andrez – Chairman of the Board, IAPMEI – Institute for the Support to SME and Innovation

Manuel Sebastião – Board Member, Bank of Portugal

Victor Figueiredo – Director, DG Innovation and Curricular Development, Ministry of Education

Organizations:

Armindo Monteiro – President, Associação Nacional de Jovens Empresários

Artur Santos Silva – President, COTEC Portugal - Associação Empreserial para a Inovação

Charles Buchannan – Administrador, Fundação Luso-Americana para o Desenvolvimento

Diogo Simões Pereira – Director General, EPIS - Empresários pela Inclusão Social

Eduardo Marçal Grilo – Board Member, Fundação Gulbenkian

Fernando Durão – Secretario-Geral, Fundação Luso-Americana para o Desenvolvimento

Inês Sousa – Director, YDreams

Luís Barata – Secretario-Geral, SEDES - Associação para o Desenvolvimento Económico e Social

Luis Mira Amaral – Former Minister, Board Member, Banco Português de Investimentos

Luis Valente de Oliveira – Former Minister, Board Memeber AEP – Portuguese Business Assocation

Universities:

University Professors Consulted:

James Taylor – Professor, Universidade Aveiro

Jonathan Levie – Director, Hunter Centre for Entrepreneurship at Strathclyde University

José Ramalho Fontes – Director-Geral, AESE – Escola de Direcção e Negócios

Maria de Lourdes Machado – Researcher, CIPES - Centro de Investigação de Políticas do Ensino Superior

Stefan Meisiek – Professor, Universidade Nova

PhD Candidates Consulted:

Ana Luísa Veloso – Professor, Instituto de Educaçao e Psicologia, Departamento de Psicologia, University of Minho,

Chris Ryder –PhD Candidate, Business & Public Policy, University of California, Berkeley

Deolinda Adao – PhD Candidate, Portuguese Studies, University of California, Berkeley

Media:

James Silver – Bureau Chief, Bloomberg News Agency