

INSTITUTIONAL SUPPORT PROGRAM FOR ENTREPRENEURSHIP: THE EXPERIENCE OF THE UNIVERSITY OF MINHO

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Abstract:

Entrepreneurship has a significant effect in promoting innovation, productivity, creating employment opportunities and economic development of a country. In many countries has been made a significant effort to promote entrepreneurship. An entrepreneur is someone who is able to develop new products and services, taking risks and identifying opportunities. The university programs have one important role in identifying business opportunities and support during the entrepreneurial process. Since Portugal has been particularly affected by the current crisis, with particular focus on the country's unemployment rate and economic operating conditions, which impact can have an academic initiative like the TecMinho's IdeaLab of University of Minho? Since 2009, the University of Minho has in operation a business ideas laboratory, the TecMinho's IdeaLab, which supports the generation and development of technology-based and / or knowledge intensive business ideas. Having already completed eight editions, it is intended to support students and graduates of the University of Minho from any scientific area. In addition to testing the commercial potential of the ideas presented, evaluates the vocation and entrepreneurial skills of the participants through the various stages of the program. Besides presenting and discussing the results over time, the paper complements the analysis with a case study of participants and ideas that were selected to initiate the TecMinho's IdeaLab workshop phase. Since its foundation, the TecMinho's IdeaLab has supported the development of 126 business ideas and enabled for 291 entrepreneurs the acquisition of knowledge and skills in business development and business creation, regardless their training areas. In addition to the individual characteristics and skills of participants, we analyze the characteristics of the ideas presented, in order to contribute for the understanding of the evolution of the program. The presented results make a contribution in the Portuguese academic entrepreneurship theme and in particular in the University of Minho case.

Keywords: Entrepreneurship, support program, University of Minho, Portugal

1. Introduction

The entrepreneurship origin lies in the recognition of an opportunity or a need, in meeting the necessary resources and the creation of a company. The universities, given their potential for knowledge and research, have been implementing programs to encourage entrepreneurship, particularly through the creation of technology transfer offices, incubators, entrepreneurship centers or establishing internal funds to stimulate the application of patents, revenue licensing and the creation of spin-offs.

Located in the northern region of the country, in a region of strong industrial implementation, the University of Minho created in 1990 the TecMinho, an interface with the peripheral business environment that provides a comprehensive set of services for managing innovations born at the University of Minho. TecMinho has three complementary departments, and beyond its technical and scientific component, has been developing initiatives to promote entrepreneurship such the creation in 2009 of TecMinho's IdeaLab, a program to support the generation and development of ideas for technology-based business and / or knowledge intensive of students and graduates of the University of Minho from any scientific area.

The present study aims to examine the TecMinho's IdeaLab program to support entrepreneurship among University of Minho's students and is organized into five sections, besides the introduction. Section 2 presents the importance of education in promoting entrepreneurship. Section 3 gives a brief summary of the Portuguese University of Minho's program to support and promote entrepreneurship. Section 4 presents the case study of TecMinho's IdeaLab with the analysis. Finally, Section 5 presents the main conclusions.

2. Entrepreneurs and Education

Entrepreneurship origin lies in the recognition of an opportunity or a need, in meeting the necessary resources and the creation of a company. Additionally it can be stated that, apart from putting the market in equilibrium, entrepreneurs are individuals who are aware of the business opportunities and use the means at its disposal to make best use of these resources (Kirzner, 1997).

The origin of the word "entrepreneur" resides in the French verb "entreprendre" which means "to undertake". Entrepreneurs are held responsible for economic development, by introducing and implementing innovative ideas such as product innovation, process innovation, market innovation and organizational innovation. The implementation of these new ideas creates new companies which generate economic growth and supply new jobs for the working population (Van Praag, 1999). The work of Wong et al (2005) state that small businesses and newly formed firms create a substantial number of new jobs, with some studies showing that small and new firms are the source for the majority of new jobs created.

Many countries have put policy priority on supporting entrepreneurship, but as Drucker (2006) said entrepreneurship is neither a science nor an art, it can be learned and should be practiced, because entrepreneurs are not born but are molded.

Policy makers believe that increased levels of entrepreneurship can be attained through education and especially entrepreneurship education (Curteis, 1997). Several authors, such as Raijman (2001) and Askun and Yiidirim (2011) defend that education, by providing broad skills, training and knowledge facilitates the access to the business world through enabling individuals to assess the extent of the labor market, and the kind of goods customers demand, and to organize a business. For Carayannis et al (2003) there is no doubt that entrepreneurship education seeks to build knowledge and skills and also increases the likelihood of entrepreneurial success. Furthermore, Souitaris et al (2007) and Von Graevenitz (2010) added that entrepreneurship education increases the intention to start a new business. A key assumption underlying the entrepreneurship education is that entrepreneurship skills can be taught and are not fixed personal characteristics. Indeed, it has been shown that (1) the effect of general education as measured in years of schooling on entrepreneur performance is positive and (2) the business training is effective or the performance of people who applied for microfinance to start their own business (Oosterbeek et al, 2010).

3. Entrepreneurship at the University of Minho

The spread of the negative effects of the international financial and economic crisis has significantly affected the activity of the Portuguese economy, with particular emphasis and impact on the unemployment rate of the country and the conditions of its economy. The emergence of entrepreneurs, able to identify and seize opportunities, invest and create wealth and jobs are critical to the recovery and development of national economy (GEM, 2010).

A recent study confirms a new generation of Portuguese entrepreneurs with higher qualifications (LINI, 2009) but data from the GEM survey indicated in 2010 a score to Portugal of just 4.5% for the rate TEA (early-stage activity entrepreneurship tax), a significant decrease of the value obtained in 2007. Regarding gender distribution of entrepreneurs in Portugal, the number of entrepreneurs male (5.9%) is equivalent to about twice the number of female's entrepreneurs (3%) (GEM, 2010).

At the academic level, the programs of institutional support for academic entrepreneurship are recent, but there is an increase in the last four years of individual initiatives of the various public universities. One of earlier examples was the University of Minho, a public university located at the north of Portugal. Established in 1973, began its teaching activity in 1975 and offers nowadays a portefólio with several courses at all levels of higher education whose quality has been evidenced by several national and international assessments. The scientific and academic activities of the University of Minho are organized into two separate campi. The Gualtar campus, located in the city of Braga, is where are the courses of exact and natural sciences, social sciences and humanities. The Azurém campus in the city of Guimarães, hosts the schools of architecture and engineering. At the human level, the university mobilizes 1100 teachers and 550 staff to cope with a diverse educational offer (total of 234 courses) and a student population of 18,700 students, of which approximately 4,300 are master's degree students and 1,900 are doctoral students.

University of Minho believes that its mission is based on three projects: teaching, research and the

provision of specialized services to the community. Thus, the organizational structure of the University is currently organized into eight schools and three institutes and is associated with 13 interface structures comprising:

- 3 structures oriented to knowledge transfer (TecMinho the IDITE Minho and SpinValor),
- 1 Park of Science and Technology (The Ave Park),
- 1 business incubator (the Spinpark),
- 1 binding entity encompassing the outside (Foundation Carlos Lloyd Braga) and,
- 7 structures aimed at applied research interaction with the business sector.

The developed work has highlighted this University as an important agent of regional development. The University of Minho has created several centers of applied research and one interface structure, TecMinho, to respond to requests from the strong existing industrial park in the area where it is inserted. Founded in 1990 as a joint initiative of the University of Minho and the Association of Municipalities of the Ave Valley, TecMinho is the interface structure of the university in the scientific and technological aspects. During its early years, TecMinho guided primarily for projects of regional development but, from 1998, it began to focus increasingly on the enhancement of university knowledge by promoting entrepreneurship, protection of intellectual property rights, licensing and the creation of spin-offs.

The mission of TecMinho is defined in three main lines of action: 1) supporting the development of new technologies / products / processes and transfer to companies, 2) the design and implementation of activities in education and training (classroom and e-learning), organizational development and transnational mobility of human resources, 3) support for university entrepreneurship and the creation of innovative firms with particular attention to the academic spin-offs. TecMinho provides a comprehensive set of services for managing innovations born at the University of Minho and is structured in three complementary departments. The first, the Technology Transfer Department ensures the protection of new products or processes, the development of a portfolio of technologies and the commercialization of University assets. Second, the Department of Advanced Education aims to improve business competitiveness based on the qualification of human resources, by offering various training courses for individuals. Finally, the Department of Entrepreneurship encourages the formation of technology-based companies, by encouraging an entrepreneurial culture and support for spin-offs in the pre-start and start-up.

Aiming to develop the entrepreneurial skills of students at the University of Minho, TecMinho has implemented several initiatives to foster an entrepreneurial culture in academia and promote entrepreneurship as a valid alternative career. The most recent initiative was the establishment in 2009 of a laboratory of ideas, TecMinho's IdeaLab, aimed at facilitating the generation and development of innovative business ideas by students from the University of Minho.

4. The TecMinho's IdeaLab (University of Minho)

4.1. Methodology

Ongoing research aims to examine the use and impact of programs of institutional support for entrepreneurship, in order to answer the research question: "What is the impact of initiatives such as the program to support entrepreneurship at the University of Minho?". Thus, at an early stage of the investigation, it was decided that the research strategy would be a case study of the University of Minho, in the particular case of TecMinho's IdeaLab. The methodology of case study consists of detailed research, based on data collected over a period of time, one or more organizations, in order to obtain an analysis of the problem to be studied. In the particular case of this work, it can be stated that this is a case study explaining why if you want to find relationships cause-effect relationship between certain situations.

4.2. Presentation of the TecMinho's IdeaLab Programm

The TecMinho's IdeaLab emerged under an application submitted by TecMinho to the contest "Promoting Entrepreneurship in Higher Education Students Portuguese" promoted in 2007 by COTEC Portugal. Supported by the University of Minho and subsequently approved and co-financed by COTEC, the application was designed to define an integrated strategy to encourage entrepreneurship at the University of Minho and able to develop students entrepreneurial skills and promote entrepreneurship as an attractive alternative career.

TecMinho's IdeaLab was established at the beginning of 2009 after the establishment of a cooperation agreement between TecMinho and the Mälardalen University (Sweden) where this model was originally implemented. The TecMinho's IdeaLab provides hands-on training and consultancy in order to help participants generate and develop innovative business ideas and also provides them access to the laboratory for a maximum period of 5 months in order to mature their business ideas. The TecMinho's IdeaLab of University of Minho intends to support the generation and development of business ideas with a technological and/or intensive knowledge background of students or graduates of any scientific area.

With this TecMinho's IdeaLab program, the University of Minho seeks:

1. Provide promoters of selected ideas with knowledge, methodologies and tools related to the creation and development of innovative businesses in order to facilitate analysis, planning and implementation of marketable products or services;
2. Encourage entrepreneurs attitudes, behaviors and values within the academic community (particularly the student community) and raise awareness of entrepreneurship as a valid career option;
3. Intensify the dynamic creation of innovative firms generated from the University of Minho (*i.e.*, spin-offs) to contribute to the renewal of the business in the region.

Besides testing the commercial potential of ideas presented, the TecMinho's IdeaLab evaluates the entrepreneurial vocation and competencies of its participants along three phases. The first phase, the receipt of business ideas, makes the analysis and selection of ideas presented by different promoter candidates. The second phase, start-up workshops, allows the development of skills related to business creation and business development through the frequency of training workshops on creativity and innovation management, strategic analysis, market analysis, analysis financial and elevator pitch. The third and final phase, pre-incubation is the individualized guidance by a "Business Coach" to allow the definition and implementation of business ideas.

4.3. Analysis of TecMinho's IdeaLab's editions

Since 2009, the TecMinho's IdeaLab concluded a total of eight editions, two editions each year (April-July and November-March). This article focuses on data from phase start-up workshops with a number of participants or promoters by year ranged from 62 participants (2010) and 82 participants (year 2011). With a total of 291 participants in this initiative is spreading across the University, and has a laboratory in the School of Engineering, Campus Azurém.

In editions of TecMinh's IdeaLab there is a significant majority of male participants (72.9% versus 27.1% of females). However, throughout the editions, the gender distribution has been some variations (see Figure 1). Editions 5th, 6th and 7th showed a significant increase of female participants, with a peak of 45% in the 7th Edition. However, on 8th Edition the female participation decreased to 19%.

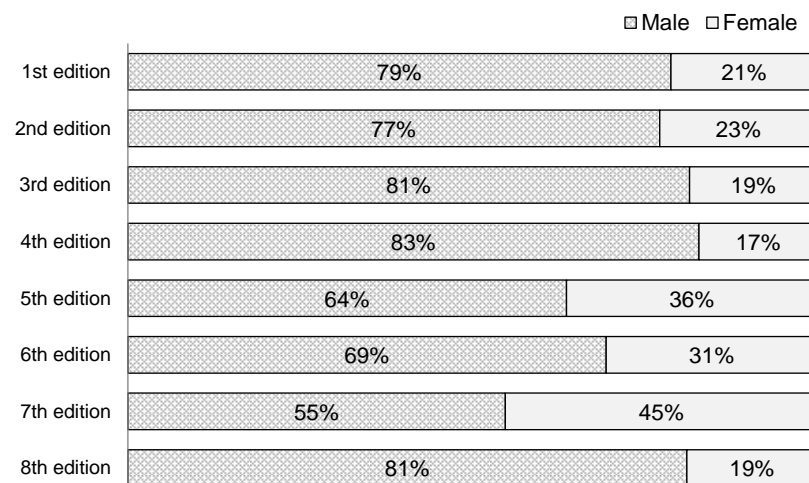


Figure 1: Participants' Gender

In turn, the analysis of the training participants distinguishing the engineering background of non-engineering shows that most participants have training in engineering (55.7% versus 40.9% non-engineering). By analyzing the formation of non-engineering, it was possible to identify a variety of training areas from the sciences (13.4%), social sciences and humanities (12%) or architecture (see Figure 2).

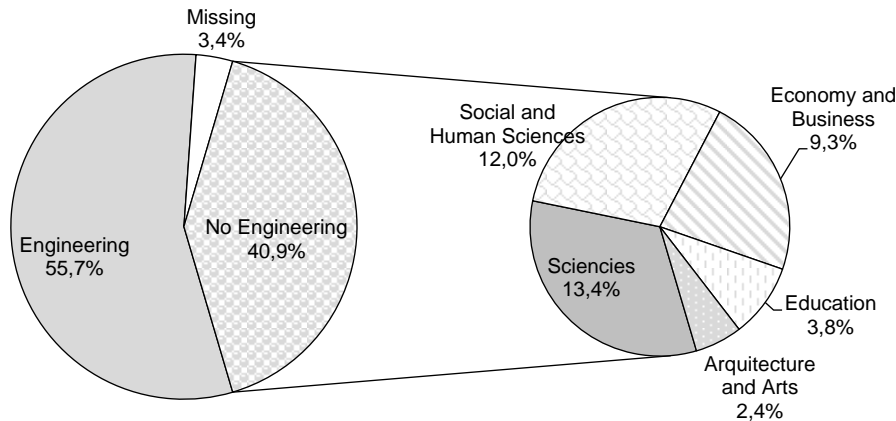


Figure 2: Participants' scientific background

The ages of the participants range from 19 to 55 years, with an average of 27.68 years. The analysis was done according to the edition indicators median, minimum and maximum (see Figure 3). In the different editions median age records a minimum of 25.0 years (Editions 2nd, 4th and 5th) and a maximum of 28.0 years (8th and 3rd Editions), which is a good indicator of youth promoters. Already at the level of the range of ages, the highest amplitude recorded was the 2nd Edition (35 years) and lowest in the 3rd Edition (15 years) which marks this edition as the "youngest" of TecMinho's IdeaLab.

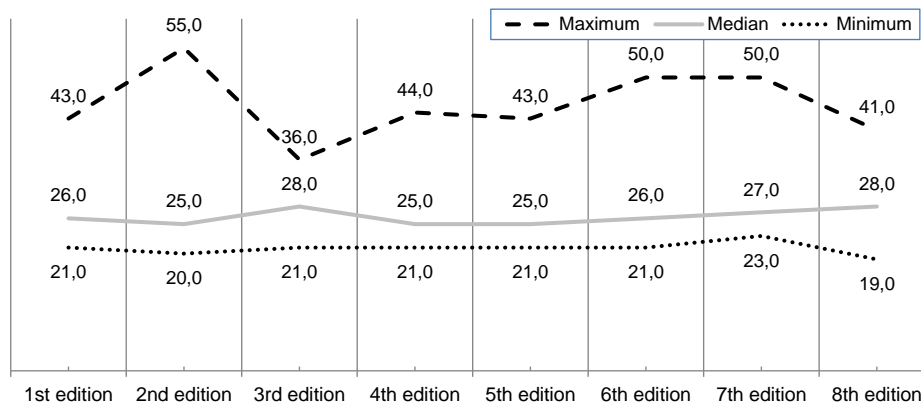


Figure 3: Participants' age by edition

In addition to the individual characteristics of each participant, the team analysis was also made. During the eight editions were accepted 126 ideas that corresponded to 126 teams. The number of elements' team varies from a minimum of 1 member and a maximum of 5 members, with an average of 2.32 members per team. Each team was further classified into a new variable "dimension" with three different classes depending on the number of member:

1. One member (small team);
2. Two or three members (average team size);
3. Four or five members (large team).

The Figure 4 illustrates the results for edition. It is noted that the teams with 2 or 3 members are those that have greater percentage participation. The exceptions are the 3rd edition with the same percentage for teams with 1 member and teams with 2 or 3 members (42.9%), and the 4th edition in which teams with one member dominated (55.6%). The teams with 4 or 5 members are less significant but in the 6th edition they accounted for a maximum of 37.5% of the teams.

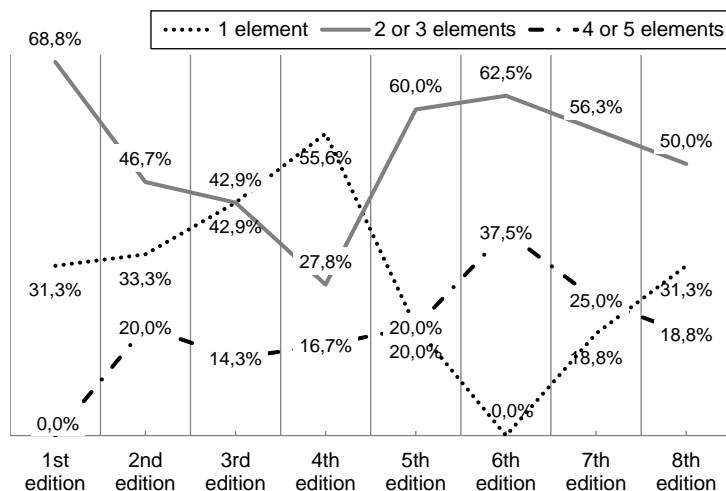


Figure 4: Team's elements

Following the analysis, we evaluated for each team the number of 1) members with engineering background, 2) female members and 3) members aged less than or equal to 25 years. Subsequently teams were classified according to three new variables:

- At least one member with engineering background (by coding the "yes" answers the 1-yes, 0-no otherwise),
- At least one member of the feminine gender (by coding the "yes" answers the 1-yes, 0-no otherwise),
- At least one member aged less than or equal to 25 years (by coding the "yes" answers the 1-yes, 0-no otherwise).

The Table 1 summarizes the results obtained. Considering the team members with engineering background it is found that 62.7% of the teams have at least one member with engineering background. In the 3rd and 8th edition only half of the teams had at least one member with engineering background. If considering the feminine elements, 42.1% of teams had at least one female member and the exceptions are the 5th and 7th editions, with a majority of teams with female participation (respectively 53% and 56%). Finally, it was found that 52.3% of the teams have at least one member aged less than or equal to 25 years and that the issue of greater inequality was the 3rd edition, with 79% of the teams with all members over the age of 25 years.

Table 1: Team characterization

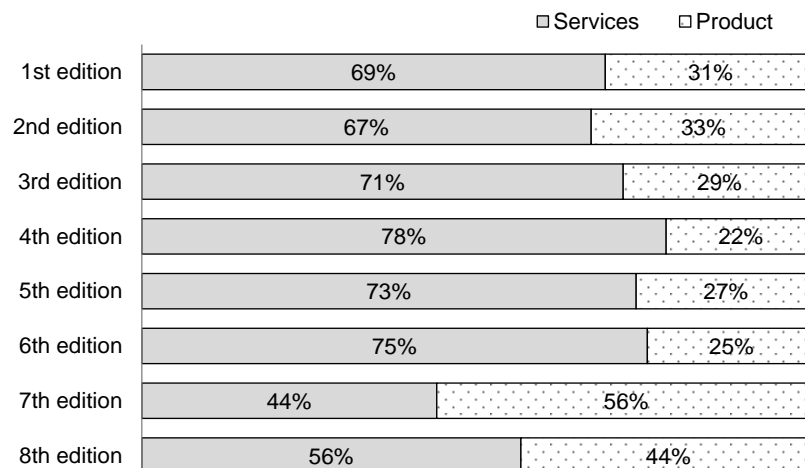
	Eng. Elements		Fem. Elements		<=25 years Elements	
	%No	%Yes	%No	%Yes	%No	%Yes
1st edition	31%	69%	56%	44%	44%	56%
2nd edition	27%	73%	60%	40%	33%	67%
3rd edition	50%	50%	57%	43%	79%	21%
4th edition	22%	78%	67%	33%	44%	56%
5th edition	33%	67%	47%	53%	40%	60%
6th edition	44%	56%	50%	50%	31%	69%
7th edition	44%	56%	44%	56%	44%	56%
8th edition	50%	50%	81%	19%	63%	38%
N_Total	47	79	73	53	59	67
% Total	37,3%	62,7%	57,9%	42,1%	46,8%	53,2%

The Table 2 summarizes the percentage of incidence in each team. In the analysis of engineering background there are 47 teams (37.3%) with zero elements and 61 teams with all elements with engineering background. In terms of females, although there are 73 teams (59.3%) with zero elements, there are 22 teams with all elements of feminine gender, a result very promising. The analysis of the elements aged less than or equal to 25 years reveals that there are 59 teams (48.2%) with zero elements. The remaining results, including the 33 teams with all elements aged less or equal to 25 years, confirm the participation of young promoters among teams.

Table 2: Teams' indicators

Eng. Elements		Fem. Elements		<=25 years Elements	
Team percentages	N_teams	Team percentages	N_teams	Team percentages	N_teams
0,00%	47	0,00%	73	0,00%	59
20,00%	1	20,00%	2	20,00%	1
25,00%	1	25,00%	2	25,00%	2
33,33%	3	33,33%	5	33,33%	5
-	-	40,00%	1	40,00%	1
50,00%	11	50,00%	19	50,00%	15
-	-	60,00%	1	60,00%	1
66,67%	2	-	-	66,67%	7
-	-	75,00%	1	75,00%	1
-	-	-	-	80,00%	1
100,00%	61	100,00%	22	100,00%	33
total	126	total	126	total	126

The analysis also included the 126 ideas accepted in the program TecMinh's IdeaLab. When each idea was classified according to the desired output (services or product), is perceived a strong component of ideas in services (66.7% against 33.3% of ideas into products). The Figure 5 examines the evolution over time, which is perceived a major trend of services ideas, with the products representing a small part of the ideas presented. The 7th Edition is the only exception with 56% of the ideas focus on products but, the 8th Edition corrected and reversed this situation by giving priority to services (56%).

**Figure 5: Ideas Outputs by Edition**

During the 8 issues, we identified nine different idea themes, with a significant amount of the information technologies ideas (35.7%) followed by the environment and energy (15.1%), consultancy (13.5%) and health care (11.9%) (see Table 3). The ideas in information technologies were most significant in the 5th, 4th and 8th edition (respectively 53.3%, 50.0% and 43.8%). Interesting to note that:

- the themes with constant presence in the editions are the IT's and the Environment and Energy (E_Energy),
- the environment and energy registered the highest importance in the 6th and 2nd editions (25.0% and 20.0% respectively),
- the consultancy had greater importance in 1st and 6th edition (31.3% and 25.0% respectively),
- the themes with less presence in the editions are the food industry (three editions), education (three editions) and Hotel & Catering (two editions).

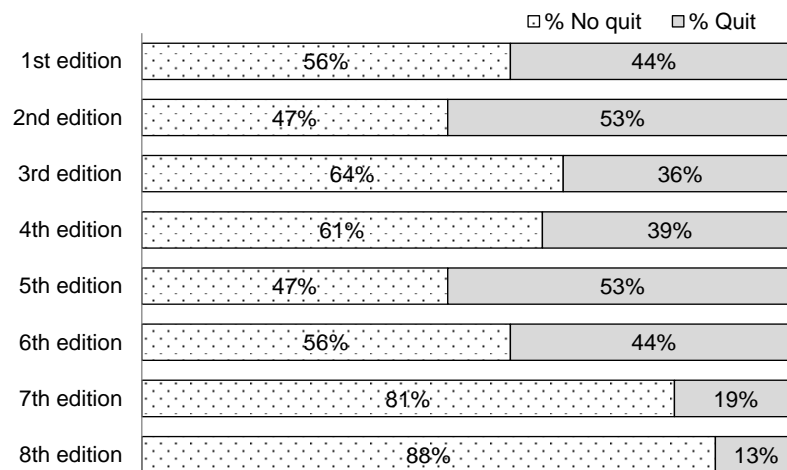
Table 3: Ideas' Theme by Edition

	IT'S	E_Energy	Consultancy	Health Care	Engineering	Industry	Food Industry	Education	Hotel & Catering	N_Total
N_Total	45	19	17	15	10	9	5	3	3	126
% Total	35,7%	15,1%	13,5%	11,9%	7,9%	7,1%	4,0%	2,4%	2,4%	100,0%
1st edition	31,3%	18,8%	31,3%	6,3%	6,3%	-	-	6,3%	-	16
2nd edition	33,3%	20,0%	20,0%	6,7%	6,7%	13,3%	-	-	-	15
3rd edition	28,6%	14,3%	14,3%	7,1%	14,3%	21,4%	-	-	-	14
4th edition	50,0%	5,6%	5,6%	-	11,1%	5,6%	5,6%	5,6%	11,1%	18
5th edition	53,3%	13,3%	6,7%	20,0%	6,7%	-	-	-	-	15
6th edition	25,0%	25,0%	25,0%	18,8%	-	-	-	-	6,3%	16
7th edition	18,8%	12,5%	6,3%	18,8%	12,5%	6,3%	18,8%	6,3%	-	16
8th edition	43,8%	12,5%	-	18,8%	6,3%	12,5%	6,3%	-	-	16

To evaluate the incidence of dropouts, we analyzed the number of team members that dropped along the workshop phase. This enabled subsequent creation of a new variable to characterization of the teams:

- At least one member quit the program (by coding the "yes" answers the 1=yes, 0=no otherwise)

During the 8 editions there were 47 teams (37.3%) with at least one member that quit the program. The results are illustrated in Figure 6. The editions that resulted in more teams with members that quit were the 2nd and 6th editions (53% for both). The editions with fewer quit teams were the last, i.e. the 8th edition with 13% and the 7th edition with 19%.

**Figure 6: Quit teams by Edition**

Tests of independence were performed between the incidence of "quit the program team" and the characterization variables: edition number, size of the team (small / medium / large), team members with engineering background (yes / no), team with female members (yes / no) and team with members aged less than or equal to 25 years (yes / no). The results suggest dependency relationships between the incidence of quit and:

- The edition number ($\chi^2 (7) = 10,463$, $p < 0.10$);
- The team age (Fisher's exact test, $p < 0.05$).

5. Conclusions

The TecMinho's IdeaLab of University of Minho test the commercial potential of the ideas presented and evaluates the vocation and entrepreneurial skills of its participants over three phases. The results analyzed in this paper are related to the start-up and workshops phase and highlight the importance of male gender participants on the program. Female participation is still relatively low (27.1%), but when analyzed by team it is verified that 42.1% of teams had at least one female member and that 22 teams are all with female members. The evolution recorded over time may indicate a progressive increase in female participation but, as the selection for participation in the program is based on the ideas presented, it could be interesting in the future to create an edition fully dedicated to female entrepreneurs.

In terms of training, most participants have background in engineering (55.7%) but there is a great diversity in the non-engineering areas. Interestingly, 62.7% of teams had at least one member with engineering background and that there are 61 teams with all members from engineering. The question is whether this is a consequence of the fact that TecMinho's IdeaLab is located in the school of engineering or whether there will be greater potential entrepreneur by people with engineering background compared to non-engineering. This should be explore in the future.

It was interesting to recognize the degree of youth participants since the mean participant's age was 27.68 years, and ranged from 19 to 55 years. The analysis of members aged less than or equal to 25 years concluded that 52.3% of the teams have at least one member aged less than or equal to 25 years and the existence of 33 teams (26.2%) with all members of age less or equal to 25.

The classification of the outputs of the ideas in service or product resulted in a high incidence of the ideas of services (66.7%). Analysis over time not evidence significant changes, although it is acknowledged that the last two editions have been more balanced. Once the output is strongly dependent on the theme idea, the ideas were classified by theme. Results indicated that the themes that are present constantly in editions of TecMinho's IdeaLab are information technologies (IT's) and the Environment and Energy (respectively 35.7% and 15.1% of the ideas accepted in the program). This result may not be surprising given the high participation of background in engineering.

The incidence of dropouts of the program was analyzed according to the number of team members who quit. Of the 126 teams accepted into the program, there were 47 teams with at least one member who quit (37.3%) and were confirmed relationships of dependence between incidence of quit members with the number of edition and team members age.

Although preliminary, the results obtained are important to characterize and understand the evolution of the program TecMinho's IdeaLab. As it is a relatively new program, we believe that the current study may contribute to a better performance of the program (including the suggestion of an edition dedicated to the participation of females proponents) and to identify potentially critical phases for participants. Following the investigation will comprehend a phase of study of the specific reasons for leaving the program in the workshop phase, with the realization of interviews and a specific survey.

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References

- Askun, B. and Yildirim, N. (2011) "Insights on entrepreneurship education in public universities in Turkey: creating entrepreneurs or not?", *Procedia Social and Behavioral Sciences*, Vol 24, pp 663–676.
- Carayannis, E. G., Evans, D. and Hanson, M. (2003) "A cross-cultural learning strategy for entrepreneurship education: outline of key concepts and lessons learned from a comparative study of entrepreneurship students in France and the US", *Technovation*, Vol 23, pp 757–771.
- Curteis, H. (1997) "Entrepreneurship in a growth culture", *Long Range Planning*, Vol 30, No. 2, pp 267-155.

- Drucker, P.F. (2006) *Innovation and Entrepreneurship*, Harper Business.
- GEM (2010). GEM Portugal 2010 Report.
- INE (Instituto Nacional de Estatística) (National Statistics Institute of Portugal) (2012) *Destaque - Estatísticas do Emprego*, 4º Trimestre de 2011, Lisboa, Portugal (in Portuguese).
- Kirzner, I. M. (1997) "Entrepreneurial discovery and the competitive market process: An Austrian approach", *Journal of Economic Literature*, Vol 35, pp 60-85.
- LINI (Lisbon Internet and Networks) (2009) *Empreendedorismo e Inovação nas PME'S em Portugal: a Rede PME Inovação COTEC*, Lisboa, Portugal (in Portuguese).
- Raijman, R. (2001) "Determinants of entrepreneurial intentions: Mexican immigrants in Chicago", *Journal of Socio-Economics*, Vol. 30, pp 393–411.
- Souitaris, V., Zerbini, S. and Al-Laham, A. (2007) "Do entrepreneurship programmes raise entrepreneurial intention of science and engineering students? The effect of learning, inspiration and resources", *Journal of Business Venturing*, Vol 22, pp 566–591.
- Oosterbeek, H., van Praag, M. and Ijsselstein, A. (2010) "The impact of entrepreneurship education on entrepreneurship skills and motivation", *European Economic Review*, Vol 54, pp 442-454.
- Van Praag, C.M. (1999) "Some classic views on entrepreneurship", *De Economist*, Vol 147, No. 3, pp 311–335.
- Von Graevenitz, G., Harhoff, D. and Weber, R. (2010) "The effects of entrepreneurship education", *Journal of Economic Behavior & Organization*, Vol 76, pp 90–112.
- Wong, P. K., Ho, Y. P. and Autio, E. (2005) "Entrepreneurship, Innovation and Economic Growth: Evidence from GEM data", *Small Business Economics*, Vol 24, pp 335–350.
- Yildirim, N. and Askun, N. (2012) "Entrepreneurship intentions of public universities in turkey: going beyond education and research?", *Procedia Social and Behavioral Sciences*, Vol 58, pp 953–963.