

The entrepreneurial intentions in a multivariate approach: a case study applied to IPCA students

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Abstract

This study intends to explain the entrepreneurial intention using a multivariate model. Previous empirical studies use only one class of explanatory variable but our purpose is to generate a more complete explanatory model that can explain the entrepreneurial intention of the students who attended the curricular unit Entrepreneurship. It was applied a questionnaire to the 40 master students who attended the curricular unit Entrepreneurship in the 2016/2017 school year. The results show that that personal background (gender and attendance of an entrepreneurship course), business knowledge (involvement in patenting activities and protection of intellectual property, possess analytical skills and possess the ability to think critically), entrepreneurial motivations (satisfy a market need and create something for oneself), and the institutional environment (knowledge of IPCA structures support to entrepreneurship) contribute for entrepreneurial intentions of master students. These results are then discussed in terms of theoretical and practical implications for entrepreneurship.

Keywords: entrepreneurial intention, entrepreneurship, Polytechnic Higher education

Introduction

Entrepreneurship is a field of research with multiple concepts and theories, where the lack of theoretical consensus is usual (Palma & Cunha, 2006). However, empirical research is characterized by different samples and statistical techniques, which do not contribute to consolidation of the field. The fact is that entrepreneurship contributes to social and economic

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development proven by creation of ventures which leave to more employment and to the wealth of a country. Redford (2013) believes that the development of entrepreneurship requires a change in attitudes and perceptions which is possible through education. A protective atmosphere is found in Higher Education which is very important for the development of new and creative ideas and business opportunities. The transformation of attitudes on entrepreneurial intentions is explained by multiples variables, but institutions like academy has an unquestionable role in this kind of metamorphosis (Fayolle & Liñán, 2014).

The literature on entrepreneurial intentions has been received many contributions from theories of social psychology field, namely cognitive psychology (Fayolle & Liñán, 2014) and since the nineties considerable amount of research is this area appeared.

Theoretical Background

The most used theoretical framework in the study of entrepreneurial intentions is the Theory of Planned Behavior (Ajzen, 1985) which defends the strength of intention as an immediate antecedent of behavior. The analysis of entrepreneurial intention may serve to predict an individual' behavior towards the creation of his own business, although, as Davidsson (1995) suggests, the intention may never reflect the reality. Entrepreneurial intentions can predict, although imperfectly, the individual' choice to start a business (Davidsson, 1995, p. 6). A recent research (Kautonen, Van Gelderen, & Fink, 2015), using a longitudinal study with a sample of adult population in Austria and Finland, concluded that entrepreneurial intentions can become true entrepreneurial behaviors, and contribute to real creation of businesses. This research, and others (see Liñán & Chen, 2006, 2009) showed the relevance and robustness of Theory of Planned Behavior. But as Fayolle and Liñán (2014) defended in a meta-analytic research realized by them that behavioral intentions only explain 27% of the variance in behavior. The authors defend the incorporation of the entrepreneurial commitment's concept as a missing link between intention and behavior of entrepreneurship's field.

Carvalho and González (2006) consider that the entrepreneurial intention can be evaluated regarding five main dimensions: 1) personal background, 2) business knowledge, 3) entrepreneurial motivations, 4) entrepreneurial self-efficacy and 5) institutional environment. Dinis and Ussman (2006) presented a very similar classification. They suggested the personal approach (which contain the psychological characteristics and some antecedents), the behavior approach (which refers to the entrepreneur's behavior), the social and cultural approach (which includes the social and cultural and the formal and institutional factors) and management approach (which includes management characteristics).

1. Personal Background

Concerning the individual characteristics of entrepreneurs, the economic literature on entrepreneurship highlights the demographic characteristics, the family and professional antecedents, the formation and academic qualification, the attitudes, the values and the motivations (Dinis & Ussman, 2006).

Dinis and Ussman (2006) noted that some of these characteristics are more objective, such as demographic, family and professional background, formation and qualification, since they are more descriptive in nature. Others characteristics such as motivation, attitudes and values are derived from the entrepreneur's profile as an individual and, therefore, are more subjective, complementing themselves the characterization of the entrepreneur.

Some studies concluded that female students have lower propensity to entrepreneurial career intentions (Rosário, 2007; Zhao, Seibert, & Hills, 2005). Davidsson (1995) suggested that the direct explanatory power of personal background variables is low. The gender differences and differences in education impact in entrepreneurial intentions are mediated by differences in attitudes between men and women. The gender has little or no direct influence in entrepreneurial

intentions. Attitudes, values and personal achievement explained differences between males and females. Bandura (1992) suggested that women are more likely than men to limit their career choices because of lack of confidence in their abilities. Another study (Shinnar, Giacomini, & Janssen, 2012) defends an examination of gender and entrepreneurial intentions across different nations and cultures. With a sample of university students of three countries: China, United States, and Belgium, they tested the effect of some barriers to entrepreneurship as lack of support, fear of failure, and perceived lack of competency in men and women. The findings indicated that women in China, United States, and Belgium perceive the lack of support as significantly more important than men. Women in the United States and Belgium perceived the fear of failure and lack of competence barriers to be more important than men. Culture moderate the relationship between the perceived importance of some the barriers and entrepreneurial intentions. This study emphasizes the role of gender and culture in determining the entrepreneurial intentions.

Also, the familiar background can affect the decision to become an entrepreneur. There are studies that prove this relationship, but others assumed that the existence of entrepreneurial family seems not to influence the decision to start a business (Rosário, 2007).

Others authors, namely, Davidsson (1995) suggested that the encounter with others entrepreneurs and the share of experiences take a central place in entrepreneurial intentions. This variable would affect entrepreneurial intentions in the same way that family role models.

2. Business Knowledge

Regarding business knowledge, the needed valued skills for creation and development of a business are the identification and use of a business opportunity; the ability to relate it to relevant business people, through the communicational and leadership skills, for example; conceptual skills, which involve decision-making and problem-solving; the formulation of business strategy and objectives (Carvalho & González, 2006; Chandler & Jansen, 1992).

Several studies (Jaafar, Abdul-Aziz, Maideen & Mohd, 2004; Lerner & Haber, 2000; McClelland, 1961) support the thesis that entrepreneurs are more minded to personal achievement than the general population, although this variable isn't the "most important variable to predict the probability of starting a business" (Davidsson, 1995; Stewart, Watson, Carland & Carland, 1998, p. 192). However, it is important to note that a considerable amount of research defend that trait theory and behavior theory are both necessary in explanation of entrepreneurial intentions. Understanding the entrepreneurial intentions includes understanding what are the differences between entrepreneurs and not entrepreneurs and understand that characteristics are based on behaviors (Dinis & Ussman, 2006).

3. Entrepreneurial Motivations

Carsrud and Brannback (2011) argued that entrepreneurial intentions remain largely underresearch despite its critical importance in predicting entrepreneurial behaviors. There are also several reasons for starting a business. The environmental circumstances, such as precarious employment or even unemployment, the need to increase income or dissatisfaction in the professional activity can motivate individuals to become entrepreneurs – these are the push factors, or extrinsic motivations. However, business can be started by intrinsic motivations or pull factors, such as the desire for success, power, money, and being his own employer, business opportunity or even retirement (Dinis & Ussman, 2006; Glancey & Pettigrew, 1997).

Among the more studied intrinsic factors need for achievement appears firstly (McClelland, 1961). People with high need for achievement prefer tasks that involve skill and effort, provide clear performance feedback, and moderate risk or challenge. In a meta-analysis, Collins, Hanges, and Locke (2004) found support for achievement's need in predicting entrepreneurial activity and performance in an entrepreneurial role.

4. Entrepreneurial Self-Efficacy

In the early empirical research the studies were more focused on the psychological characteristics of business founders (Davidsson, 1995). A growing number of studies on entrepreneurial intentions included self-efficacy as an explanatory variable. Self-efficacy is a dispositional variable that reflects the degree to which a person believes that a particular behavior leads to a given outcome and that have the capacity to achieve those outcomes, leading to high expectations of success (Bandura, 1982). Entrepreneurial self-efficacy may result in an important explanatory antecedent to understand entrepreneurial intention, since this dispositional variable may predispose people to be more persistent, to try harder and to submit to more aversive experiences (Cunha, Rego, Cunha & Cabral-Cardoso, 2006). The study of Wilson, Kickul, and Marlino (2007, p. 398) stated that “self-efficacy play an important role in shaping (or limiting) perceived career options. But education still plays a strong difficult role in raising the levels of self-efficacy in women. Educational initiatives addressing entrepreneurial self-efficacy are especially important for women because of the self-efficacy bias (Wilson, Kickul, & Marlino, 2007). Mueller and Dato-On (2008) found no statistically significant differences in self-efficacy between men and woman in a sample of MBA students. The gender is no longer a reliable predictor of self-efficacy and the gender stereotypes and socially conditioned perceptions explain better the variable.

5. Institutional Environment

The institutional environment, in particular the supports, the initiatives and the units in the Higher Education Institutions, can create an environment that lead to development of student’s entrepreneurial spirit (Autio, Keeley, Klofsten & Ulfstedt, 1997; Carvalho & González, 2006; Rocha & Freitas, 2014). For Fayolle and Liñán (2014) little research exists regarding the potential link between some educational variables (for example, course contents, pedagogical methods, teachers’ professional profiles, available resources, etc.) and the impact of entrepreneurship education programs on the antecedents of entrepreneurial intentions. The study of Martin, McNally, and Kay (2013) stated that the relation between entrepreneurship education and training and entrepreneurship outcomes is stronger for academic-focused entrepreneurship education and training interventions than for training-focused entrepreneurship education and training interventions.

In a study comparing students that had classes in Entrepreneurship and those that hadn’t, Rocha and Freitas (2014) concluded that learning entrepreneurship have effects in the entrepreneurship profile even after the creation of a business, supporting the importance of entrepreneurship education. The educational programs of short duration have a rather limited usefulness than educational programs of long duration (Heuer & Kolvereid, 2013). Redford (2006), in a study with the purpose to characterize the entrepreneurship education in Portugal, during the period of 2004/2005, stated that the entrepreneurship course pedagogy relies on business plan creation and on theoretical lessons rather than in role playing, computer simulation or internships. These results need an additional reflection since this pedagogy have an impact in the student’s entrepreneurial intention and in the creation of an entrepreneurship profile. Martin et al. (2013) found a statistically significant relationship between entrepreneurship education and human capital outcomes, namely on entrepreneurship knowledge and skills, and between entrepreneurship education and entrepreneurial intentions. Bae, Qian, Miao, & Fiet (2014) concluded that entrepreneurship education (courses in new business development or business planning) was related more positively to a participant’ entrepreneurial intentions than to business education (general knowledge in business administration).

Previous empirical studies used only one class of explanatory variable (Autio et al., 1997; Glancey e Pettigrew, 1997, for example) but our purpose is to generate a more complete explanatory model that can explain the entrepreneurial intention of the students who attended the curricular unit Entrepreneurship, inspired in the original model of Davidsson (1995).

Methodology

The main purpose of this paper is to evaluate the entrepreneurial intentions of students who attended the curricular unit of Entrepreneurship in the Master Degree courses in the Polytechnic Institute of Cávado and Ave (IPCA).

It was applied a survey to the 40 master students who attended the curricular unit Entrepreneurship in the 2016/2017 school year. Following the model of Carvalho and González (2006) it has been analyzed five dimensions to measure the entrepreneurial intentions: the personal background (scientific area, year, student status, age, gender, professional experience, entrepreneurial family background, parents' academic qualifications); the business knowledge (opportunity, strategy, relational skills, conceptual skills); the entrepreneurial motivations (need for independence, need for personal development, perception of wealth instrumentality, need for approval); the entrepreneurial self-efficacy (expectations of future success) and the institutional environment (encouragement to put in practice entrepreneurial ideas, knowledge of the existence and use of IPCA entrepreneurship support units).

In the last years, Higher Education in Portugal has focused on education for entrepreneurship and creation of structures to support the development of the entrepreneurial spirit in students (Redford, 2006). IPCA offers to its students the curricular unit of Entrepreneurship and has structures of support that aim to support the creation of ventures. We consider that this is an environment that leads to the development of potential entrepreneurs. The population of this study seemed to be appropriate for the development of this research, whose main objective is the evaluation of entrepreneurial intentions based on a set of differentiated explanatory variables.

The final sample is composed by 40 master students which attended the Master Degree in Tourism Management and Master Degree in Business Management.

The students were mainly female (45%) and mainly with ages between 30 and 40 years (Figure 1).

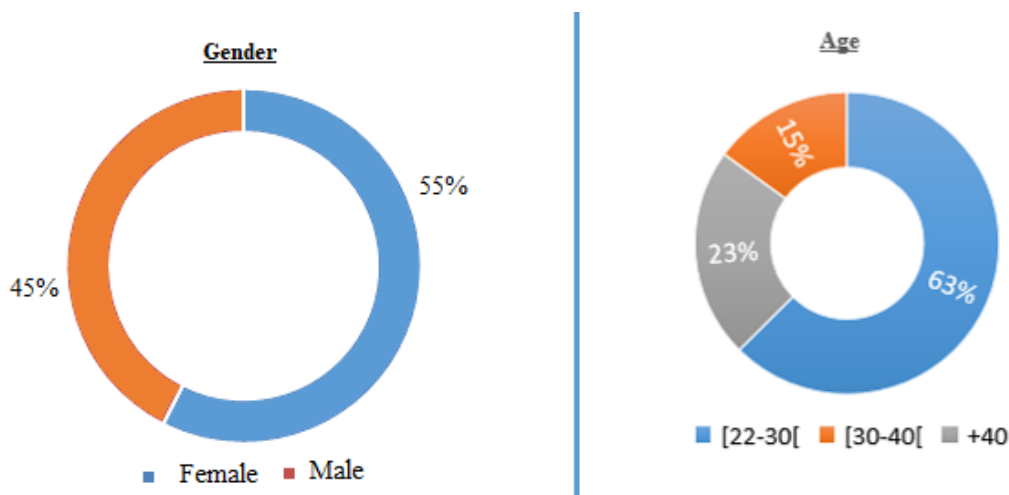


Figure 1 – Sample Description – Gender and Age (n=40)

The Master Degree in Tourism Management was represented by 43% of the respondents and the Master Degree in Business Management by 57% (Figure 2).

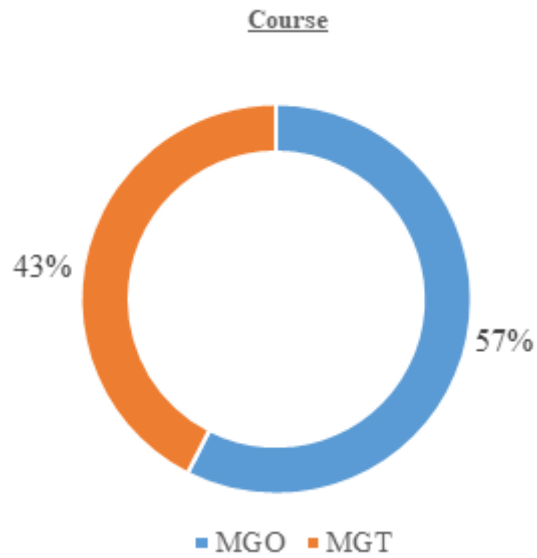


Figure 2 – Sample Description – Master Course (n=40)

In what concerns to familiar background, 65% of the students had relatives with previous experiences on entrepreneurship (Figure 3).

Family relatives who have created own business

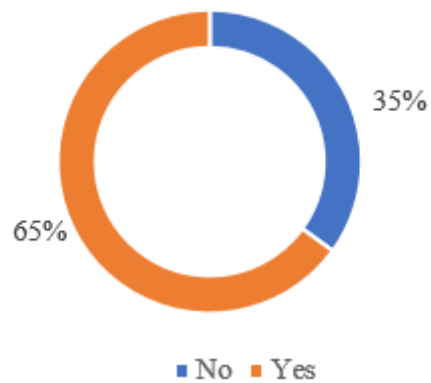


Figure 3 – Sample Description – Familiar Background (n=40)

From all the 40 students, 26 (65%) had previous professional experience and that experience they have are mainly less than five years (Figure 4).

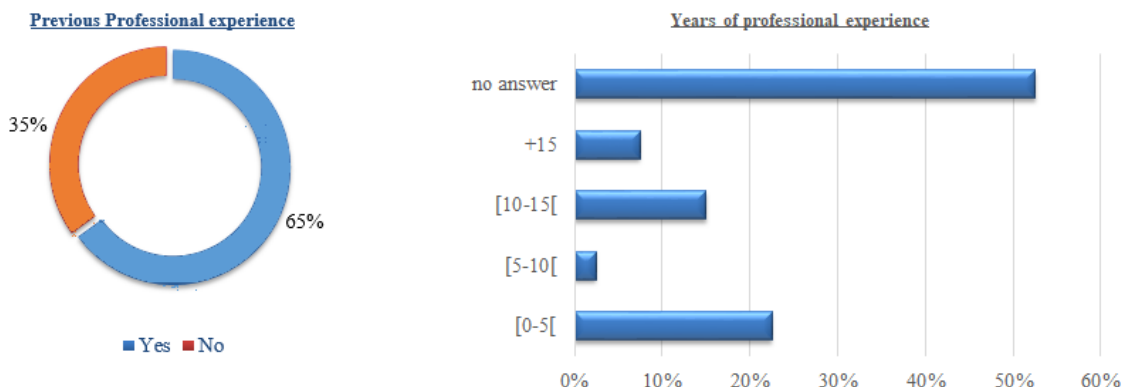


Figure 4 – Sample Description – Previous Professional Experience (n=40)

Relating previous attendance of an entrepreneurship curricular unit, 5% of the respondent had it on Technical Education and 70% had it at university or Polytechnic (Figure 5).

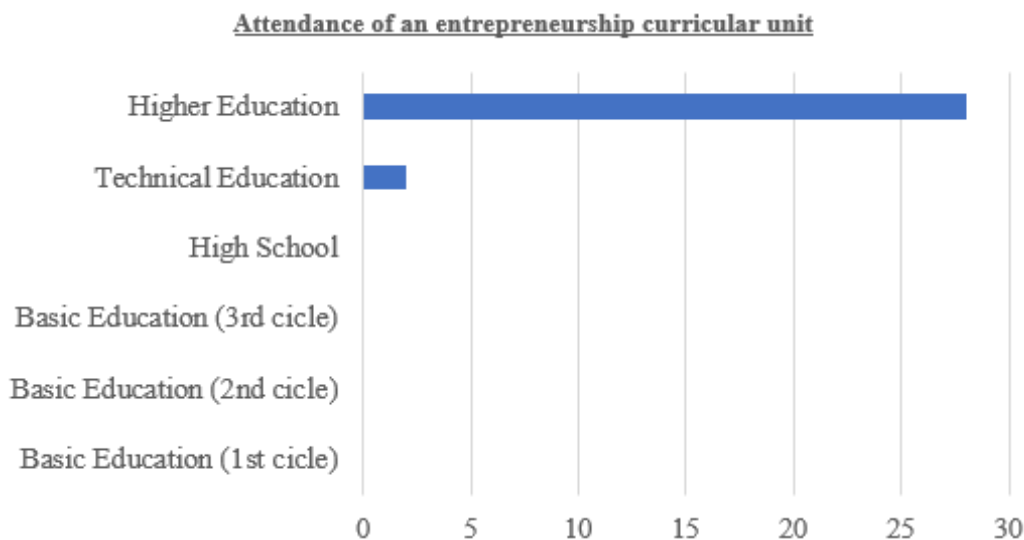


Figure 6 – Sample Description – Attendance of an Entrepreneurship Curricular Unit (n=40)

Measures

The data obtained from the questionnaire enabled us to build several variables that are used as multidimensional measures of the personal background, business knowledge entrepreneurial motivations, entrepreneurial self-efficacy and institutional environment.

Dependent variable

Considering that our goal was to analyze the entrepreneurial intention we used as dependent variable a measure of the intention to “start your own business or work for yourself” (Table 1). The variable Entrepreneurial Intention is a categorical variable that distinguishes between students who have stated an interest in starting their own business / self-employment and the students that did not.

Table 1 – Dependent Variable

	N	Mean
Intends to start your own business or work for yourself (0 = No; 1 = Yes)	40	0.375

Independent variable

Personal background

To measure personal background, we asked for age, gender, scientific area, year, student status, professional experience, entrepreneurial family background, and parents' academic qualifications). The related questions were which one that are presented in table 2:

Personal Background	N	Mean
1. Age	40	0.295
2. Gender	40	0.550
5. Direct family members who created their own businesses (0 = No; 1 = Yes)	40	0.650
6. Previous professional experience (0 = No; 1 = Yes)	40	0.650
7.1 Previous attendance of an entrepreneurship curricular unit – Basic Education (1 st Cicle) (0 = No; 1 = Yes)	40	0.000
7.2 Previous attendance of an entrepreneurship curricular unit – Basic Education (2 nd Cicle) (0 = No; 1 = Yes)	40	0.000
7.3 Previous attendance of an entrepreneurship curricular unit – Basic Education (3 rd Cicle) (0 = No; 1 = Yes)	40	0.000
7.4 Previous attendance of an entrepreneurship curricular unit - High School (0 = No; 1 = Yes)	40	0.000
7.5 Previous attendance of an entrepreneurship curricular unit - Technical Education (0 = No; 1 = Yes)	40	0.050
7.6 Previous attendance of an entrepreneurship curricular unit - Higher Education (0 = No; 1 = Yes)	40	0.700

Table 2 – Independent Variable - Personal Background

Business knowledge

To measure business knowledge, we asked for opportunity, strategy, relational skills and conceptual skills. The related questions were which one that are presented in the table 3:

Table 3 – Independent Variable - Business Knowledge

Business Knowledge	N	Mean
10.1 Previous new product or technology marketing or analysis (0 = No; 1 = Yes)	40	70.00
10.2 Previous pitch or business plan presentation to a jury (0 = No; 1 = Yes)	40	0.225
10.3 Previous product or technology development to a real customer (0 = No; 1 = Yes)	40	0.175
10.4 Previous Business Plan (0 = No; 1 = Yes)	40	0.875
10.5 Previous participation on a contest related to entrepreneurship (product development, Business Plan) (0 = No; 1 = Yes)	40	0.225
10.6 Previous participation on workshops related with entrepreneurship (extra-curriculum and without credits) (0 = No; 1 = Yes)	40	0.425
10.7 Previous work or internship on an enterprise or star-up (extra-curriculum and without credits) (0 = No; 1 = Yes)	40	0.350
10.8 Previous involvement in an entrepreneurial or business activity related with student's association (0 = No; 1 = Yes)	40	0.300
10.9 Previous involvement in a technology patenting or intellectual property rights (0 = No; 1 = Yes)	40	0.075
15.1 Take responsibility for solving a problem (Likert scale 1-5)	40	4.200
15.2 Evaluate business ideas (Likert scale 1-5)	40	3.725
15.3 Analytical skills (Likert scale 1-5)	40	3.625
15.4 Written communication (Likert scale 1-5)	40	3.875
15.5 Oral communication (Likert scale 1-5)	40	3.975
15.6 Persuasive communication and negotiation skills (Likert scale 1-5)	40	3.925
15.7 Cooperate with others through networks and contacts (Likert scale 1-5)	40	4.050
15.8 Creativity (Likert scale 1-5)	40	3.875
15.9 Define personal goals, achieve them and establish new (Likert scale 1-5)	40	4.225
15.10 Carry out strategic business planning (Likert scale 1-5)	40	3.750
15.11 Make presentations (Likert scale 1-5)	40	3.800
15.12 Deal with risk (Likert scale 1-5)	40	3.650
15.13 Dealing emotionally with a problem (Likert scale 1-5)	40	3.975
15.14 Level of risk tolerance (Likert scale 1-5)	40	3.600
15.15 Think critically (Likert scale 1-5)	40	3.925
15.16 Recognize market gaps and exploit market opportunities (Likert scale 1-5)	40	3.700
15.17 Reflect and be introspective (Likert scale 1-5)	40	3.900

Entrepreneurial motivations

To measure entrepreneurial motivations, we asked for need for independence, need for personal development, perception of wealth instrumentality and need for approval. The related questions were which one that are presented in the table 4:

Entrepreneurial Motivations	N	Mean
12.1 Satisfy a market need (0 = No; 1 = Yes)	40	0.625
12.2 Focus on a specific technology (0 = No; 1 = Yes)	40	0.200
12.3 Create something (0 = No; 1 =Yes)	40	0.850
12.4 Having more flexibility and independence (0 = No; 1 = Yes)	40	0.450
12.5 Solve a social problem (0 = No; 1 = Yes)	40	0.075
12.6 Manage an organization (0 = No; 1 = Yes)	40	0.250
12.7 Manage people (0 = No; 1 = Yes)	40	0.400
12.8 Earn a lot of money (0 = No; 1 = Yes)	40	0.375
12.9 Create a job (0 = No; 1 = Yes)	40	0.425
12.10 Having more free time (0 = No; 1 = Yes)	40	0.025
12.11 Earning social status (0 = No; 1 = Yes)	40	0.050
12.12 Following a family tradition (0 = No; 1 = Yes)	40	0.050
13.1 No initial capital to open a company (0 = No; 1 = Yes)	40	0.750
13.2 Too much risk (0 = No; 1 = Yes)	40	0.475
13.3 No assistance or legal advice (0 = No; 1 = Yes)	40	0.225
13.4 No ideas about what type of business to run (0 = No; 1 = Yes)	40	0.200
13.5 No knowledge about market and business (0 = No; 1 = Yes)	40	0.300
13.6 No assistance for validating the viability of the business (0 = No; 1 = Yes)	40	0.200
13.7 No experience on management and finances (0 = No; 1 = Yes)	40	0.375
13.8 Current financial situation (0 = No; 1 = Yes)	40	0.450
13.9 No regular income (0 = No; 1 = Yes)	40	0.275
13.10 Having to work hard (many hours) (0 = No; 1 = Yes)	40	0.025
13.11 Being afraid to fail (0 = No; 1 = Yes)	40	0.300
13.12 Lack of support from people around (family, friends, etc) (0 = No; 1 = Yes)	40	0.125

Table 4 – Independent Variable - Entrepreneurial Motivations

Entrepreneurial self-efficacy

To measure entrepreneurial self-efficacy, we asked for expectations of future success. The related questions were which one that are presented in the table 5:

Entrepreneurial Self-efficacy	N	Mean
14.1 Lead the technical team in the successful development of a new product (Likert scale 1-5)	40	3.550
14.2 Translate user needs into design requirements that meet client expectations (Likert scale 1-5)	40	3.600
14.3 Design and build a product with performance close to the requirements (Likert scale 1-5)	40	3.650
14.4 Explore the concept and limits of technology to understand how best to use it (Likert scale 1-5)	40	3.375
14.5 Develop a hypothesis of its own and a research plan to test it (Likert scale 1-5)	40	3.450
14.6 To perceive exactly what is new and important in an innovative theoretical article (Likert scale 1-5)	40	3.475

14.7 Convince a customer to try a new product for the first time (Likert scale 1-5)	40	3.825
14.8 Important scientific breakthrough in practical application (Likert scale 1-5)	40	3.250
14.9 Recruit the right employees for a new project or challenge (Likert scale 1-5)	40	3.850
14.10 Working with a supplier to optimize prices and help business success (Likert scale 1-5)	40	3.825
14.11 Develop a clear and complete business plan (Likert scale 1-5)	40	3.775
14.12 Rigorously estimate the costs of implementing a new project (Likert scale 1-5)	40	3.250
14.13 Choose the appropriate market strategy to introduce a new service (Likert scale 1-5)	40	3.600
14.14 Know the needed steps to add value to a new business (Likert scale 1-5)	40	3.425

Table 5 – Independent Variable - Entrepreneurial Self-efficacy

Institutional environment

To measure institutional environment, we asked for encouragement to put in practice entrepreneurial ideas, knowledge of the existence and use of IPCA entrepreneurship support units. The related questions were which one that are presented in the table 6:

Institutional Environment	N	Mean
16.1 Knowledge of PRAXIS XXI (0 = No; 1 = Yes)	40	0.500
16.2 Knowledge of G3E (0 = No; 1 = Yes)	40	0.475
17.1 Support for trademark and patent registration (0 = No; 1 = Yes)	40	0.000
17.2 Developing ideas and business (0 = No; 1 = Yes)	40	0.125
17.3 Creation of spin-offs (0 = No; 1 = Yes)	40	0.000
17.4 Applied research and development of new products (0 = No; 1 = Yes)	40	0.000
17.5 Incubation of spin-offs (0 = No; 1 = Yes)	40	0.000
17.6 Innovation and brainstorming (0 = No; 1 = Yes)	40	0.000
17.7 Presentation / training room (0 = No; 1 = Yes)	40	0.175
17.8 Development of products with international companies, ERASMUS internships and Language Center (0 = No; 1 = Yes)	40	0.150
17.9 Materials and Testing (0 = No; 1 = Yes)	40	0.100
17.10 Business Simulation (0 = No; 1 = Yes)	40	0.075

Table 6 – Independent Variable - Institutional Environment

Results

Non-Parametric Test

Non-parametric tests were performed to test the influence of the explanatory variables on the entrepreneurial intention (dependent variable)

Regarding the Personal Background dimension the non-parametric test indicates that two categories individually, influence on the entrepreneurial intention (table 7).

The results show that gender have, individually, influence on the entrepreneurial intention (p value= 0,035). The results also show that “have attended an entrepreneurship discipline in higher education” have, individually, influence on the entrepreneurial intention (with a level of significance of p-value=0.079)

Personal Background	Man-Whitney Test	
	Z	Asymp. Sig
2.	-2,107	,035
5.	-,169	,866
6.	-,845	,398
7.1	a	a
7.2	a	a
7.3	a	a
7.4	a	a
7.5	-,370	,711
7.6	-1,759	,079

a) missing values
(all answers =
0/No)

Table 7 – Non Parametric Test Personal Background Dimension

Regarding the Business Knowledge dimension the non-parametric test indicate that three categories individually, influence on the entrepreneurial intention (table 8).

Concerning the level of involvement in activities related to entrepreneurship, the results show that “Already been involved in the patenting of a technology or in the protection of intellectual property” have, individually, influence on the entrepreneurial intention (p value= 0.086). Concerning the attitude and entrepreneurial traits the results show that “possess analytical skills” have, individually, influence on the entrepreneurial intention (p-value=0.036). The results also show that “possess the ability to think critically” have, individually, influence on the entrepreneurial intention (p-value=0.022).

Business Knowledge	Kruskal-Wallis Test		Man-Whitney Test	
	Chi-Square	Asymp.Sig	Z	Asymp. Sig
10.1			131,00	0,113
10.2			153,00	0,472
10.3			165,00	0,877
10.4			150,00	0,441
10.5			166,00	0,944
10.6			146,00	0,426
10.7			141,00	0,310
10.8			163,00	0,696
10.9			120,00	0,086
15.1	2,417	0,120		
15.2	1,502	0,220		
15.3	4,415	0,036		
15.4	0,677	0,411		
15.5	0,572	0,449		
15.6	0,037	0,848		
15.7	1,232	0,267		
15.8	0,587	0,444		
15.9	2,699	0,100		
15.10	2,425	0,119		
15.11	1,830	0,176		
15.12	1,711	0,191		
15.13	0,779	0,378		
15.14	2,374	0,123		
15.15	5,273	0,022		
15.16	1,717	0,190		
15.17	0,014	0,906		

Table 8 – Non-Parametric Test Business Knowledge Dimension

Regarding the Entrepreneurial Motivations dimension the non-parametric test indicate that none of the categories that integrate this dimension have individually influence on entrepreneurial intentions (table 9).

Entrepreneurial Motivations	Man-Whitney Test	
	Z	Asymp. Sig
12.1	-1,615	,106
12.2	-1,612	,107
12.3	-,677	,498
12.4	-,810	,418
12.5	-,153	,878
12.6	-,559	,576
12.7	-1,317	,188
12.8	-,916	,360
12.9	-,408	,683
12.10	-,671	,502
12.11	-1,110	,267
12.12	-1,110	,267
13.1	-,559	,576
13.2	-,565	,572
13.3	-1,255	,209
13.4	,000	1,000
13.5	-1,056	,291

13.6	-,806	,420
13.7	-,250	,803
13.8	-,602	,547
13.9	-1,354	,176
13.10	-1,291	,197
13.11	-,352	,725
13.12	-,122	,903

Table 9 – Non Parametric Test Entrepreneurial Motivations Dimension

Regarding the Entrepreneurial Self-Efficacy dimension the non-parametric test indicate that the category "have the skills to rigorously estimate the costs of implementing a new project" has, individually, influence on entrepreneurial intentions (p-value=0,061) (table 10).

Entrepreneurial Self-Efficacy	Kruskal-Wallis Test	
	Chi-Square	Asymp. Sig
14.1	2,344	,673
14.2	2,916	,405
14.3	,619	,892
14.4	2,986	,394
14.5	2,253	,522
14.6	,956	,812
14.7	3,209	,360
14.8	1,455	,835
14.9	,385	,943
14.10	2,168	,538
14.11	2,947	,400
14.12	7,356	,061
14.13	2,052	,726
14.14	1,425	,700

Table 10 – Non Parametric-Test Entrepreneurial Self-efficacy_Dimension

Regarding the Institutional Environment dimension the non-parametric test indicate that none of the categories that integrate this dimension have individually influence on entrepreneurial intentions (table 11).

Institutional Environment	Man-Whitney Test	
	Z	Asymp. Sig
16.1	-,322	,747
16.2	-1,211	,226
17.1	A	a
17.2	-1,097	,273
17.3	a	a
17.4	a	a
17.5	a	a
17.6	a	a
17.7	-,318	,750
17.8	-1,129	,259
17.9	-1,612	,107
17.10	-,153	,878

a) missing values (all answers = 0/No)

Table 11 – Non Parametric Test Institutional Environment Dimension

Regression Analysis

Considering the dichotomous nature of the dependent variable entrepreneurial intention (1= Intends to start your own business or work for yourself) we run the model using a stepwise logistic regression.

Chi-square	Sig.
26,414	,009

Table 12 – Omnibus Tests of Model Coefficients

Given the Omnibus Tests of Model Coefficients (table 12) the models provide a good fit to the data; the chi-squared goodness-of-fit test for the change in the -2Loglikelihood value revealed to be statistically significant. The significance value of less than 0.05 provides support for acceptance of the model. Regarding the Pseudo-R² Nagelkerke the model explains 78% of the variance.

	Variables	Exp (B)
Personal Background		
	1	,956
	2	,022*
	5	1,017
	6	,593
	7	,000
Business Knowledge		
	10	1107,913
	15	1,046
Entrepreneurial Motivations		
	12	15309491541,766*
	13	,000
Entrepreneurial Self Efficacy		
	14	7,049
Institutional Environment		
	16	1364,944*
	17	,000
	Constant	,021
Pseudo-R ² Nagelkerke		,778
Valid N		40

* Sig <= 0.05;

Table 13 – Results of logistic Regression

Table 13 presents the results of the logistic regression.

Regarding the Personal Background dimension the results show that “being” female decreases the odds of intends to start your own business or work for yourself, as the proportionate change of odds (Exp b) is below 1.

Regarding the Entrepreneurial Motivations dimension the results show that the personal motivation to satisfy a market need and create something for oneself increases the odds of intends starting their own business / self-employment.

Regarding the Institutional environment dimension the results show that know the IPCA structures for support entrepreneurship increases the odds of intends to start your own business or work for yourself.

Discussion

The results of non-parametric tests show that some categories of personal background dimension, business knowledge dimension and entrepreneurial self-efficacy dimension are related to entrepreneurial intentions in this sample. These are important results and deserve attention and discussion.

Some studies have suggested that women are less inclined to men to create her own businesses (Rosário, 2007; Zhao et al. 2005). There are some explanations for that. Davidsson (1995) highlights the role gender differences that are required from society: society expects women more passive and with less initiative. These are expectations in terms of gender that are present in attitudes and beliefs. But the role differences are not enough to explain the reasons why women have less intentions to be entrepreneur. The lack of confidence on their abilities, the perceived lack of support and the fear of failure are important antecedents that explain the hesitation of women in decisions to found their own ventures. That seems that syllabus of Entrepreneurship courses in academic institutions should develop the topics related to soft skills. The entrepreneurship education based only in the expositive traditional model must give way to more dynamic methods that emphasize the attitudes, the skills and motivation development, important drivers of the birth of an entrepreneur (Palma & Silva, 2014).

The non-parametric tests show that the attendance of an Entrepreneurship course is a predictor of entrepreneurial intentions. This study seems to reinforce the relevance of the Entrepreneurship Education in formation of entrepreneurial intentions, a similar conclusion with others investigations done in international context (Heuer & Kolvereid, 2013; Martin et al., 2013; Rocha & Freitas, 2014). The positive impact of entrepreneurship courses on entrepreneurial intentions shows that the proliferation of courses for entrepreneurial education in academic institutions that has taken place in Portugal since the early 90s was and is a key issue. These data reinforce the unequivocal role of education in entrepreneurship.

Concerning the business knowledge dimension, and the non-parametric tests, the variable level “Already been involved in the patenting of a technology or in the protection of intellectual property” have, individually, influence on entrepreneurial intentions. This result shows that the students who already start to put in practice their business plans have more intentions to start a business. Regarding the variables “possess analytical skills” and “possess the ability to think critically” they have, individually, influence on entrepreneurial intentions. Analytical skills and critical thinking refer to conceptual and abstract skills required to a good entrepreneur. Students who believe they have these skills propend to display more entrepreneurial intentions. The sample is composed by master students of the area of Management (master degree in Tourism Management and in Business Management). Most of these students possess solid management knowledges acquired in higher education courses and perceive the importance of analytic thinking, complex decision-making, environmental analysis, and critical and long term thinking for the success of a business (Carvalho & González, 2006). These business knowledges are strengthened by the attendance of entrepreneurship courses. These results globally show that perceiving to have previous business knowledges are a significant predictor of entrepreneurial intentions of master students.

Self-efficacy is identified in most studies about entrepreneurial intentions. In non-parametric tests the variable "have the skills to rigorously estimate the costs of implementing a new project" has, individually, influence on entrepreneurial intentions. It reflects the degree to which a person believes that a behaviour leads to a given outcome and that have the capacity to achieve those outcomes, leading to high expectations of success (Bandura, 1982). Having the resources to

achieve an outcome reinforces the beliefs in success. However, it seems important an additional thought about the importance of costs for this sample. That means an emphasis is the financial costs in the starting of a new venture. But although financial costs are important resources, they are not the only crucial resources to new businesses. The business idea, the evaluation of the market, and the psychological profile of an entrepreneur are also important points. Once again it is important to highlight the role of Entrepreneurship Education in the development of the soft skills, namely, self-efficacy, between students. The traditional model of Entrepreneurship Education which emphasizes only business plan and business analysis, with support of expositive classes, is no longer valid. Role playing, listening other entrepreneur's experiences, for example, can help the self-efficacy development.

Regarding the entrepreneurial motivations dimension the results of logistic regression show that the personal motivation to satisfy a market need and create something for oneself are predictors of the entrepreneurial intentions. The entrepreneurship literature named these variables as intrinsic motivation or pull factors. The need for autonomy and independence are entrepreneurship motivations well identified in literature (Carsrud & Brannback, 2011; Collins et al., 2004; Dinis & Ussman, 2006) as well the need for achievement, referred first by McClelland (1961). Satisfy a market need can mean that the individual has a strong need for achievement and personal development.

Finally, the regression analysis also shows that institutional environment, namely the knowledge of IPCA structures that support entrepreneurship, explains entrepreneurial intentions of master students. IPCA has structures that support entrepreneurship, namely, PRAXIS XXI e G3E. These structures help students in the business idea development, in the creation of spin-offs, give support in trademark registration and offer training in entrepreneurship, for example. These results highlight the need and the unquestionable value of these structures and units (Autio et al. 1997) for the emergence of entrepreneurial spirit in Higher Education Institutions. The investment in these units is an effort of academia with return.

A sample with university students is very common in entrepreneurial intentions research. It offers advantages, in Liñán & Chen (2006) opinion: similar ages and qualifications make the sample more homogeneous. There is the necessity to take caution with the extrapolation of the data, because the little dimension of sample.

As Davidsson (1995) refers intentions could be imperfect indicators of behaviours and actions. Intentions may never become real behaviours. This is a potential limitation of this study.

In terms of future research, it would be interesting to analyse the impact of the course of Entrepreneurship on the entrepreneurial intention of the students, comparing the students before and after attending the curricular unit of Entrepreneurship, from the perspective of a longitudinal study. In entrepreneurship research is also urgent to examine the intention-behaviour link (Fayolle & Liñán, 2014) and longitudinal studies may serve this purpose. Fayolle and Liñán (2014) propose the entrepreneurial commitment as the missing link between intentions and behaviours and suggest their inclusion in entrepreneurship studies. Future research might also examine the entrepreneurial behaviours, instead entrepreneurial intentions. Try to study established entrepreneurs and what influenced their decision of become an entrepreneur is a possible avenue to the research in Entrepreneurship.

Conclusions

The main contribution of this study is the use of a multivariate model to explain entrepreneurial intentions of IPCA master students. Our model show that personal background (namely gender and attendance of an entrepreneurship course), business knowledge (involvement in patenting activities and protection of intellectual property, possess analytical skills and possess the ability to think critically), entrepreneurial motivations (satisfy a market need and create something for oneself), and the institutional Environment (knowledge of IPCA structures support to entrepreneurship) explain the entrepreneurial intentions of master students. For the point of view of Entrepreneurship Education Higher Education Institutions should invest in the development of

soft skills (self-efficacy, risk propensity, need for achievement), particularly in female students. The traditional model of entrepreneurship education, based on theoretical classes, should be replaced by active models which emphasize role playing, simulations of real situations and contact with real entrepreneurs. Institutions should continue to invest in entrepreneurship support units and must equip themselves with the resources necessary for the effective success of their students.

References

- Ajzen, I. (1985). *From intentions to actions: A theory of planned behavior*. In J. Kuhl & Beckmann (Eds.), *Action-control: From cognition to behavior* (pp. 11–39). Heidelberg Springer.
- Autio, E., Keeley, R. H., Klofsten, M., & Ulfstedt, T. (1997). Entrepreneurial intent among students. Testing an intent model in Asia, Scandinavia and USA. In *Frontiers of Entrepreneurship Research, Proceedings of the 17th Annual Babson College Entrepreneurship Research Conference*.
- Bae, T. J., Qian, S., Miao, C., & Fiet, J. (2014). The relationship between entrepreneurship education and entrepreneurial intentions: a meta-analytic review. *Entrepreneurship Theory and Practice*, 217-254.
- Bandura, A. (1982). Self-Efficacy mechanism in human agency. *American Psychologist*, 37 (2), 122-147.
- Carsrud, A. & Brannback, M. (2011). Entrepreneurial motivations: what do we still need to know? *Journal of Small Business Management*, 49 (1), 9-26.
- Carvalho, P. M. & González, L. (2006). Modelo explicativo sobre a intenção empreendedora, *Comportamento Organizacional e Gestão*, 12 (1), 43-65.
- Chandler, G. N., & Jansen, E. (1992). The founder's self assessed competence and venture preference. *Journal of Business Venturing*, 7 (3), 223-236.
- Collins, C. J., Hanges, P. J., & Locke, E. A. (2004). The relationship of achievement motivation to entrepreneurial behavior: a meta-analysis. *Human Performance*, 17 (1), 95-117.
- Cunha, M. P., Rego, A., Cunha, R., & Cabral-Cardoso, C. (2004). Comportamento Organizacional: disposições – situações. In *Manual de Comportamento Organizacional e Gestão* (3^a edição), Lisboa: RH Editora, pp. 58-59.
- Davidsson, P. (1995). *Determinants of entrepreneurial intentions*. Paper prepared for the RENT IX Workshop, Piacenza, Italy, Nov. 23-24.
- Dinis, A. & Ussman, A. M. (2006). Empresarialidade e empresário: revisão da literatura. *Comportamento Organizacional e Gestão*, 12 (1), 95-114.
- Fayolle, A. & Liñán, F. (2014). The future of research on entrepreneurial intentions. *Journal of Business Research*, 67, 663-666.
- Glancey, K. & Pettigrew, M. (1997). Entrepreneurship in the small hotel sector. *International Journal of Contemporary Hospitality Management*, 9 (1), 21-24.
- Heuer, A. & Kolvereid, L. (2013). Education in Entrepreneurship and the Theory of Planned Behaviour. *European Journal of Training and Development*, 38 (6), 506-523.
- Jaafar, M., Abdul-Aziz, A., Maideen, S., & Mohd, S. (2011). Entrepreneurship in the tourism industry: Issues in developing countries, *International Journal of Hospitality Management*, 30(4), 827-835.

- Kautonen, T., Van Gelderen, M., & Fink, M. (2015). Robustness of the Theory of Planned Behavior in Predicting Entrepreneurial Intentions and Actions. *Entrepreneurship Theory and Practice*, 39 (3), 655-674.
- Lerner, M. & Haber, S. (2000). Performance Factors of Small Tourism Ventures: The Interface or Tourism, Entrepreneurship and the Environment. *Journal of Business Venturing*, 16, 77-100.
- Liñán, F. & Chen, Y. (2006). Testing the entrepreneurial intention model on a two-country sample. *Document de Treball*, 6/7, Department d'Economia de l'Empresa: Universitat Autònoma de Barcelona.
- Liñán, F. & Chen, Y. (2009). Development and cross-cultural application of a specific instrument to measure entrepreneurial intentions. *Entrepreneurship Theory and Practice*, 593- 617.
- Martin, B. C., McNally, J.J., & Kay, M. (2013). Examining the formation of human capital in entrepreneurship: a meta-analysis of entrepreneurship education outcomes. *Journal of Business Venturing*, 28, 211-224.
- McClelland, D. C. (1961). *The achieving society*. Princeton, NJ: Van Nostrand Reinold.
- Mueller, S. T. & Dato-On, M.C. (2008). Gender role orientation as a determinant of entrepreneurial self-efficacy. *Journal of Developmental Entrepreneurship*, 13 (1), 3-20.
- Palma, P. J. & Cunha, M. P. (2006). New challenges in entrepreneurship: introduction to the special issue. *Comportamento Organizacional e Gestão*, 12 (1), 3-6.
- Palma, P.J. & Silva, R. (2014). *Proatividade e espírito empreendedor*. In P. Palma, M. P. Lopes & J. Bancaleiro. *Psicologia para não psicólogos: a gestão à luz da Psicologia*. Lisboa: RH Editora.
- Rosário, A. E. (2007). *Propensão ao empreendedorismo dos alunos finalistas da Universidade do Porto*. Tese de mestrado não publicada. Faculdade de Engenharia: Universidade do Porto.
- Redford, D. T. (2013). *Handbook de educação em empreendedorismo no contexto Português* (pp. 9-28). Palma de Cima: Universidade Católica Editora.
- Redford, D. T. (2006). Entrepreneurship education in Portugal: 2004/2005 national survey. *Comportamento Organizacional e Gestão*, 12 (1), 19-41.
- Rocha, E. L. & Freitas, A. A. (2014). Avaliação do ensino do empreendedorismo entre estudantes universitários por meio do perfil empreendedor. *RAC*, 18 (4), 465-486.
- Shinnar, R. S., Giacomini, O., & Janssen, F. (2012). Entrepreneurial perceptions and intentions: the role of gender and culture. *Entrepreneurship Theory and Practice*, 465-493.
- Stewart, W., Watson, W., Carland, J., & Carland, J. (1998) A proclivity for entrepreneurship: a comparison of entrepreneurs, small business owners, and corporate managers, *Journal of Business Venturing*, 14, 189-214.
- Wilson, F, Kickul, J., & Marlino, D. (2007). Gender, entrepreneurial self-efficacy, and entrepreneurial career intentions: implications for entrepreneurship education. *Entrepreneurship Theory and Practice*, 465-493.
- Zhao, H., Seibert, S. E, & Hills, G.E. (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6), 1265-1272.