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Entrepreneurship in higher education: The role of incentives and the impact of academies on the motivations to undertake and entrepreneurial potential of students

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Empreendedorismo no Ensino superiores: O papel dos incentivos e o impacto das Academias nas motivações e potencial empreendedor.

O empreendedorismo é um dos contribuintes para a melhoria do *status quo* económico. Na verdade, ele pode gerar não só lucro, mas também criar empregos, beneficiando assim o crescimento económico. O papel das Academias tem sido cada vez mais enfatizado na promoção e educação para o empreendedorismo entre os seus alunos, visando não só criar e divulgar o conhecimento, mas também educar e facilitar meios e estratégias para empreender. Desta forma, as Academias não só devem preparar e formar os alunos para encontrar trabalho, mas também capacitá-los com as habilidades e conhecimentos que permitirão a criação de empregos. O presente estudo tem como objetivo principal explorar a percepção dos alunos acerca do nível de empreendedorismo presente nas suas academias, bem como compreender a relação entre a percepção do nível de empreendedorismo das academias e as motivações e o potencial empreendedor dos alunos. Como objetivos secundários, procuraremos explorar: a relação entre as variáveis das motivações para empreender e o potencial empreendedor; o papel dos incentivos nas academias, se estes são percebidos pelos alunos e como eles influenciam a motivação dos mesmos para empreender.

Foi recolhida uma amostra de 966 sujeitos. Para medir as variáveis, utilizámos a *HEInnovate Self-Assessment Scale*, uma escala de motivações pessoais e processos facilitadores do empreendedorismo com base na *Society for Associated Researchers on International Entrepreneurship (SARIE)*, uma versão adaptada do *Carland Entrepreneurship Index* e uma escala de incentivos para o empreendedorismo baseada no trabalho da mesma Sociedade acima referida. Foi descoberto neste estudo que os alunos percebem as suas universidades como moderadamente empreendedoras e que o nível de atividade a nível empreendedor nas academias influencia as motivações de aprendizagem e desenvolvimento. Além disso, o estudo concluiu que a motivação influencia o fator raciocínio/intuição no potencial empreendedor e que os incentivos financeiros/governamentais e educacionais/de consultoria influenciam consideravelmente as motivações de aprendizagem e desenvolvimento.

Palavras-chave: Academias, Empreendedorismo, Motivações, Potencial, Incentivos.

Entrepreneurship in higher education: The role of incentives and the impact of academies on the motivations to undertake and entrepreneurial potential of students

Entrepreneurship is one of the contributors to the improvement of the economic status quo. In fact, it can generate not only profit but also create jobs, thus benefiting economic growth. The role of the Academies has been increasingly emphasized in the promotion and education of entrepreneurship among their students, aiming not only to create and disseminate knowledge, but also to educate and facilitate means and strategies to undertake. In this way, the Academies should not only prepare and train students to find work, but also equip them with the skills and knowledge that will enable the creation of jobs. The present study has as its main objective the exploration of the students' perception of the level of entrepreneurship present in their academies, as well as to understand the relation between the perception of the level of entrepreneurship of the academies and the motivations to undertake and the entrepreneurial potential of the students. As secondary objectives, we will aim to explore: the relationships between the variables of the motivations to undertake and entrepreneurial potential; the role of incentives in the academies, and if these are perceived by the students and how they influence the motivation of students to undertake.

A sample of 966 subjects was collected. In order to measure the variables, we used the HEInnovate Self-Assessment scale, a scale of personal motivations and facilitators of entrepreneurship based on the Society for Associated Researchers on International Entrepreneurship (SARIE), an adapted version of the Carland Entrepreneurship Index and an Incentive Scale for Work-Based Entrepreneurship of the same Society referred to above. It was discovered in this study that the students perceive their universities as being moderately entrepreneurial and that the level of entrepreneurial activity in academies influences learning and development motivations. Furthermore, the study concluded that motivation influences the thinking/feeling factor in entrepreneurial potential and that financial/governmental and educational/consulting incentives influence learning and development motivations considerably.

Key Words: Academies, Entrepreneurship, Motivations, Potential, Incentives.

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Introduction

The impact of entrepreneurship in the world of organizations and economies is notorious, creating a more competitive and dynamic market with more potential. Therefore, an entrepreneur has a positive impact on the labor market, contributing to its expansion. Both academics and lawmakers agree that entrepreneurs and start-ups or businesses play a central role in the development and well-being on their societies. As such, there has been an increasing appreciation and recognition for the role of new and small businesses in the economy (GEM, 2017).

To respond to a competitive global and local market, entrepreneurial capacity has become essential. Thus, assuming that each individual has the capacity to be proactive and to develop behaviors at the entrepreneur level, if the environment provides favorable stimuli, it is of the utmost importance that entrepreneurship education be taken as a viable path for the pursuit of this goal. The teaching-learning process facilitates the acquisition of knowledge, which will become useful skills in the active integration of young people into life in society (Ávila, 2015).

Both this dissertation and the team of researchers are part of the Poliempreende program. This program began as a pioneer action in Portugal, initially in the Castelo Branco polytechnic institute, and rapidly expanded and is currently made up of 17 Portuguese institutes. It is important to mention the evolution of this program, which was initially developed through a competition of entrepreneurial ideas at a regional and national level but has quickly become a financed project of innovation networks (PIN- Poli Entrepreneurship Network). Now the program is present in all phases of entrepreneurship, from the promotion of creativity to the creation of companies with 26 polytechnic institutes, universities, and polytechnic schools not integrated in polytechnic institutes. Gonçalves (2009) emphasizes the project, stating that it deserves greater prominence at national level for its initiatives and goals. In a simple way, the PIN has as main objective the promotion of the entrepreneurial spirit in the academic communities through various initiatives, ending with a national competition (Parreira, Pereira, & Brito, 2011).

Given the importance of entrepreneurship and its education, the present study aims to: explore the level of entrepreneurship of academies perceived by their students; better understand the effect of academies on students' entrepreneurial motivations and potential to undertake; the relation between the variables of motivation and entrepreneurship potential; to analyse the perception of the students' incentives and their effect on motivation; to find out if more incentives translates into a higher level of entrepreneurship in the academies. Therefore, the present study may help to better understand the students' perception of entrepreneurial activity present in their academies, and if the incentives play a role in entrepreneurship competencies. We hope that the results of the study will also help us to better understand the relationships between the variables mentioned above.

This study will enable academies and other entities to better understand some dynamics present in the phenomenon of entrepreneurship, so they can adjust their policies, future objectives and programs based on the knowledge generated here.

A sample of 966 students was collected, using the questionnaire on "student's entrepreneurial motivations ". In order to measure the students' perception of the entrepreneurship level of the academies, entrepreneurial motivations, potential to undertake and incentives for entrepreneurship, we used the OECD HEInnovate Self-Assessment instrument in an adapted scale version, a personal motivations and facilitators of entrepreneurship scale based on the Society for Associated Researchers on International Entrepreneurship (SARIE), an adapted version of the Carland Entrepreneurship Index and an Incentive Scale for Work-Based Entrepreneurship of the same society referred above, respectively.

I – State of the Art

1- Entrepreneurship and Entrepreneurial Academies

The prosperity and dynamism of a nation depends largely on the competitive capacity of its organizations, which rests on the capacities of the entrepreneurs and managers of these organizations (Cuervo, Ribeiro, & Roig, 2010). Nowadays the business world is increasingly competitive and constantly changing. To face these changes, it is increasingly common to use entrepreneurship and use it as a business strategy with the aim of exploring new opportunities and satisfying customer demand (Custódio, 2011).

According to Reynolds (2005), the entrepreneurial function can be conceptualized as the discovery of new opportunities and the creation, from these opportunities, of new economic activities. This could be through the creation of new companies. Shane and Venkataraman (2000) also points out that entrepreneurship involves the discovery, evaluation and exploration of new opportunities, that is, the creation of new organizational strategies and the exploration of new markets with innovative products and inputs. In the perspective of Menezes (2003) the entrepreneurial individual is the one who has initiative and who promotes the enterprise with his innovative behavior, he also knows how to transform contexts, promote collaboration, create a network of personal relationships and generate results, he is an entrepreneur to do what he likes to do with dedication, optimism, enthusiasm and need for achievement.

Increasingly, a role of great importance is attributed to the university regarding its impact on knowledge and on the entrepreneurial economy (Audrescht, 2009). The central activities of universities are generally recognized as being those of information transmission (teaching) and the creation of knowledge (research), however, universities have undergone an internal transformation to adapt to the conditions of the environment and to assert its role in the economy, in this way the entrepreneurial university emerged (Guerrero, Urbano, Fayolle, Klofsten, & Mian, 2016). To Minola,

Donina and Meoli (2016) the entrepreneurial university emerged as a new archetype of an education institution that seeks to create knowledge and its transfer, contributing to the development of local economies and empowering individuals. Pinheiro and Stensaker (2013) affirm that the entrepreneurial university, being an organizational archetype, is characterized by the adoption of new structural arrangements that aim at greater internal collaboration (coupling) and that foster external partnerships (bridging). Ipiranga, Freitas and Paiva (2010) emphasize the concepts of "entrepreneurial university" and "academic entrepreneurship" in the context of the interaction between university and government, which elevates the university's role beyond education and training, becoming a factor and system of innovation in the development of a country.

It was in 1947 that Myles Mace taught the first entrepreneurship class in the United States of America, under the title "Management of New Enterprise" (Katz, 2003). According to Ávila (2015), education is a way forward for the achievement of entrepreneurship, which in turn is a factor of competitiveness and economic development. This author also points out that it is necessary to consolidate an entrepreneurial culture in the academies. This can sometimes be limited by the punctual nature of the actions promoting entrepreneurship instead of a sustainable and suitable strategy that in turn is a particularity of a real entrepreneurial academy. In the perspective of Vieira (2017), if the context provides favorable and indicated stimuli, assuming that all individuals can learn and develop entrepreneurial skills, education will become a key way to materialize ideas and projects since it allows the acquisition of knowledge and skills that will later be useful in active life in society. As stated by Wilson (2008), the academy that has so far focused on securing jobs for its students, not creating their own jobs, must change its strategy to adapt to the current unstable and ever-changing business landscape.

Based on several authors referred above, we can then say that the economic scenario is constantly changing and needs innovation so that there is no stagnation. Universities could be an answer to this question of creating entrepreneurial ideas and projects. To do so, universities will have to abandon their traditional register of knowledge creation and transmission and focus on other areas such as entrepreneurship. As mentioned above, it will be necessary to create a culture that encourages and demystifies entrepreneurship in the academies and presents the entrepreneurial path as a viable possibility by providing students with adequate information and basic knowledge, such as the support and incentives that are available to who decides to be an entrepreneur.

2- Triple Helix Model

To better understand the role of academies in the phenomenon of entrepreneurship, we will seek support in the theoretical model of the Triple Helix, where there are three protagonist entities: Government, industry and university. The Triple Helix model was conceptualized in the 1990s by

Leydesdorff and Etzkowitz, and it was originated through Etzkowitz's long-standing interest in studying the phenomena and relations between universities and industry (Etzkowitz, 2002) and Leydesdorff's interest in conceptualizing an evolutionary model capable of generating and explaining a complex network of communication (Leydesdorff, 1995). After the consequent development of the model we can now understand it as a conceptual framework capable of exploring the dynamic relations between the three entities named above and the knowledge society (Leydesdorff & Etzkowitz, 1996; Ranga & Etzkowitz, 2013).

The creation of synergies and structured actions between different entities or stakeholders, whose availability and responsibilities differ, arose from the common interest in entrepreneurship and the advantages it brings to each of them. Thus, the existence of information sharing, and dialogue becomes essential to consider an organized national strategy (Leydesdorff & Etzkowitz, 1996; Redford 2013). In the Triple Helix model, the leading role is given to the promoters and organizers of innovation; this prominent role is given both to individuals and to organizations, to bring together several stakeholders interested in a common project (Etzkowitz & Zhou, 2017). In the perspective of these authors, the core of the model lies in the interaction, as relatively equal parts, between university, industry and government. This model of interaction between the three spheres may lead to new schemes and practices of innovation through that cooperation. The model can be considered as a basis for institutional shaping, that is, a platform for the creation of new organizational forms that promote innovation, such as incubators.

In this theoretical model, three different configurations and their relations in the possible positioning in the three proposed institutional spheres are presented (University, Industry and Government) also regarding their interrelationships. In the "statist configuration" the leadership role is played by the Government, which is the one that leads the university and the industry, but also limits their ability to institute and develop innovative transformations. In the "laissez-faire configuration" the state of the economy plays a limited role, industry being the main driving force and the university and government acting only as a support, where the university oversees the provision of qualified human capital and the government acts as a regulator of mechanisms both socially and economically (Etzkowitz & Leydesdorff, 2000; Etzkowitz & Zhou, 2017). Finally, in the "balanced configuration", knowledge institutions, including universities, play a leading role in joint initiatives, acting as industry and government partners. This setting provides the most relevant insights for innovation, since the most innovation-friendly environments are those at the intersections of the three spheres (Etzkowitz & Leydesdorff, 2000).

Consistent with Ranga and Etzkowitz (2013), the entrepreneurial university is a fundamental concept in the Triple Helix model, not only for the teaching and research part of it, but also for the mission of getting involved in development at the socioeconomic level. The great advantage of universities is their ability to produce students with innovative ideas, talents

and skills that in turn can lead to students not only represent the new generations of professionals, but also who can become entrepreneurs, thus contributing to job creation leading to economic growth.

Etzkowitz and Zhou (2017) also stress the importance of the entrepreneurial university, stating that their presence, associated with the existence of teachers and students who actively seek pragmatic results derived from their research, is an essential factor. According to the same authors, it is the university that is the main institution of knowledge-based societies, with the Government and industry being the main institutions of the industrial society. Ranga and Etzkowitz (2013), Etzkowitz and Zhou (2017) also state that students are the university's great trump and competitive advantage as an institution included in the Triple Helix system, noting that regular student flow and graduation is a constant generator of ideas.

Universities, more than just generating knowledge and human resources for entrepreneurship, increasingly occupy an entrepreneurial role in the business sector by creating innovative small businesses, thus becoming a stakeholder in socio-economic development (Ivanova & Leydesdorff, 2014).

3- Global Entrepreneurship Monitor (GEM)

The Global Entrepreneurship Monitor, hereafter referred to as GEM, had its origins in 1997 and was the result of the joint work of Michael Hay and Bill Bygrave. The GEM is characterized as an independent study of entrepreneurship that is carried out around the world. Its central objective is to analyze the link between the level of economic growth and the degree of entrepreneurship, at the same time as it seeks to discriminate the conditions that may stimulate or delay entrepreneurial processes in each participating country (GEM, 2010). The main motivation behind the GEM was the lack of current data on entrepreneurship, so it has been since 1997 that GEM has been overseeing the collection of information on entrepreneurship annually. The GEM primary study was carried out at Business school and Babson College in 1999, having as participants and collaborators a group of 10 nations. Currently, GEM has become a partnership made up of 64 teams from different nations (GEM, 2008).

The main goal of GEM is to create a database with indexes on business activities to measure disparities in business activity in various countries. Thus, contributing to a knowledge that allows evaluating and understanding what should be done to improve the entrepreneurial capacity of each nation. The central goals of the GEM are to identify the factors that dictate levels of business activity, measure the differences in levels of activity between each country, and identify policies that can improve those levels (GEM, 2008).

The data, stories and reports that allow us, progressively and regularly, to improve our understanding of the phenomenon and the entrepreneurial process is made possible through a data collection carried out

together with the collaboration of all the representatives involved. The community of elements that integrate the GEM believes that entrepreneurship is associated with active and renewing benefits. They also believe that the information gathered, and the studies carried out play an essential role for researchers dealing with entrepreneurship. These researchers can benefit from access to more than two million observations in more than 100 economies (GEM, sd).

Portugal was integrated in the GEM studies in 2001 and was part of the studies in the years 2004, 2007, 2010, 2011, 2012, 2013, 2014 and 2015. The information on Portugal and the various reports are provided by the Portuguese Society of Innovation (SPI) and ISCTE-UL - Lisbon University Institute (Vieira, 2017).

As stated in the GEM (2009) and the GEM (2010), the GEM sought to facilitate the analysis and perception of the variability of the relevance that entrepreneurship has in the various nations, thus, the GEM identified and defined three types of economies based on the characteristics of economic development in each country: factor driven economies, efficiency-driven economies and innovation-driven economies, the latter being more associated with the existence of entrepreneurship. Still according to the same sources, Portugal is classified as being an innovation-driven economy. In these types of economies, it is expected to be an interest and proactivity in the search for opportunities to undertake without being conditioned by the fear of risking (Vieira, 2017).

In the results of the studies conducted by Kelley, Singer and Herrington (2016) in the GEM of 2015-2016, where they compared 62 countries regarding factors influencing entrepreneurship, creating rankings in several categories, we can observe that Portugal ranks first in 62 in the category of entrepreneurship in the school/academy and the third also in 62 with respect to the transmission of knowledge of research and development. However, in what concerns the perception of opportunities, entrepreneurial intentions and fear of failure, Portugal occupies places less favorable, being 50, 33 and 43 in 60 respectively.

In the results obtained in the GEM (2016/2017), where 66 countries were compared, like those of the previous GEM study, we can see that Portugal dropped 18 places in the category of entrepreneurship in the school/academy, thus occupying the nineteenth place in 66 countries. Portugal also descended in the field of knowledge transmission of research and development, now occupying the thirteenth place in 66. Regarding the perception of opportunities (ranked 50 in 65), entrepreneurial intentions (ranked 46 in 65) and fear of failing (ranked 27 in 65), Portugal continues to occupy unfavorable positions, except in the fear of failure, in which there was a visible improvement.

Having said this, we can affirm that, according to the studies cited above, Portugal is extremely well positioned about the education and transmission of knowledge for entrepreneurship and that it is on a favorable path for the development of a culture that values and stimulates the same. On the other hand, there is a negative perception about the existence of

opportunities, and the fear of failure also proves to be a factor.

When we compare the perceived opportunities and capacities of the European entrepreneurs with the North Americans, we observe that the values of the North Americans are visibly superior in the two fields. Regarding entrepreneurial intentions the subjects of the two regions show similar values. In the "fear of failure" category, Europeans are less fearful than the North Americans, although the former are less aware of their entrepreneurial opportunities and capabilities (Global Entrepreneurship, 2017). According to the GEM (2017) in North America successful entrepreneurs achieve a social status perceived to be higher than Europeans in Europe, and media attention to entrepreneurship is also higher in North America. Another striking difference is in the cultural and social standards regarding entrepreneurship where North Americans show a markedly higher score than Europe, this may be because entrepreneurial careers are more mystified in Europe than in North America.

4- Motivations to Undertake

As stated by the Oxford Dictionary, we can define motivation as the "reason or reasons that lead us to act or behave in a particular way", and according to Vroom (1964) motivation is a product of personal expectations about a certain effort that will lead to an intentional action (Sánchez & Atienza-Sahuquillo, 2017). In the opinion of several authors like Hornsby and Kuratko (1994), the process that leads to entrepreneurial intention and behavior is also described in part by entrepreneurial motivation, and as said by Hessels, Van Gelderen and Thurik (2008), it is primordial to improve the motivations at the entrepreneur level so that policies can be adapted and effective programs that support and promote entrepreneurship.

Research on this subject is strongly based on two approaches, on the one hand we have the theory of planned behavior (Ajzen, 1991), and on the other hand we have the theory of opportunities (Shapero, 1984). Both approaches assume that the decision to undertake is strongly related to factors of a contextual nature as well as to motivational and attitudinal aspects (Loiola, Gondim, Pereira, & Ferreira, 2016). For several authors such Robichaud et al. (2010) and Stephan et al. (2015), the entrepreneurial motivations are many, among them: financial motivations, desire for independence, family-related factors, and work-related factors. Through an empirical study conducted between 2002 and 2014, which focused on their data collection, at the time, 18 countries of the European Union, Roman and Rusu (2016) concluded that the main motivations of entrepreneurs are related to factors such as: unemployment, inflation, tax situation, fear of failure and the perception of one's own capabilities.

The need for realization is one of the theories that has been most studied, and it is based on the theory of motives of McClelland (1961). According to this theory, the drive for achievement is reflected in the ambitious people who start new organizations. This type of motivation helps to understand business-level activity.

Several studies have concluded that the need for independence is more present in entrepreneurial individuals than in the rest of the population, which means that it can also be a significant motivational factor when deciding to undertake (Gartner, 2001; Hornart & Aboud, 1971; Shane, Kolvereid, & Westhead, 1991). The social networks of work, family (Abebe, 2012; Almeida & Teixeira, 2014; Nanda & Sørensen, 2010), the entrepreneurial actions of former college colleagues (Kacperczyk, 2013), and the inclusion of entrepreneurship courses (e.g., Franke & Luthje 2004; Shinnar, Pruett, & Toney, 2009; Wu & Wu, 2008), are also factors that influence the choice to undertake (Loiola et al., 2016). Shanker and Astrachan (1996) also stress the role of the family as a motive to undertake, as it represents an influence both socially and economically. It is important to mention that the influence and impact of education on students' entrepreneurial motivation and the intention to pursue a career in this field varies according to the country's culture (Packham, Jones, Miller, Pickernel, & Brychan, 2010).

Through an empirical study about entrepreneurship in the student population conducted by Parreira et al. (2011), it was observed that the most recognized reasons to undertake were "to continue to learn", "entrepreneurship makes sense for life", "give security to the family" and "be innovative and aware of new technologies". After a factorial analysis of the main components carried out in this same study, it was concluded that the main motivations were related to four factors: family security, prestige, independence and material assets and the realization and implementation of an opportunity.

In the GEM 2016/2017 some motivations in the initial phases of entrepreneurial activity were identified. Three quarters claim that they chose this route to seize an opportunity, and entrepreneurs in a "factor-driven economy" seemed to be more motivated by necessity, that is, they had no better work options. In "innovation-driven economies" 79% of the subjects seemed to be motivated by the opportunity, not the need.

There are also studies in the personality features field that may be influencing the motivation and entrepreneurial intention. Brandstätter (2011), through the review of meta-analysis studies, concluded that three personality factors are predominantly present in the literature: conscientiousness, openness to experience and extroversion. A more recent study in the review of meta-analyses, by Frese and Gielnik (2014), emphasizes self-efficacy, the search for personal fulfillment and proactivity as influencing factors. According to Parreira et al. (2015) it is important for both researchers and academics to understand what motivates a subject to undertake more than just identifying the typical personalistic traits of entrepreneurs.

5- Entrepreneurial Potential

The scientific literature seems to affirm that the existence of the study of entrepreneurship during the academic course of the students

contributes to increase their intention to create their own business, and today, as stated by Shane (2004b), it became consensual that entrepreneurship is one of the main drivers of economic growth and wealth creation. Currently, university policies take a path towards promoting and supporting entrepreneurship by encouraging their teachers, researchers and students to patent their findings (Wood, 2009), thus making the theoretical information produced by scientific research physical and capable of generating profit. The university's role in promoting the entrepreneurial spirit of its students, teachers and researchers is increasingly evident (Santos, Caetano, & Curral, 2010).

Also in the perspective of the mentioned authors, there are four psychological dimensions that separate individuals in terms of building their entrepreneurial potential: psychological skills, entrepreneurial motivations, management skills and social skills, in each competence are also subdimensions: economic motivation, vision, desire for independence, leadership capacity, ability to mobilize resources, entrepreneurial self-efficacy, communicative and persuasive ability, social networking capacity, innovative capacity, emotional intelligence and resilience. Having said that, we can affirm that the authors identified some distinguishing features of individuals with entrepreneurial potential, among them: emotional intelligence, that is, the capacity to react appropriately to theirs and the emotions of others and to manage them effectively, resilience, that is, the ability to stay focused on an objective and be insistent in the process needed to achieve it, and finally the capacity for innovation, which passes through the differentiation of new and dissimilar ideas of entrepreneurs.

Gerry, Marques and Nogueira (2008) point out the need for self-realization, initiative and creativity, self-confidence and the locus of control, the propensity to take risks, the desire for independence, autonomy and persistence as predictors of entrepreneurial potential. Krueger and Brazeal (1994) argue that there must be entrepreneurial potential before there can be entrepreneurial behavior, since there must be a basis to create, stimulate and develop entrepreneurial behavior in individuals. For the same authors, the entrepreneurial potential stands on three bases: the perceived viability, the propensity to act and the perceived desirability.

Santos (2008) proposed three dimensions inherent to the construct of entrepreneurial potential: realization, planning and power, and a complementary dimension: entrepreneurial intention. Within each dimension are several attributes. For instance, within the dimension "realization" is the capacity to identify opportunities, persistence and efficiency; within the "planning" dimension there is the capacity for goal determination, information search, continuous planning and permanent control; within "Power" lies the capacity of persuasion and the ability to build a communication network. Finally, in the complementary dimension "complementary intention" is the desire to create a business (Santos, 2008). De Souza, Dos Santos, Lima, Da Cruz, and Lezana (2016) were based on the theory and scale proposed by Santos (2008), performing an empirical study to compare subjects who showed entrepreneurial success with those who did

not. The results evidenced a great weight of the factor “Goals” and the authors affirm that this is the great differentiator between the two types of subjects.

As stated by Barreiro, Gonçalves and Sousa (2014), the educational level is a great influence of the attitude and the entrepreneurial intention in individuals being that education can help to create an entrepreneurial personality. In this way, we can say that it is not only important to measure the entrepreneurial potential, but also to create mechanisms capable of fostering and developing entrepreneurial minds, thus giving prominence to academies in the role of promoter of entrepreneurship in students. Galloway and Kelly (2009) argue that entrepreneurial intention, access to entrepreneurial role models, and the desire for financial autonomy are also good predictors. Santos, Caetano and Curral (2014) define the entrepreneurial potential as the disposition of an individual to engage in entrepreneurial actions at the corporate level.

Panc (2015) states that to enable the measurement of entrepreneurial potential in a complex and reliable way, we will have to do it through a flexible methodology capable of investigating/analyzing the complex constructs inherent to entrepreneurial potential. The same author, through the comparison with the dimensions identified by Arthur, Day, McNelly, and Edens (2003), proposed a set of dimensions that should be considered when measuring the entrepreneurial potential. The referred dimensions are the following: problem solving ability (the ability of the subject to efficiently gather, perceive and analyze information both technically and professionally); capacity of organization and planning (ability of the subject to organize the activities of himself and of third parties as well as the ability to draw up plans in a structured way); ability to influence others (ability to convince others based on his own beliefs and to assume group coordination); awareness/consideration of third parties (decisions and actions of the subject take into account the position and consequences of himself and others); communication (ability of oral or written transmission of information in a clear and effective way); drive (ability to maintain a high level of energy and demanding expectations); and finally tolerance to stress (ability of the subject to remain efficient in several scenarios).

We can therefore resume that many authors refer similar dimensions or characteristics of entrepreneurial potential that can be organized into three more general categories: social capacities, the characteristics of the individual and the characteristics of the environment. In the category of social capacities, we can find characteristics such as leadership, communication, persuasion, planning, power and the other person's capacities. In the category of the individual's characteristics we can identify emotional intelligence, the desire for independence / autonomy, creativity, motivation / drive and the ability to deal with stress. Finally, in the category of the characteristics of the environment include aspects such as education and access to models of the role of entrepreneur. We can also affirm that it is not only important to identify and measure the entrepreneurial potential, but also to encourage and foster it, and here the role of the academies is

evidenced given its influence and capacity to create and develop young entrepreneurs.

6- Incentives/Support to undertake

As said by Nayab (2010), the main influences of the environment are social and cultural in nature, such as economic factors, governmental policies and the availability of resources. Social and cultural influences refer to a social organization of a particular society and its social attitudes regarding businesses, as well as the beliefs of individuals that impact their values and guide their behavior (Parreira et al., 2011).

The economic factors that influence entrepreneurship are linked to the organization of a certain society, for example the available interest rates, taxes, purchasing power and confidence levels in the economy (Parreira et al., 2011). In the line of the same authors, business opportunities are created when there is economic development. When there is a recession there is also a reduction of the number of opportunities, but it does not diminish their quality, leading to large business opportunities in times where there is a recession in a country. For Friedlander and Pickle (1968) another fundamental factor that influences the creation of businesses is the existence of buyers able to buy the product or acquire the service.

Political influences are related to the ideologies and positions that are adopted by those who exercise power. These may be favorable or unfavorable to entrepreneurship. As stated by Parreira et al. (2011), the more liberal a government is, the more likely it is to bet on entrepreneurial policies by considering entrepreneurship as a relevant strategy in economic development. One can also deduce that when there is a non-liberal or even oppressive government, entrepreneurship will usually not be had in count. There are also other political factors that can contribute to the promotion of entrepreneurship, including: industrial and technological parks, infrastructure development, policies to support entrepreneurship, debureaucratization and the fight against corruption.

About the availability of resources in a society, and according to Parreira et al. (2011), human resources, physical resources such as industrial infrastructures or parks, and the availability of materials needed to create production processes are key-factors to influencing business and enterprise creation. Mokyr (1990) also emphasizes the existence of human resources, skilled labor and managers as being an important factor. As stated by Shapero (1984), the existence of financial resources made available by the bank must also be considered as a factor of great influence.

In 2011 a study on entrepreneurship in the academic population conducted by Parreira and colleagues, sustained evidence for the existence of four factors that were perceived by the students as having the greatest influence on the intention to undertake. The researchers mentioned identified "resource availability," "having stable clients and incentives," "social and economic instability," and "opportunities in the industry" and "the area of residence" as being the main factors in the incentives that influence students

to create a business or company as the most important factors perceived by the students as the key incentives or factors that really support or leverage the idea of undertaking.

II - Method

Study objectives:

Given the importance attributed to the role of academies in the current inconstant and changing economic landscape, not only in what regards the production and dissemination of knowledge but also in the training of young entrepreneurs, the question arises whether the academies are perceived by their own students as being entrepreneurial academies or not. This study has as its first objective to ascertain the students' perceptions regarding the level of entrepreneurship.

There are two variables that appear to be the most studied in the literature regarding entrepreneurship, being the motivations to undertake and entrepreneurial potential. Students will not only have to be educated about entrepreneurship so that they can pursue a career in this field still mystified in Europe, they need to demonstrate the potential and the motivation to do so. The second objective of this study is to investigate the relationship between the entrepreneurship students' perception level and their motivation and potential. That is, what is the relationship between the level of perceived entrepreneurship and the motivation and potential students to come to create their own business?

Motivation and entrepreneurial potential may be two good predictors of a future entrepreneurial career, but what is the relationship between them? Will motivation increase entrepreneurial potential? Or entrepreneurial potential increase motivation? The third objective of this study is to deepen and better understand this relationship. There is yet another variable to consider for students to want and to become entrepreneurs: incentives to undertake. These may be important insofar as the perception of them will facilitate the process of initiation of an entrepreneurial activity. So, if there are more incentives will there be more motivation? And what is the students' perception of their existence? Are there incentives and are they being properly disseminated? Finally, there is one more question about incentives that we want to answer: if there are more incentives, specifically in the academies; will there also be a higher level of entrepreneurial activity?

Sample:

The participants in this sample are 966 students of Higher Education, being 265 (27.4%) males and 701 (72.7%) females. Above 877 (90.8%) are single or divorced, and 85 (8.8%) are married or in a union of fact. In what concerns nationality, 888 (91.9%) are of European nationality, 17 (1.8%) are of African nationality, 59 (6.1%) are of South American nationality and 2 (0.2%) are of Asian nationality. The clear majority are students at universities (95%), being 220 (22.8%) worker-students. Regarding the

course, 294 (30.4%) are undergraduate, 515 (53.3%) belongs to the integrated masters, 95 (9.8%) are non-integrated master students, 57 (5.9%) are PhD and 5 (0.5%) post-graduate students.

Table 1- Characterization of the sample

	<i>M</i>	<i>S.D.</i>	Total (n=966) N	%
Age	23.82	6.725	966	100
Gender				
Male			701	27.4
Female			265	72.6
Marital status				
Single/Divorced			877	90.8
Married/Non-marital partnership			85	8.8
Entrepreneurs in family				
Yes			560	58.0
No			406	42.0
Nationality				
European			888	91.9
African			17	1.8
South-american			59	6.1
Asian			2	0.2
Education Institution				
University			918	95.0
Polytechnic institution			45	4.7
Other			3	0.3
Course type				
Graduation			294	30.4
Integrated master			515	53.3
Master			95	9.8
Doctorate			57	5.9
Postgraduation			5	0.5
Year of course				
1			112	11.6
2			210	21.7
3			309	32.0
4			149	15.4
5			186	19.3
Status regarding education				
Student			746	77.2
Working student			220	22.8

Instruments:

A questionnaire called “Student’s entrepreneurial motivations” composed of various scales was used in this study. This questionnaire was developed by a team of five experts (Parreira et al., 2011) and was used for the first time in an initiative of the Poliempreende project.

1- Scale of personal motivations and factors that facilitate entrepreneurship:

A 17 item-questionnaire about motivations and facilitating factors regarding entrepreneurship (Parreira et al., 2011) measured on a 5-point Likert scale (1- Of little importance to 5-Very important) was used. This scale is composed of four dimensions: familial and societal realization (which included items like: “give security to my family”); resources and income (which included items like: “desire to have high profits”); prestige (which included items like: “raise my position in society”) and learning and development (which included items like: “be innovative and well-informed about new technologies”). Respondents rated each item based on the degree of importance that they assigned to the motivations to undertake. A CFA performed with this sample showed good fit considering NFI = .871, CFI = .885, TLI = .851, and an acceptable fit for RMSEA = .083. The scale showed also discriminant validity and reliability. In both samples, Cronbach’s alpha coefficients were greater than .70, indicating an adequate internal consistency.

2- Carland Entrepreneurship Index

This scale includes an adapted version of the Carland Entrepreneurship Index (Carland, Carland, & Hoy, 1992) with 33 items, instead of using a binary scale with antagonistic perspectives we chose a likert scale (from 1 = "not important" to 5 = "very important") that evaluates the student’s potential to undertake. This scale is composed of two dimensions: judging/perceiving, were students evaluated items such as: "I consider myself an imaginative person” and thinking/feeling were students evaluated items such as: "I am responsible for thinking and planning the business ".

Exploratory factorial analysis (EFA) was carried out since the original Carland Entrepreneurship Index was adapted to a new version, with 50% of the sample randomly selected. Previously, we checked the requirements for a reliable interpretation of PCA. According to Gorsuch (1983) a minimum of 5 subjects per item is needed; since the questionnaire has 33 items, the ratio found was $470/33$ items = 14.24 subjects/item, which enables, a priori, a reliable use of PCA. Furthermore, the Kaiser-Meyer-Olkin test (KMO) was higher than .70 (KMO= .859), showing sampling adequacy. The Bartlett’s Test of Sphericity presented a $X^2(465) = 2942.75$, $p < .001$, showing that the correlation matrix differs from the identity matrix (Gorsuch, 1983). According to eigenvalue > 1 , two different factors were extracted – Judging Perceiving and Thinking Feeling.

CFA of this two-factorial solution with the second part of the sample randomly selected revealed an acceptable fit, NFI=.822, CFI = .845, TLI = .851, SRMR=.063 and RMSEA= .074. The scale presented high reliability (Nunally, 1978), composite reliability (CR \geq .70; Hair et al., 2008), and AVE \geq .50 (Bagozzi & Yi, 1988), $\alpha = .89$, CR = .91, AVE =.30 ($\alpha = .88$, CR = .88, AVE =.28 for Judging Perceiving; $\alpha = .76$, CR = .76, AVE =.38 for Thinking Feeling).

3- Incentive scale for Entrepreneurship

The final version of this scale (Parreira, Mónico, Carvalho, & Silva, 2018) was composed of 15 items measured on a 5-point Likert scale (1- Of little importance to 5-Very important). Two dimensions compose this scale: financial and governmental incentives, were students rated items such as: “loan guarantees”, and educational and consulting incentives, were students rated items such as: “Counselling services”. Respondents rated each item based on the degree of importance that they assigned to the incentives to create a business. The CFA performed with this sample confirmed the two-factor structure obtained, showing an acceptable fit, NFI = .922, SRMR = .060, CFI = .931, TLI = .902, and RMSEA = .084. In both samples, Cronbach’s alpha coefficients were greater than .85, indicating a good internal consistency.

4- HEInnovate Self-Assessment scale

The HeiInnovate Self-Assessment (available online at heinnovate.eu) scale was also used for students to evaluate the entrepreneurial level of their universities, with 37 items being part of seven dimensions. Individuals, in this part of the questionnaire evaluated their University using a scale between 1 “Totally disagree” and 5 “Totally agree”. The seven dimensions of this scale are: leadership governance, organizational capacity, entrepreneurial teaching and learning, preparing and supporting entrepreneurs; knowledge exchange and collaboration; internationalized institution and measuring Impact. Regarding each of these dimensions students had to rate items like: “entrepreneurship is an important part of my university’s strategy”, “business goals are supported by a wide range of sustainable financing and investment sources”, “the university offers several formal learning opportunities to develop entrepreneurial skills”, “the university emphasizes the value of entrepreneurship”, “the university is committed to collaborating and sharing knowledge with the industry, the public sector and society”, “internationalization is an important part of the university's entrepreneurial agenda” and “the university regularly assesses the impact of its entrepreneurial agenda” respectively.

CFA was performed to test the fit of the seven-factorial solution. This solution revealed a good fit, NFI = .924, CFI = .953, TLI = .947, SRMR=.033 and RMSEA = .057. The scale presented high reliability (Nunally, 1978), composite reliability ($CR \geq .70$; Hair et al., 2008), and $AVE \geq .50$ (Bagozzi & Yi, 1988), $\alpha = .98$, $CR = .99$, $AVE = .71$; $\alpha = .93$, $CR = .92$, $AVE = .70$ for Leadership Governance; $\alpha = .90$, $CR = .88$, $AVE = .60$ for Organizational Capacity; $\alpha = .93$, $CR = .93$, $AVE = .72$ for Entrepreneurial Teaching & Learning; $\alpha = .95$, $CR = .94$, $AVE = .74$ for Preparing & Supporting Entrepreneurs; $\alpha = .94$, $CR = .94$, $AVE = .75$ for Knowledge Exchange & Collaboration; $\alpha = .92$, $CR = .92$, $AVE = .68$ for Internationalized Institution; $\alpha = .95$, $CR = .95$, $AVE = .78$ for Measuring Impact).

Procedures:

Care was taken to ensure the anonymity and confidentiality of the subjects and their responses, both for ethical reasons and to avoid biases in their responses. Formal and ethical situations were also considered, such as the confidentiality of data, the voluntary nature of participation in the study and informed consent.

The questionnaires were administered individually by our team of Master Psychology students. Participants were contacted in person, by e-mail or telephone by the research team made up of master's students and teachers. The questionnaire was applied in paper and digital format. At the beginning of filling out the questionnaires clear and concise instructions were given and in the end the research objectives were revealed to the participants. Data collection was done during the year of 2017.

Data analysis:

All the analysis was performed by using the statistical program SPSS and AMOS (v. 22.0, IBM Corp, 2013) for Windows. Missing values (< 1%) were all MCAR and replaced through the series mean method. Exploratory Factor Analysis (EFA) was performed with SPSS by Principal Component Analysis (PCA), VARIMAX rotation (Kaiser's normalization), given that we expected independent factors. Confirmatory factor analyzes (CFA) were carried out with AMOS, with maximum likelihood estimation method. The normality of the variables was analyzed by the coefficients of asymmetry (Sk) and kurtosis (Ku). None of the variables presented values of Sk and Ku that could indicate violations of the normal distribution, <1.5 and |Kuunivariate| <2.

Factorial models' goodness of fit the was analyzed by the NFI (Normed of fit index, good fit > .80, Schumacker & Lomax, 2010), SRMR (Standardized Root Mean Square Residual), TLI (Tucker-Lewis Index, appropriate adjustment > .90, Brown, 2015), CFI (Comparative fit index, good fit > .90, Bentler, 1990) and RMSEA (Root Mean Square Error of Approximation <.05 , acceptable adjustment <.08; Kline 2011; Schumacker & Lomax, 2010).

The improvement of the model fit was evaluated by the modification indices (MI; Bollen, 1989), and we considered releasing the parameters with higher MI inside each factor. We followed Arbuckle (2013), which indicates analyzing the MIs by their statistical significance ($p < .001$).

Internal consistency was assessed by Cronbach alpha coefficient (Nunnally, 1978), both for the global scale and their dimensions. We followed the indication of Hair, Black, Babin and Anderson (2010), which considers coefficients of internal consistency higher than .80 as an acceptable reliability indicator.

III - Results

In table 2 we present the internal consistency values, the means, the standard deviations and the intercorrelations between the personal motivations and factors that facilitate entrepreneurship, the Carland entrepreneurship index scale, the incentive scale for entrepreneurship and the Heinnovate scale, along with their respective factors.

Regarding the personal motivations and factors that facilitate entrepreneurship scale, the average of the answers is 3.56, indicating that, overall, the average students' scores approach the 4= agree option, indicating a level of motivation to undertake above the intermediate point of the scale of the four factors that makes up this scale. The factor that obtained the highest average score was that of the learning and development motivations, followed by the familial and societal realization motivations, the prestige motivations and, finally, the resources and income motivations.

As for the Carland Entrepreneurship Index, there is an average of 3.80 ($SD=0.48$). The factor that scored the highest average was the thinking/feeling potential.

In the Incentives for entrepreneurship we observed an average of 3.95 ($SD=0.60$). The financial and governmental incentives factor obtained the highest average between the two factors.

Finally, in the Heinnovate scale we can observe an average of 2.95 ($SD=0.78$). The factor that scored the highest on this scale was the internationalized institution, with the lowest score being found in the preparing and supporting entrepreneurs' factor.

Table 2 also contains the correlation matrix. We found a moderate association (Cohen, 1988) between the scales of personal motivations and factors that facilitate entrepreneurship and the incentive scale for entrepreneurship and between the Carland Entrepreneurship index and also the scale of personal motivations and factors that facilitate entrepreneurship. The relations between the remaining scales' scores are all weak of magnitude (Cohen, 1988).

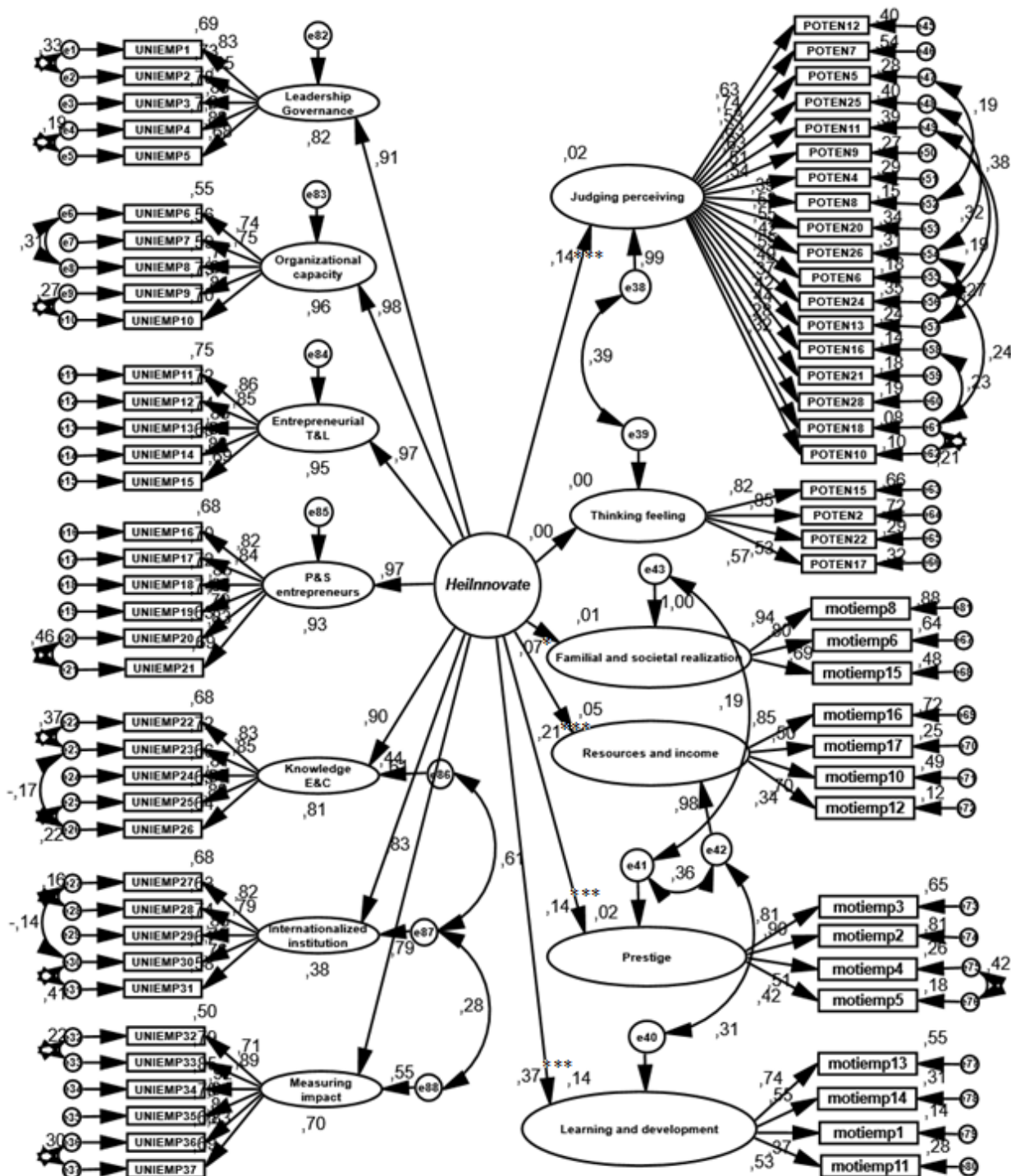
Table 2- Mean, standard-deviation, coefficients of internal consistency (Cronbach's alphas) and intercorrelation matrix between the scale of personal motivations and factors that facilitate entrepreneurship, Carland Entrepreneurship Index, Incentive scale for Entrepreneurship and the HEInnovate Self-Assessment scale.

	α	M	DP	(1)	(2)	(3)	(4)	(5)	(6)	(7)	(8)	(9)	(10)	(11)	(12)	(13)	(14)	(15)	(16)	(17)	(18)	(19)	
Motivation- Global scale (1)	.79	3.56	.52	1	.58	.75	.75	.52	.33	.28	.32	.36	.37	.20	.23	.24	.23	.23	.23	.23	.19	.12	.19
F1- Family and societal fulfillment motivations (2)	.85	4.12	.80	1	.24	.29	.13	.19	.14	.22	.18	.17	.15	.09	.10	.09	.10	.09	.83	.06	.07	.11	.07
F2- Resources and income motivations (3)	.67	2.88	.80	1	.40	.29	.23	.23	.24	.17	.16	.19	.04	.15	.17	.15	.15	.16	.19	.12	.12	.01	.12
F3- Prestige motivations (4)	.78	3.25	.91	1	.12	.13	.08	.16	.31	.32	.16	.13	.16	.13	.10	.10	.10	.11	.12	.10	.10	.10	.13
F4- Learning and development motivations (5)	.63	4.13	.61	1	.37	.32	.36	.30	.30	.21	.27	.29	.29	.27	.29	.29	.29	.27	.25	.25	.25	.12	.19
Incentives- Global scale (6)	.89	3.95	.60	1	.93	.87	.22	.25	.09	.19	.24	.24	.24	.24	.24	.24	.24	.22	.17	.17	.17	.09	.11
F1 - Financial and Government Incentives (7)	.84	3.92	.67	1	.62	.18	.20	.08	.15	.15	.15	.18	.18	.18	.18	.18	.18	.18	.13	.13	.13	.06	.06
F2- Educational and Consulting Incentives (8)	.84	3.99	.66	1	.23	.26	.09	.22	.22	.22	.22	.22	.22	.22	.22	.22	.22	.23	.19	.18	.18	.10	.14
Entrepreneurial potential- Global scale (9)	.87	3.80	.48	1	.97	.59	.14	.13	.13	.13	.13	.13	.13	.13	.13	.13	.13	.08	.10	.12	.12	.19	.13
F1- Judging and perceiving potential (10)	.86	3.76	.51	1	.40	.17	.16	.17	.16	.17	.16	.17	.16	.17	.16	.17	.16	.12	.14	.14	.14	.15	.15
F2- Thinking and feeling potential (11)	.78	3.91	.70	1	.07	.07	.03	.03	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.02	.05	.05	.19	.07

HEInnovate- Global scale (12)	.98	2.95	.78	1	.88	.90	.92	.92	.90	.71	.89
F1- Leadership Governance (13)	.93	2.86	.93	1	.84	.82	.81	.73	.51	.71	
F2- Organizational capacity (14)	.90	2.90	.91		1	.86	.83	.76	.51	.74	
F3- Entrepreneurial teaching and learning (15)	.93	2.87	.93			1	.87	.80	.53	.75	
F4-Preparing and supporting entrepreneurs (16)	.93	2.73	.89				1	.81	.51	.79	
F5- Knowledge Exchange and collaboration (17)	.92	3.08	.88					1	.69	.76	
F6- Internationalized Institution (18)	.91	3.45	.89						1	.64	
F7- Measuring Impact (19)	.93	2.83	.84							1	

Note: Correlations between the sociodemographic variables and scales and their respective factors were not presented, due to low effect size.

(* $p < .05$; ** $p < .01$)



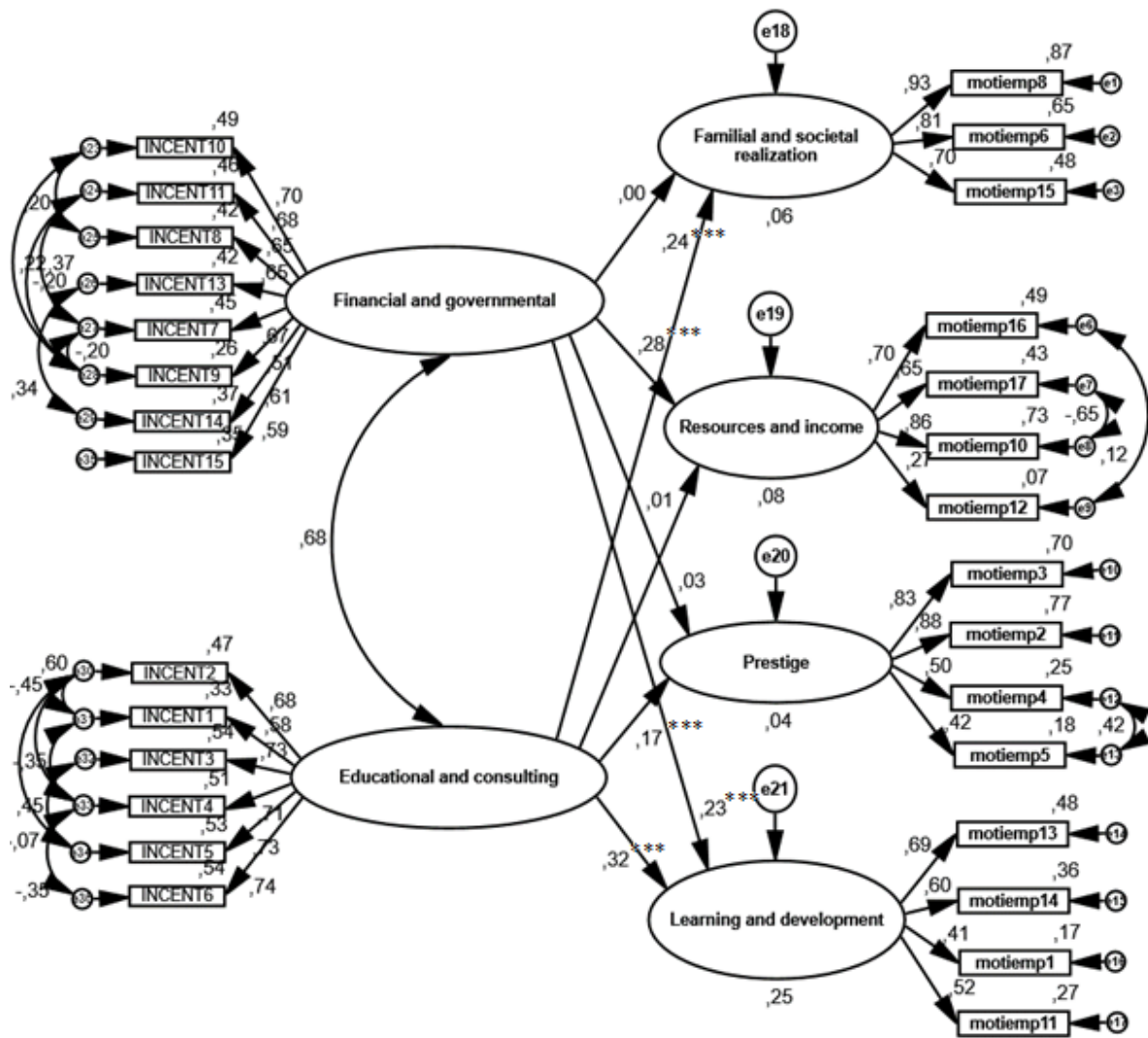
*p<.05; **p<0.01; ***p<.001

Figure 1 - Influence of the level of perceived entrepreneurship of the academies on the entrepreneurial potential and motivations to undertake of their students: standardized regression coefficients (β) and proportion of explained variance (R^2) of the estimated structural model.

The structural model of Figure 1 allows us to test the effect of the entrepreneurial level of the universities perceived by their students (Heinnovate scale) on the factors of the entrepreneurial potential scale (Carland index: judging/perceiving and thinking/feeling dimensions) and the student's entrepreneurial motivations (familial and societal realization, resources and income, prestige and learning and development).

The observation of the quality of the adjustment of the model indicated a value of CMIN/2587 of 3.34, $p < .001$. The NFI index with a value of .83 indicates a good fit of the model (Schumacker & Lomax, 2010). On the other hand, the CFI is .88, practically reaching the value of .90 proposed in the literature (Bentler & Dudgeon, 1996) and the SRMR is .07, indicating a good fit. With respect to RMSEA, we found the .05 value (90CI of .048 to .050), considered as a good fit indicator (Schumacker & Lomax, 2010). Generally, the results obtained allow us to consider that we are facing a model with a good fit.

We found that the Heinnovate scale has an $R^2 = 2\%$ effect on the judging/perceiving factor and $R^2 = 0\%$ on the thinking/feeling factor of the entrepreneurial potential scale (modified Carland index). As for the effect of the Heinnovate scale on the factors of the student's entrepreneurial motivation scale, we can observe an effect of $R^2 = 14\%$ in the learning and development factor, $R^2 = 5\%$ in the resources and income factor, $R^2 = 2\%$ in the prestige factor and $R^2 = 1\%$ in the familial factor and societal realization.



*p<.05; **p<0.01; ***p<.001

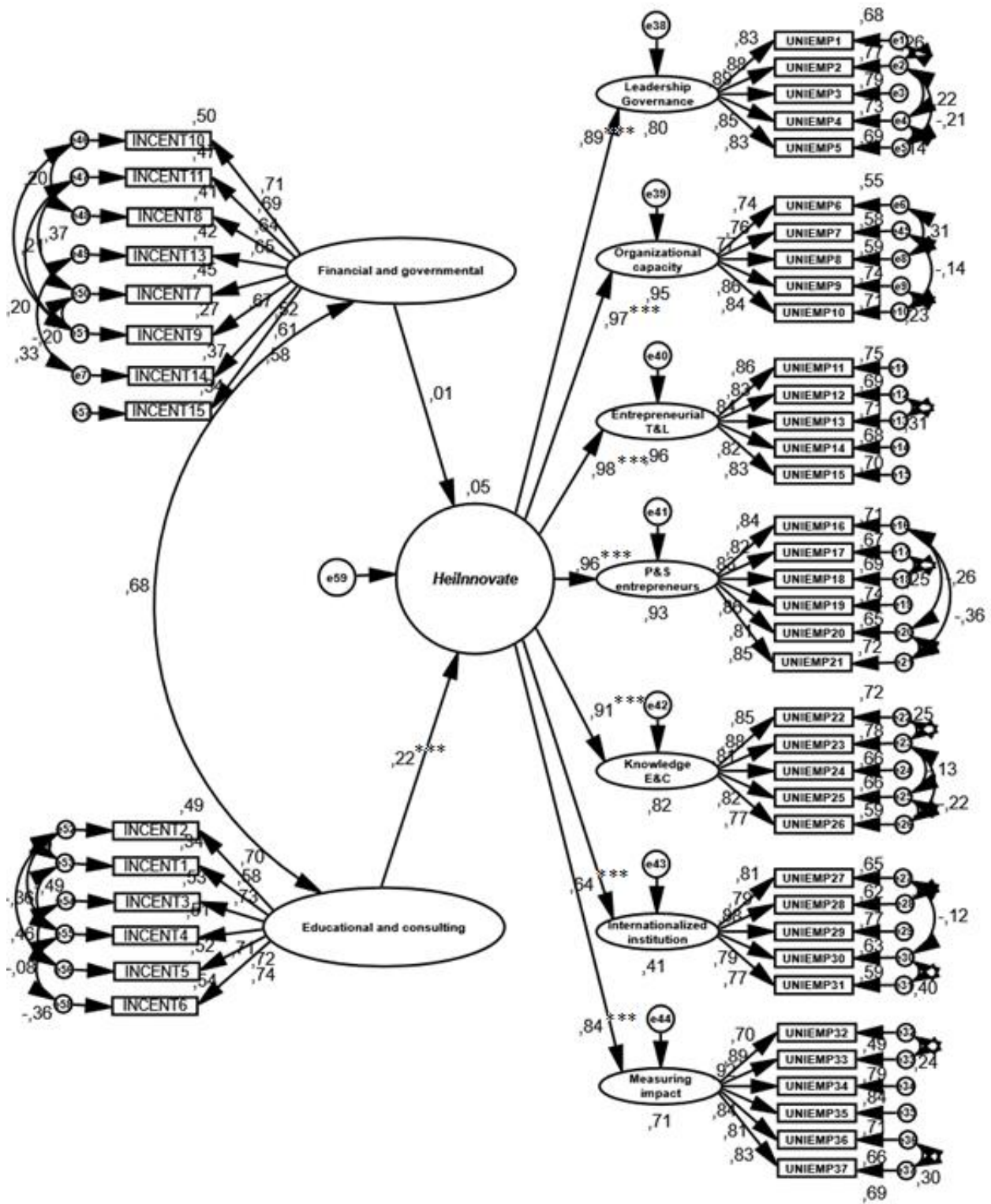
Figure 2 - Influence of the incentives on the motivations to undertake: standardized regression coefficients (β) and proportion of explained variance (R^2) of the estimated structural model.

The structural model of figure 2 allows us to test the effect of the financial and governmental incentives and educational and consulting incentives factors (incentive scale for entrepreneurship) on the factors of the

personal motivations and factors that facilitate entrepreneurship scale (familial and societal realization, resources and income, prestige and learning and development).

The observation of the quality of the adjustment of the model indicates a CMIN/353 of 5.75, $p < .001$. The NFI index with a value of .83 indicates a good adjustment of the model. On the other hand, the CFI is .86, practically reaching the value of .90 proposed in the literature (Bentler & Dudgeon, 1996) and the SRMR is .08, indicating an acceptable fit. With respect to RMSEA, we found the .07 value (90CI of .067 to .073), which is acceptable.

We can observe that the factors of the incentive scale for entrepreneurship has an effect of $R^2=6\%$ in the familial and societal realization factor, $R^2=8\%$ in the resources and income factor, $R^2=4\%$ in the prestige factor and $R^2=25\%$ in the learning and development factor.



*p<.05; **p<0.01; ***p<.001

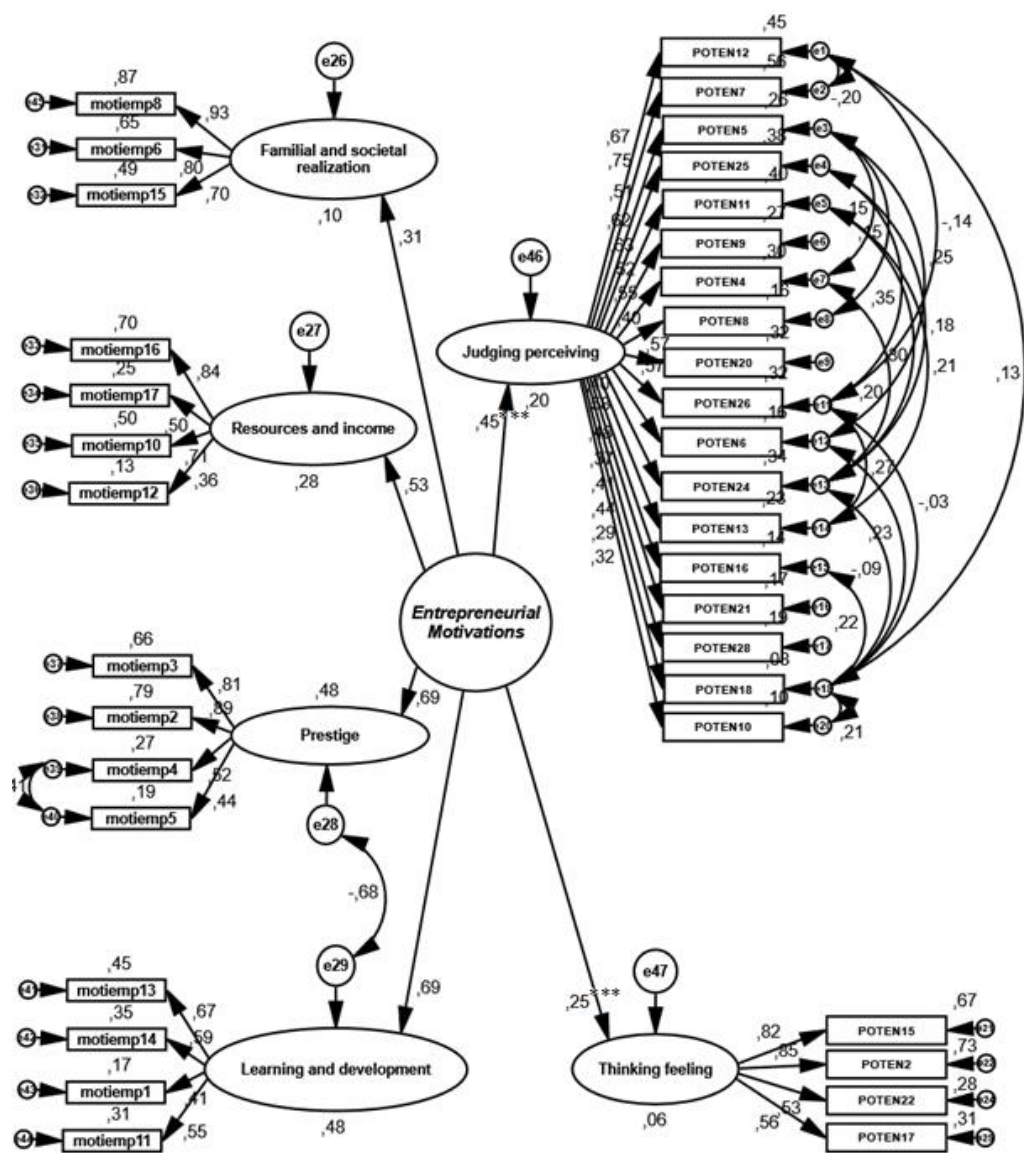
Figure 3 - Influence of the incentives on the level of perceived entrepreneurship of the academies: standardized regression coefficients (β) and proportion of explained variance (R^2) of the estimated structural model.

Entrepreneurship in higher education: the role of incentives and the impact of academies on the motivations to undertake and entrepreneurial potential of students
 Samuel Nejati Eghteda (e-mail: samu_sne@hotmail.com) 2018

The structural model of Figure 3 allows us to test the effect of the factors of the incentive scale for entrepreneurship (financial and governmental incentives and educational and consulting incentives) on the Heinnovate scale.

The quality of the adjustment of the model was good considered NFI = .90, CFI = .92, SRMR =.05, and RMSEA 0 .05 (90CI of .052 to .055), and acceptable attending CMIN / 181 = 3.76, $p < .001$.

It was found that the effect of the factors of the incentive scale for entrepreneurship has an effect of $R^2 = 5\%$ on the Heinnovate scale.



* $p < .05$; ** $p < 0.01$; *** $p < .001$

Figure 4 - Influence of the incentives on the level of perceived entrepreneurship of the academies: standardized regression coefficients (β) and proportion of explained variance (R^2) of the estimated structural model.

The structural model of figure 4 allows us to test the effect of the personal motivations and factors that facilitate entrepreneurship on the two factors (judging/perceiving and thinking/feeling) of the incentive scale for entrepreneurship.

The quality of the adjustment of the model can be considered acceptable: CMIN / 604= 4.72 ($p < .001$), NFI = .78, CFI = .82, SRMR = .08, and RMSEA 0 .06 (90CI of .060 to .064).

We can observe that the entrepreneurial motivations have an effect of $R^2=20\%$ on the judging/perceiving factor and of $R^2=6\%$ on the thinking/feeling factor.

IV – Discussion

As already mentioned, the main objective of this study is to investigate the students' perceptions regarding the level of entrepreneurship in their academies and how the level of perceived entrepreneurship in academies influences the variables of entrepreneurial potential and motivations to undertake. As complementary objectives were defined the exploration and better understanding of the relationship between entrepreneurial potential and motivations to undertake of students, the way in which the incentives influence the students' motivations to undertake, and finally the exploration of the influence of the incentives regarding the level of perceived entrepreneurship in the academies.

The study showed that the students perceive their academies as being moderately entrepreneurial ($M=3$ of maximum 5), which does not meet the GEM classification for Portugal or Europe (GEM, 2016, GEM, 2017) where they are classified with significantly higher scores. However, these results may indicate that the academies are still in a phase of transition between the classical archetype of teaching and research and the new archetype of entrepreneurial academies that foster and develop entrepreneurial activities. This new archetype was proposed by authors such as Guerrerro et al. (2016) and Minola, Donina and Meoli (2016). Given this, we can respond to the first objective by stating that students perceive the level of entrepreneurship present in their academies as being satisfactory, the question whether the students' perception is related to lack of information, non-involvement in entrepreneurial activities, or the weak dissemination of internal and external activities at the level of entrepreneurship by the academies remains. Another possibility is that the mind-set of teachers still remains attached to that of the classic archetype, thus affecting its development.

Responding to the second objective: the students' perception of the level of entrepreneurship present in the academies showed little influence on the entrepreneurial potential. However, 14% of the motivations regarding learning and development are explained by this same perception, which comes to corroborate the studies of authors such as Ávila (2015) and Vieira

(2017) who affirm that education is a viable way to achieve more and better levels of entrepreneurship. That said, we can affirm that having a high level of entrepreneurship and entrepreneurial activities in the academies could lead to greater motivation in the learning and development motivations of the students, which in turn, in the long run, could lead to a greater interest in entrepreneurial activities. The remaining factors of the entrepreneurial motivation are little influenced by the level of entrepreneurship in the academies perceived by the students.

Authors such as Krueger and Brazeal (1994) argue that in order to really exist entrepreneurial behavior, the individual must have firstly the potential for it. The results of this study point to the possibility that the motivation to undertake is a precursor of the entrepreneurial potential. That is, the motivations to undertake influence the entrepreneurial potential. The relationship between these two variables is moderate, but the motivation explains 20% of the judging/perceiving factor and 6% of the thinking/feeling factor. We can thus conclude by objecting to the third objective, that there is in fact a relationship, although moderate, between the motivations to undertake and entrepreneurial potential and that motivation appears to be a considerable influence on entrepreneurial potential.

The results showed that the financial/governmental and educational/consulting incentives explain 25% of the learning and development motivations, the remaining factors were not significantly influenced by the incentives. We can then affirm and responde to the fourth objective of this study stating that incentives actually have an influential role in the motivations of students regarding entrepreneurial activities, however, they are much more prominent learning and development motivations.

Authors such as Ipiranga, Freitas and Paiva (2010) argue that the relationship between government and academies creates the path and fosters the emergence and development of entrepreneurial academies, and in light of the Triple Helix theory (e.g., Etzkowitz & Zhou, 2017; Ivanova & Leydesdorff, 2014; Leydesdorff & Etzkowitz, 1996; Rang & Etzkowitz, 2013; Redford, 2013) the relationship between the three spheres, namely between the government and the institutions of knowledge, is what can lead to a positive development of entrepreneurship, which in turn has become a factor to take into account in today's world economy.

According to the results of this study, the percentage of influence exerted by the financial/governmental and educational/consulting incentives on the perception of the level of entrepreneurship in the academies is only 5%, despite the existence of the incentives being perceived by the students. This corresponds to the fifth objective. These conclusions may also mean a weak interaction regarding the promotion and development of entrepreneurship between government and academies. Given the low influence of incentives on the level of entrepreneurship perceived in the academies by the students, we can, by exclusion of parties, affirm that the present study points to a "balanced configuration" (Etzkowitz & Leydesdorff, 2000), however, a more conclusive studie would be needed to determine this.

Taking into account the results of this dissertation, it was concluded that there is a potential taxonomy of variables that can lead to the result of the entrepreneurial intention or even behavior. The learning and development motivations are influenced by 14% by the students' perception of the level of entrepreneurship in the academies and by 25% by the perceived incentives. The resource and income motivations are also influenced by the incentives, at 28%. In turn, personal motivations at the level of entrepreneurship influence 20% the judging/perceiving potential factor.

Having said this, we can base the student's entrepreneurial behavior on the existence or perception of incentives (financial, governmental, educational and consulting) and on the perception or existence of entrepreneurial activity in the academies. These two variables will lead to greater motivation in terms of learning and development, which in turn will lead to the perception of entrepreneurial potential that will ultimately lead to the adoption of intentions or even directed behaviors towards the creation of a business and consequently to entrepreneurship. It is important to state that we recognize that the percentages of influence are not as high as expected; however, this study can be a starting point to test this taxonomy and approximate it as close as possible to the reality.

We have also to consider the variables of personality and intrinsic motivations, because these variables were not studied in this dissertation but can have an important effect on the student's perceptions.

V – Conclusion, limitations and further studies

The present study demonstrated the importance of investing in entrepreneurship in the academies, both in terms of new initiatives such as the Poliempreende project in Portugal and in the dissemination of these same initiatives. The new entrepreneurial academy archetype seems to be taking shape, and this development will be useful not only for students who will make their transition from the academic world to the labor world but also to local economies. Given the current economic situation, we can stress that new businesses and entrepreneurial behaviors are a great value to all stakeholders. This is also why the common companies, government and knowledge institutions should encourage and facilitate entrepreneurial initiatives. As we all know, entrepreneurship has a huge positive impact on economic growth.

We believe that academies can, with this study, better understand the students' perceptions regarding the level of entrepreneurship in their academies and how this same perception is reflected in their motivations and the potential to adopt entrepreneurial thoughts and behaviors. Once again, it is important to affirm the role of entrepreneurship education, with emphasis on the motivations of learning and development that have been considerably influenced by the environment and characteristics of the academies.

It is also important to mention some limitations of this study so that more thorough studies can be conducted in the future. The main limitation of

the study was the sample, a convenience sample was used that showed little heterogeneity. For future studies it is recommended to use a varied and if possible multiple samples of countries depending on the geographical area targeted for the study. Another limitation is due the study is focused mainly on the reality of academies. The industries and government had not been included. For future studies it is recommended to include the three stakeholders in order to have a better understanding of the role of each sphere and of the mutual work in relation to entrepreneurship.

The fact that this is a cross-sectional study does not allow to truly evaluate a profile, it is necessary to carry out follow up and longitudinal and cohort studies. For instance, a study where we could compare two samples, one before the European crisis and one after, would be extremely useful to better understand the variables that affect the students in what regards entrepreneurship.

In this study, resulting from the new information generated, some questions remain relevant to answer, questions that we challenge all researchers and future researchers in the area to explore. The present study took into account the students' perceptions, being that a research to determine the actual level of entrepreneurship in the academies of these students was not done. It would be of great value to conduct a comparative study between the students' perception and the reality to determine if these are confirmed or to explore what leads to the disparity of results if that is the case.

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