

## Entrepreneurship in higher education: The key role of self-efficacy-A cross sectional study



José Ramalho <sup>1,\*</sup>, Carla Carvalho <sup>1</sup>, Pedro Parreira <sup>2</sup>, Eduardo Leite <sup>3</sup>, Lisete Mónico <sup>1</sup>, Anabela Salgueiro-Oliveira <sup>2</sup>

<sup>1</sup>Center for Research in Neuropsychology and Cognitive Behavioral Intervention, Faculty of Psychology and Educational Sciences, Paço das Escolas, University of Coimbra, Coimbra, Portugal

<sup>2</sup>The Health Sciences Research Unit: Nursing (UICISA: E), Nursing School of Coimbra, Coimbra, Portugal

<sup>3</sup>Centro de Investigação, Desenvolvimento e Inovação em Turismo, University of Madeira, CiTUR, Funchal, Portugal

### ARTICLE INFO

#### Article history:

Received 26 April 2021

Received in revised form

4 October 2021

Accepted 26 November 2021

#### Keywords:

Entrepreneurial intention

Higher education institutions

HEInnovate

Self-efficacy

Students entrepreneurial education

### ABSTRACT

Entrepreneurship is the engine of a nation's economic, cultural, and social development. Since Higher Education Institutions play a crucial role, it is important to analyze the academy's entrepreneurial education effectiveness in promoting entrepreneurial intention amongst students. This study aims to analyze the effect of the education agenda of a Higher Education Institution on the students' entrepreneurial intention, exploring the effect of self-efficacy as a mediator. A quantitative, cross-sectional, and non-experimental study was performed. A sample of 176 Portuguese higher education students fulfilled the "Entrepreneurial Motivations Survey," which includes the HEInnovate Self-Assessment Scale, the Self-Efficacy Scale, and the Entrepreneurial Intention Scale. Data analysis was performed using Statistical Package for Social Sciences (SPSS), AMOS, and PROCESS software. Through structural equation models, it was created a mediation model to assess the impact of the University education agenda on the entrepreneurial intention of the students. All scales showed adequate validity and reliability. The Faculty was not perceived as an entrepreneurial academy by the students. The results did not show a direct effect of the entrepreneurial education agenda on the students' entrepreneurial intention. The effects emerged through self-efficacy, which plays a mediating effect between entrepreneurial education agenda on the students' entrepreneurial intention. The entrepreneurship agenda didn't directly influence the entrepreneurial intention. It is mandatory to offer a rich agenda in order to improve the students' entrepreneurial competencies, preparing them to strive in the competitive market, in which self-efficacy plays an important role.

© 2022 The Authors. Published by IASE. This is an open access article under the CC BY-NC-ND license (<http://creativecommons.org/licenses/by-nc-nd/4.0/>).

### 1. Introduction

In 2008, the world faced a crisis that impacted the job market, translating into poor economic growth and lack of opportunities worldwide especially for the youth (Rae and Woodier-Harris, 2013). Considering that, the European Commission suggested an investment in entrepreneurship (EC, 2012) as it would help students not only be able to create job opportunities for themselves and others but enhance their abilities in the future to resolve problems and transform difficult situations into new

prospects as the entrepreneurial mindset is not restrained to business creation (Baidi and Suyatno, 2018).

Higher Education Institutions (HEI) play a key role in this scenario, considering the positive effect education has on entrepreneurial intention (Corso, 2020; Jahani et al., 2018; Kritskaya and Kritskaya, 2016) as they prepare their students to enter the labor force (Corso, 2020). However, not all are yet adapted to the rapid shifts in the paradigm, as the growing notion of a job lasting a lifetime is gradually fading away (Hartsenko and Venesaar, 2017). Besides, it has been shown that a flawed implementation of entrepreneurship into the curriculum can have a restrictive effect on the "entrepreneurial mindset" and limit the student's thinking process instead of providing them with tools to expand it, therefore having the opposite desired outcome (Gurel et al., 2010; Islam et al., 2018).

\* Corresponding Author.

Email Address: [ccarvalho@fpce.uc.pt](mailto:ccarvalho@fpce.uc.pt) (J. Ramalho)

<https://doi.org/10.21833/ijaas.2022.02.002>

Corresponding author's ORCID profile:

<https://orcid.org/0000-0003-3351-5003>

2313-626X/© 2022 The Authors. Published by IASE.

This is an open access article under the CC BY-NC-ND license

(<http://creativecommons.org/licenses/by-nc-nd/4.0/>)

After a debate in the European University-Business Forum, it became clear that a solid statement on what defines an entrepreneurial HEI and a guiding framework for action was necessary. As a result, it was created a self-assessment tool (HEInnovate) available to everyone online. The scale allows an evaluation of the level of entrepreneurship in HEI based on the ideas presented by Gibb and Hannon (2006) and according to the perspective of every component of the Institution, from top management to students. The scale itself is comprised of 7 dimensions as it recognizes the complexity of entrepreneurial education and what is helpful or not when applying this concept (OECD, 2014).

Aware of the benefits to the economy (Obembe et al., 2014), the education given in the universities should translate into entrepreneurial action. One possibility of evaluating this entrepreneurial action is through entrepreneurial intention. A high level of entrepreneurial intention translates into a high probability of incurring some entrepreneurial behavior (Omidi et al., 2016). Entrepreneurial intention is a sincere motivation that an individual possesses to follow through with an entrepreneurial action or behavior and can be influenced by several variables such as openness to experiences or education (Jang et al., 2019). One that is recurrent in literature is self-efficacy which has been described as one of the most influential factors in explaining academic entrepreneurial intentions (Prodan and Drnovsek, 2010). Besides, when combined with an entrepreneurial focused education, it has been shown to have a positive effect on entrepreneurial intention (Baidi and Suyatno, 2018) with some studies establishing it as a clear mediating effect (Zhao et al., 2005).

As seen in the previous paragraphs, entrepreneurship may be a key component in the development of a more sustainable economy and even in the response to future problems caused by the increasingly rapid shifts in the job market. Since we believe that the University should be a driving force in equipping the new generations with valuable skills to face upcoming challenges, it must position itself as the main stakeholder in the education of entrepreneurship. Therefore, we aim to investigate the relationship between the entrepreneurial education agenda of a central Portuguese University and the entrepreneurial intention of the students of one of its Faculties while studying the mediating impact of self-efficacy. Secondly, it comprises an effort to analyze the academy's entrepreneurial education effectiveness in promoting entrepreneurial intention amongst students as well as highlighting the importance of the development of self-efficacy during the process. There is a focus on the perceptions rather than the reality of the setting because the entrepreneurial intention is anticipated to be more influenced by the individual's conception of the environment (Omidi et al., 2016).

With this study, we are proposing three hypotheses:

H1: The entrepreneurial education agenda of the University has a positive influence on the entrepreneurial intention of the students from the Faculties.

H2: Students' self-efficacy has a positive influence on their entrepreneurial intention.

H3: Students' self-efficacy acts as a mediator in the relationship between the entrepreneurial education agenda of the University and the students' entrepreneurial intention.

The outcomes may provide a starting point for the development of a wider scale study that will be able to provide us with a good diagnosis of the current state of the effectiveness of the entrepreneurial agenda of this University in its students and that fostering constructs such as self-efficacy should have a stronger presence in the efforts conducted.

## 2. Theoretical background

To begin to answer the questions of this study, it is needed to clearly define what constitutes entrepreneurship. Davidsson (2003), saw entrepreneurship as "a social phenomenon which leads to improved use of resources in the economic system as a whole," whereas Schumpeter (1947) defined it as a driving force in innovation that is responsible for the creation of wealth or an organization. Current publications build on the latter, adding that entrepreneurship can also be the expansion of an existing business (Parreira et al., 2017). Entrepreneurship has been acknowledged as one of the main forces driving economic growth (Chen et al., 2015) through the development of new ventures and job opportunities (Sultan, 2016). Although they were unable to specify the mechanisms through which that occurs, Wennekers and Thurik (1999) discussed that entrepreneurship, alongside a variety of ideas and increasing competition, could make the country more competitive at an international level in an era marked by globalization.

However, by being often associated with uncertainty, it may not provide a stable income each month, thus, the fear of failure stands out as a major hurdle to the entrepreneurial process (Cacciotti and Hayton, 2015; Van Praag, 1999). In the same line, Leite et al. (2021) concluded that the life of an entrepreneur can be very challenging, but there is nothing romantic about it. Indeed, an entrepreneur takes a lot of risks, and its activity requires a great commitment, a spirit of sacrifice, and a higher work capacity, obviously beyond technical knowledge.

Higher Education Institutions (HEI) whose main objective is to equip the younger generations with skills to exercise a profession become crucial elements at this point.

As highly important structures in the dissemination of entrepreneurship when having the right conditions, there have been several authors that have come forward with attempts to define what constitutes fertile grounds for the development of entrepreneurship in academic institutions. Gibb and Hannon (2006) defined an Entrepreneurial University as an institution of higher education, which are financially autonomous, capable of promoting an entrepreneurial culture, taking responsibility for the personal development of their students and faculty, and commitment to including entrepreneurial education in the pre-established curricula. As entrepreneurial education, we include every form of learning and teaching that contributes to the development of the entrepreneurial mindset, behavior, and skills such as creative thinking and problem solving (Proença and Sanches, 2016).

Assuming that entrepreneurship can be taught (Proença and Sanches, 2016; Teixeira and Davey, 2010), several strategies can be adopted, for instance, connecting the University to the entrepreneurial world, creating entrepreneurial programs, or including courses aimed at the study of entrepreneurship on the curriculum (Arranz et al., 2017).

The positive impact of entrepreneurial education on entrepreneurial intention has been highlighted by several studies (Islam et al., 2018; Mwasalwiba, 2010; Teixeira and Davey, 2010). The network Eurydice conducted a study at a European level—“Entrepreneurship Education at Faculty in Europe”—that states the importance of including in the curricula and education plans, themes related to entrepreneurial education focusing on entrepreneurial attitudes, skills, and knowledge (Proença and Sanches, 2016). As stated before, an entrepreneurial intention is a strong predictor of incurring an entrepreneurial action.

An intention can be described as a sincere individual's drive to carry a behavior or an action through (Baidi and Suyatno, 2018) and, as a result, is a strong predictor of said action (Ajzen, 1991). Following this logic, an entrepreneurial intention is a motivation that one person holds to carry out an entrepreneurial action translating, for example, into the creation of a business or adding value to one (Baidi and Suyatno, 2018; Moriano et al., 2012).

According to the literature, entrepreneurial intention can be influenced by several factors of intrinsic or extrinsic nature and it can be explained using intention-based models that allow an insight into the entrepreneurial cognitive process before enrolling in entrepreneurial action (Esfandiar et al., 2019; Low and Macmillan, 1988). The Theory of Planned Behaviour (TPB) was introduced by Ajzen (1991) and relies on the principle that the attitude towards the act (the perception of the positive or negative contributions of a certain action to one's life), subjective norms-including social networks-and the perception of behavior control (Ajzen, 1991)-which intersects with the self-efficacy concept established by Bandura (1977) and Esfandiar et al.

(2019)-pose as the motivational foundation to conduct a behavior with a high level of reliability (Ajzen, 1991).

Social norms, when compared to other factors, are a weaker predictor of entrepreneurial intention. The young entrepreneurs make their choices based more on intrinsic than extrinsic factors, i.e., social norms (Moriano et al., 2012). This does not mean, however, that external factors do not play a role in entrepreneurial intention, as it is made clear by the importance of investment in entrepreneurial education. Students with entrepreneurial education tend to have stronger entrepreneurial intentions and a higher probability to start new businesses when compared to their peers (Kolvereid and Moen, 1997; Noel, 2001; Paço et al., 2011) especially when intrinsic values, such as self-efficacy, are stimulated (Baidi and Suyatno, 2018).

There has not been a complete consensus on the relationship between entrepreneurial education and entrepreneurial intention. Farhangmehr et al. (2016) were unable to establish a significant direct relationship between the two variables, citing that a knowledge-based education, which did not develop important soft skills (i.e., relationships, commitment, organizing ability) and the influence of external variables and cultural context (i.e., economic crisis), resulted in a low motivation to enroll in entrepreneurial activities. In another study, Zhao et al. (2005) found that formal learning was only able to result in entrepreneurial intention if self-efficacy was present as a mediator in the relationship.

Self-efficacy can be described as a construct linked with an individual's success in certain tasks (Parreira et al., 2018). It is related to desirable features that include motivation to learn and resilience and is amongst the factors that compose the psychological mechanisms managing motivation. Bandura (1977) was one of the first authors to tackle this construct with the proposal of the “Social Learning Theory,” which states that learning happens through behavioral modeling and that self-efficacy is dynamic, meaning that it could change with exposure to new information and experiences.

The first of four sources that are believed to affect self-efficacy is related to performance outcomes. According to this principle, an individual's perception of their abilities is expected to increase if a previous experience provided them with positive evidence. Vicarious experiences are mentioned as the second source and relate to the likelihood of the person witnessing others in situations of accomplishment or failure as observing people that resemble ourselves succeed due to personal effort, increases the observers' confidence in their skills to perform and thrive in similar conditions. Verbal persuasion is presented as the third source and stands for the influence a person can exert on another's self-efficacy presenting verbal information regarding the task and the individual's capability to do it. The last source of influence is physiological feedback, through which people experience sensations from their body, and the way they

perceive this emotional arousal influences their beliefs of efficacy; thus, individuals are more likely to experience success if they do not feel anxious about a social object or situation (Bandura, 1977; Parreira et al., 2018).

Since self-efficacy is a strong predictor of task performance, it can be essential in entrepreneurship because it translates into a greater chance of an individual making a bigger effort and time investment in one task (Beeftink et al., 2012). This constitutes one of the reasons why a focus on self-efficacy development helps stimulate Entrepreneurial Intention and impacts the reception of entrepreneurial education (Jahani et al., 2018).

### 3. Method

#### 3.1. Design of the study

This is a non-experimental, cross-sectional (Levin, 2006), descriptive, and quantitative study. Besides that, it has adopted both a descriptive and correlation design. Descriptive in the sense that we intended to collect data that would be able to describe the current entrepreneurial levels of the University and its students' entrepreneurial profile and self-efficacy (Kramer, 1985) and correlational because it aimed to explore the relationship between three variables (Thompson et al., 2020). Finally, this is a single cross-sectional study as it analyses data from a specific point in time (Levin, 2006). As the research was conducted in the field of social sciences, we considered a level of confidence of 90%

and a level of significance of 10% which entailed a sample of 68 participants. We were, however, able to obtain during a short amount of time 176 answers to the questionnaire that integrate the sample displayed in this study. It is important to add that the sample was not randomly selected and, in an attempt to correct the bias resulting from that, we justify the inclusion of a larger number of participants.

#### 3.2. Samples

Students from a Faculty of a public University in the central region of Portugal were recruited, currently enrolled in Bachelor, Master, or Ph.D. Our sample comprises 176 participants from a Faculty of a University in central Portugal, 148 (84.09%) being female and 28 (15.91%) being male. The youngest participant is 18 years old and the oldest 43 years old (M=21.74). Most of the participants are Portuguese (88.30%). Under the variable "Job," 163 identified with the condition of "Student" (92.61%). When it comes to contact with entrepreneurship, 11 (22.00%) of the students who reported having had classes about entrepreneurship, stated that they were part of the curriculum, whereas the other 39 (78.00%) students participated in sessions that were not part of the degree's curriculum. Less than half of the participants (47.73%) stated the presence of entrepreneurs in their families with the father figure being the most common person to be related to that variable (n=41; 23.30%). Table 1 provides further details.

**Table 1:** Sample's demographic characteristics

	Sample	M	SD
	Age	21.744	3.59
	Sample	n	%
Sex	Male	28	15.91
	Female	148	84.09
	Single	170	96.59
Civil Status	Married	4	2.27
	Civil Union	2	1.14
	None	92	52.27
	Brother	1	0.57
	Father	41	23.30
	Mother	18	10.23
Entrepreneurs in the family	Cousin	6	3.41
	Grandmother	5	2.84
	Grandfather	10	5.68
	Uncle	30	17.05
	Aunt	16	9.09
	Husband	1	0.57
Student was or is part of a Student Association	Yes	82	46.59
	Part of the curriculum	11	22.00
Classes about entrepreneurship	Not part of the curriculum	39	78.00
	Student	163	92.61
Job	Working Students	13	7.39

Average (M), Standard Deviation (SD), Number of participants included that were included in the variable (n), and the percentage of the total population the "n" corresponds to (%)

### 3.3. Instruments

#### 3.3.1. HEInnovate self-assessment scale

The European Commission created, in 2013, a self-assessment tool, available for free, online, that

would be able to evaluate the Institutions in the seven domains considered essential for one to become an entrepreneurial and innovative structure (Parreira et al., 2018). The dimensions include Strong Leadership and Good Governance (incorporation of entrepreneurship in the HEI's



strategic plan, incentivize its units to promote entrepreneurship and give them autonomy to act and, finally, asserting itself as the driving force in entrepreneurship and innovation in the regional and social context), Organizational Capacity (the Institution's capability to capture different sources of investment as well as creating synergies with entrepreneurial structures both internal and external), Entrepreneurial Teaching and Learning entrepreneurship through the development and application of innovative methods and exposure to real-life experiences, Preparing and Supporting Entrepreneurs (support students and faculty on the pursuit of an entrepreneurial career taking advantage of their connections to the industry and access to financing opportunities), Knowledge Exchange and Collaboration (the stimulation, direct application and the usage of the knowledge on behalf of the social, cultural and economic development), Internationalized Institution (integration of internationalized complexes in the institution's education, research and knowledge exchange to act as vehicles of change and improvement) and Measuring Impact (determining and comprehending the impact of the changes withheld by the institution).

Besides this, the platform also provides resources to promote good practices, guidance notes to help HEI to have a framework to discuss, evaluating and evolve as an entrepreneurial institution (OECD, 2014).

The scale was adapted by Mónico et al. (2020) and used to measure the entrepreneurial education agenda of the HEI, evaluating the seven dimensions across 37 items. Each item was evaluated using a Likert scale that ranged between 1 "Totally disagree" to 5 "Totally agree." In this previous study, which comprised 966 students from different Portuguese HEIs, the CFA analysis revealed a good fit of the seven-factorial solution—NFI=0.924, CFI=0.953, TLI=0.947, SRMR=0.033 and RMSEA=0.057—and high reliability.

### 3.3.2. Self-efficacy scale

The Self-Efficacy scale was adapted by Parreira et al. (2017) to the Portuguese population and was used to measure the self-efficacy presented by students from the Faculty. The scale is composed of nine items. Each item was evaluated using a Likert scale that ranged between 1 "Totally disagree" to 5 "Totally agree."

### 3.3.3. Entrepreneurial intention scale

The Entrepreneurial Intention scale was adapted by Oliveira et al. (2016) to the Portuguese population and was used to measure the entrepreneurial intention presented in students from the Faculty. The scale is composed of five items. Each item was evaluated using a Likert scale that ranged between 0 "Totally disagree" to 6 "Totally agree."

## 3.4. Procedures

The dissemination of the questionnaire was made through social media (Facebook, Instagram, and LinkedIn) by directly contacting students that met the eligibility criteria. During the dissemination, the purpose of the study was explained, and all relevant information was provided, including ethical procedures.

The questionnaire was sent online. Responses were collected between December 2019 and January 2020. In order to prevent bias, the questionnaire was anonymous and did not require information that could reveal participants' identities. This step aimed to prevent students to provide answers that may have been seen as more desirable.

## 3.5. Ethical Procedures

To comply with the ethical guidelines, the research procedures were planned to ensure the participants' anonymity and confidentiality of their answers. Besides that, it was ensured positive feedback for this study by the Commission on Ethics and Deontology of the Research carried out by the Faculty of Psychology and Education Sciences from the University of Coimbra (CEDI) in an extraordinary meeting on the 25<sup>th</sup> of January 2018.

The voluntary nature of participation was mentioned when the study was presented, and participants were not able to respond to the questionnaire unless they agreed with the conditions. At the end of the completion of the questionnaire, information about the research objectives was given to each participant as well as the contact information of one of the authors to allow for questions or doubts to be presented.

## 3.6. Data analysis

The analyses were performed using 22.0 IBM SPSS, AMOS, and PROCESS v.3.5. Regarding the normality of the variables, skewness (Sk) and kurtosis (Ku) coefficients were consulted which allowed for the establishment of said normality as adequate as it fits in the intervals of  $|Sk| < 2$  and  $|Ku| < 3$  (Kline, 2015).

The goodness of fit was assessed by interpreting the values of the RMSEA (Root Mean Square Error of Approximation, considering an acceptable fit with  $<0.08$  and a good fit  $<0.05$ ; Kline, 2015; Schumacker and Lomax, 2004). SRMR (Standardized Root Mean Square Residual) presents an appropriate fit when  $<0.08$  (Brown, 2015), NFI (Normed of a fit index, with a good fit above 0.80; Schumacker and Lomax, 2004), TLI (Tucker-Lewis Index, considering an adequate adjustment to be above 0.90; (Brown, 2015)). CFI (Comparative Fit Index, good fit  $>0.90$ ; (Bentler, 1990)) and  $\chi^2/df$  (considering good adjustment  $<2$ ; acceptable fit  $<5$ ; (Marôco, 2014; Schumacker and Lomax, 2004)).

The model fit was improved by modification indices (Bollen, 1989), considering releasing parameters with the highest MI accordingly to their statistical significance, with a MI higher than 11 ( $p < 0.001$  (Marôco, 2014)).

Reliability was assessed by determining Cronbach's alpha (Nunnally, 1978) for both the global scale and the dimensions present in each one. While a good indicator of internal consistency has a value of 0.80 (Hill and Hill, 2012), coefficients higher than 0.70 were considered adequate and as a good metric for internal consistency.

A probability of .05 for the Type I error was considered for all the analyses. Effect sizes of Pearson correlations were classified according to Cohen (1998). To perform the linear regression analysis, the assumptions of normal distribution, homogeneity, and independence of errors were checked. The first two assumptions were validated graphically; for the last one, validation was obtained through the Durbin-Watson statistic.

To test the final hypothesis, we design a Simple Mediation Model (Model 4; (Hayes, 2013)) that aimed to showcase in what manner the antecedent (entrepreneurial education agenda of the University) would influence the outcome (entrepreneurial intention) through a single variable (self-efficacy), meaning that self-efficacy would function as a mediator in this relationship. With 10000 bootstrap samples, we used bias-corrected bootstrap confidence intervals for the indirect and direct

effects to construct intervals at a 95% level of confidence. Confidence intervals that did not include zero were selected as having statistical significance (Hayes, 2013).

Before the confirmatory analyses, an assessment focused on the distribution of the items by the response possibilities was conducted. To obtain the maximum conceivable number of independent factors, it was utilized the Varimax rotation method. Regarding the Confirmatory Factor Analysis, the software used to perform the method of maximum likelihood estimation was AMOS version 22. In terms of composite reliability and mean-variance extracted for the factors, they were analyzed recurring to the methods stated in Fornell and Larcker (1981).

4. Results

We begin by presenting the results of the Confirmatory Factor Analysis of the instruments.

HEInnovate Self-Assessment scale: CFA was performed to test the fit of the seven-factorial solution of the HEInnovate Self-Assessment scale (three items were excluded from this questionnaire). This solution revealed an acceptable fit: NFI=0.856; CFI=0.918; SRMR=0.0431; TLI=0.909, and RMSEA=0.080. The scores indicate an acceptable fit and high reliability (Cronbach's Alpha=0.984). Fig. 1 shows a representation of the modified CFA model for the HEInnovate Self-Assessment.

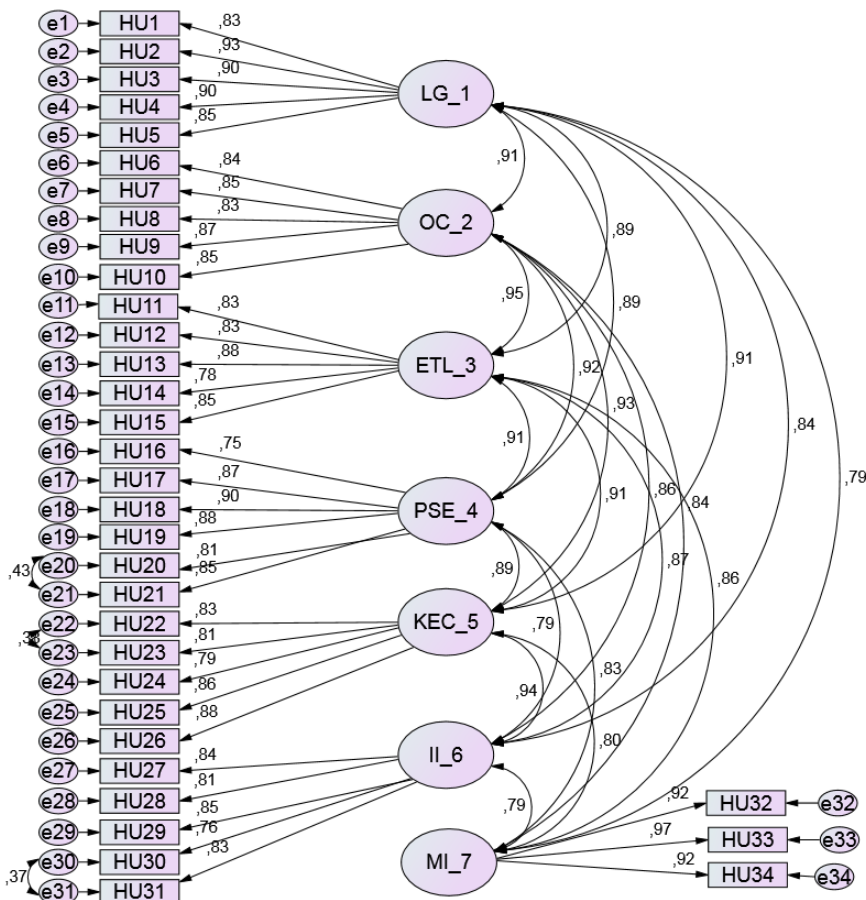


Fig. 1: Representation of the modified CFA model for the HEInnovate self-assessment

Self-efficacy: After conducting the EFA analysis, only the items which displayed a relationship with self-efficacy related to entrepreneurship were maintained to obtain good reliability. Afterward, with the remaining four items, it was conducted Confirmatory Factor Analysis and the following results were achieved: NFI=0.998; CFI=0.995; SRMR=0.0165, TLI=0.971; RMSEA=0.059. The values indicate an acceptable fit and acceptable reliability with the value of Cronbach's Alpha=0.700. Fig. 2 shows a representation of the modified CFA model for Self-Efficacy.

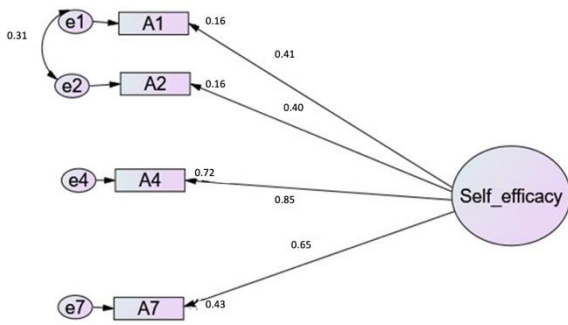


Fig. 2: Representation of the modified CFA model for Self-Efficacy

Entrepreneurial Intention scale: Conducting the Confirmatory Factor Analysis, the following results were achieved: NFI=0.995; CFI=1.000; SRMR=0.0141; TLI=1.001; RMSEA=0.000. The values indicated a good fit but only after the association of errors identified in the scale by “e3” and “e5” after the consultation of the modification indices. As the

Cronbach's Alpha was 0.865, the scale presented good reliability. Fig. 3 shows a representation of the modified CFA model for entrepreneurial intention.

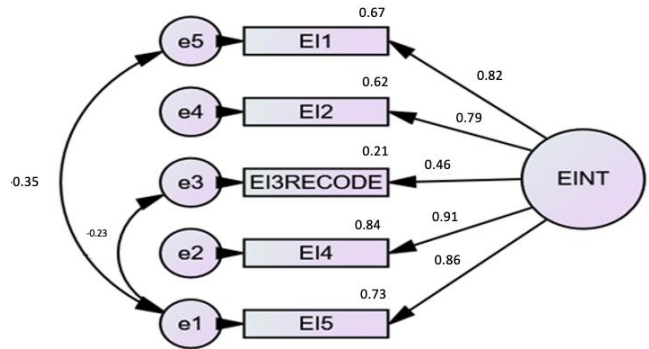


Fig. 3: Representation of the modified CFA model for the entrepreneurial intention

After analyzing the psychometric properties of the measures, the means (M), average variance extracted (AVE), standard deviations (SD), Cronbach's Alpha ( $\alpha$ ), the maximum values, the minimum values of the scales were as presented in Table 2. Globally, students perceive both the University and the Faculty's entrepreneurial levels as medium although having a better perception of the University (M=3.45) than their Faculty (M=2.96). Regarding all the seven dimensions of the HEInnovate scale, in both cases, the dimension “Internationalized Institution” had the best average score (M=3.63, University; M=3.33, Faculty) followed by “Knowledge Exchange and Collaboration” (M=3.57, University; M=3.04, Faculty).

Table 2: Descriptive statistics (Min, Max, M, SD), average variance extracted, and reliability coefficients (CR,  $\alpha$ ) of the measures

	Min	Max	M	SD	CR	AVE	$\alpha$
1. Entrepreneurial Intention Scale	1.85	3.26	2.61	1.30	0.88	0.61	0.87
2. Self-Efficacy Scale	1.89	4.89	3.62	0.54	0.70	0.50	0.85
3. HEInnovate Global Scale- University	3.13	3.82	3.45	0.73	0.90	0.57	0.98
3.1 Leadership and Governance	1.00	5.00	3.56	0.80	0.95	0.78	0.94
3.2 Organizational Capacity	1.00	5.00	3.44	0.76	0.92	0.71	0.92
3.3 Entrepreneurial Teaching and Learning	1.00	5.00	3.38	0.79	0.93	0.72	0.93
3.4 Preparing and Supporting Entrepreneurs	1.00	5.00	3.327	0.84	0.94	0.72	0.94
3.5 Knowledge Exchange and Collaboration	1.00	5.00	3.57	0.77	0.91	0.67	0.92
3.6 Internationalized Institution	1.00	5.00	3.63	0.79	0.91	0.67	0.91
3.7 Measuring Impact	1.00	5.00	3.23	0.86	0.96	0.89	0.96
4. HEInnovate Global Scale- Faculty	1.00	5.00	2.96	0.85	0.89	0.57	0.98
4.1 Leadership and Governance	1.00	5.00	3.02	0.92	0.95	0.78	0.92
4.2 Organizational Capacity	1.00	5.00	2.93	0.89	0.92	0.71	0.92
4.3 Entrepreneurial Teaching and Learning	1.00	5.00	2.95	0.95	0.93	0.72	0.94
4.4 Preparing and Supporting Entrepreneurs	1.00	5.00	2.68	0.96	0.94	0.72	0.94
4.5 Knowledge Exchange and Collaboration	1.00	5.00	3.04	0.94	0.91	0.67	0.92
4.6 Internationalized Institution	1.00	5.00	3.33	0.91	0.91	0.67	0.91
4.7 Measuring Impact	1.00	5.00	2.79	0.97	0.96	0.89	0.97

Composite reliability (CR), average variance extracted (AVE), Cronbach's Alpha ( $\alpha$ ), Standard Deviation (SD)

On average, as it happened with the global scores, the values for each dimension that was present in the HEInnovate scale were higher when applied to the University-with mean values between 3.23 (“Measuring Impact”) and 3.63-compared to the Faculty-which presented mean values between 2.68 (“Preparing and Supporting Entrepreneurs”) and 3.33.

Self-efficacy had an M=3.612, considered a moderate self-perception of self-efficacy. The entrepreneurial intention, however, had an M=2.61, which represents a tendency for students to place their answers on the lower side of the scale, below the intermediate levels of the scale.

To get some insight regarding the hypothesis present earlier, we begin by presenting the

correlation between the global HEInnovate Self-Assessment Scale regarding the University, its dimensions, self-efficacy, and entrepreneurial intention (Table 3). As the outcomes state, there

were found some correlations with statistical significance, while the values account for only weak or low correlations (Cohen, 1988).

**Table 3:** Intercorrelations between the dimensions of the HEInnovate Self-Assessment Scale concerning University and the global scales

	LG	OC	ETL	PSE	KEC	INT	MI	HEI	SE	EI
Leadership and Governance (LG)	1	0.86**	0.83**	0.84**	0.83**	0.76**	0.75**	0.91**	0.16*	-0.02
Organizational Capacity (OC)		1	0.87**	0.87**	0.86**	0.80**	0.81**	0.95**	0.20**	-0.06
Entrepreneurship Teaching and Learning (ETL)			1	0.87**	0.84**	0.81**	0.82**	0.94**	0.26**	-0.05
Preparing and Supporting Entrepreneurs (PSE)				1	0.82**	0.74**	0.83**	0.93**	0.18*	-0.03
Knowledge Exchange and Collaboration (KEC)					1	0.84**	0.76**	0.93**	0.135	-0.04
The Internationalized Institution (INT)						1	0.72**	0.88**	0.22**	-0.01
Measuring Impact (MI)							1	0.89**	0.145	-0.01
HEInnovate Self-Assessment Scale Uni (HEI)								1	0.20**	-0.03
Self-Efficacy (SE)									1	0.17*
Entrepreneurial Intention (EI)										1

\*p≤0.05; \*\*p ≤ 0.01

Although this is not the focus of this study, we also present the correlation matrix related to the socio-demographic variables and the global scales (Table 4). It is important to notice that

entrepreneurial intention was correlated with programs that did not integrate the Faculty's curriculum.

**Table 4:** Intercorrelations between the socio-demographic factors and the global scales

	Age	MP	DG	Year	OUT	EI	SE	HEI
Age	1	0.10	0.04	0.27**	0.12	-0.09	0.15*	-0.15
Mobility programs (MP)		1	-0.07	0.14	0.07	0.07	0.16*	-0.06
Entrepreneurship Classes - degree (DG)			1	-0.08	0.11	0.10	0.023	-0.02
Classes outside of the curriculum (OUT)				1	0.24**	0.12	0.12	-0.13
Entrepreneurial Intention (EI)					1	0.17*	0.17*	-0.03
Self-Efficacy (SE)						1	0.20**	0.20**
HEInnovate Self-Assessment Scale Uni (HEI)							1	1

\*p≤0.05; \*\*p≤0.01

In the first hypothesis (The entrepreneurial education agenda of the University has a positive influence on the entrepreneurial intention of the students from the Faculties), we could not establish a statistically significant relationship between the entrepreneurial education agenda, measured by the dimensions in the HEinnovate scale, and the entrepreneurial intention of the students as the p-values were all above 0.05.

Verifying the second hypothesis (Students' self-efficacy has a positive influence on their

entrepreneurial intention) by reading the correlation matrix, we could establish a low but positive statistically significant correlation between the entrepreneurial intention and self-efficacy ( $r=0.171$ ,  $p=0.023$ ). Considering the p-value, it was conducted a linear regression which indicated a significant effect of self-efficacy on entrepreneurial intention ( $r=0.281$ ;  $R^2=0.079$ ). Analyzing the data present in Table 5, we can verify that Self-Efficacy predicts 7.9% of the entrepreneurial intention.

**Table 5:** Regression coefficients and model summary information for the tested model (Prediction of Entrepreneurial Potential through Self-Efficacy)

	Entrepreneurial Intention				
	B	SE	Beta	t	p
Self- Efficacy Scale	0.621	0.161	0.281	3.856	0.000
$R=0.281$ ; $R^2=0.079$ , $SE=1.252$ $F(1,174)=14.866$ , $p<0.001$					

For hypothesis 3 (Students' self-efficacy acts as a mediator in the relationship between the entrepreneurial education agenda of the University and the students' entrepreneurial intention) we designed a simple mediation model that can be found in Fig. 4 (data from the model summary, regression coefficients, and the corresponding standard errors are presented in Table 6).

The analysis was conducted and analyzed according to Hayes (2013). It supported the hypothesis that Self-efficacy mediates the relationship between the entrepreneurial education agenda of the University and the entrepreneurial

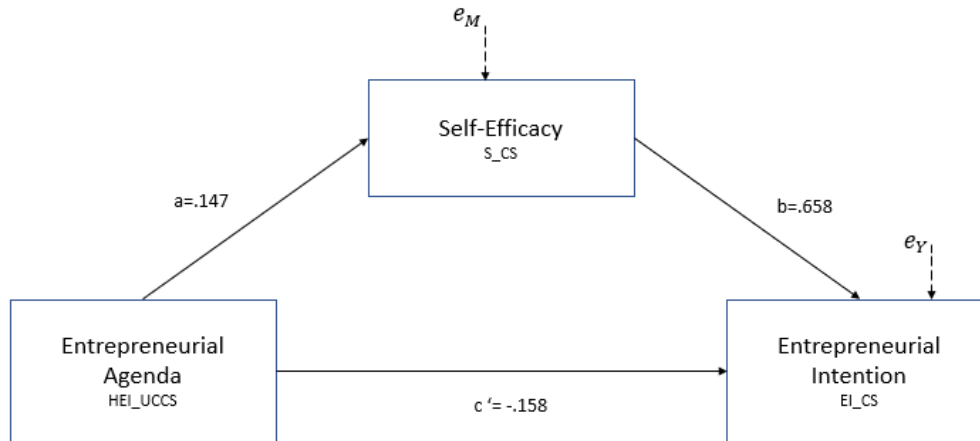
intention of Students of the Faculty (total model summary:  $F(2,173)=3.077$ ,  $R^2=0.034$ ,  $p<0.05$ ). A statistically significant indirect effect of self-efficacy was found in the relationship between the entrepreneurial education agenda and the entrepreneurial intention (95% CI=0.007, 0.170, ab=0.097). However, regarding the total effect, a statistically significant relationship was not achieved (95% CI=-0.326, 0.204) and the same was verified in the direct effect (95% CI=-0.3944, 0.1392).

The independent samples t-test or student's t-test for two independent samples was performed aimed to understand the differences in scores of the



HEInnovate applied to the University between students with high and very high self-efficacy ( $M \geq 4$ ) and the rest of the sample ( $M < 4$ ). In this test, the cutting point was established as four, to consider only students whose responses, on average, portrayed a solid or strong agreeability with the statements present in the self-efficacy scale. There

was a significant difference in the scores for 50 students with high Self-Efficacy ( $M_{HEInnovate}=3.709$ ,  $SD=0.713$ ) and the 126 students with lower self-efficacy ( $M_{HEInnovate}=3.342$ ,  $SD=0.719$ ),  $t(174)=3.057$ ,  $p=0.003$ .



**Fig. 4:** PROCESS v.3.5 Statistical diagram demonstrating the mediating effects of self-efficacy on the relationship between the Entrepreneurial Education Agenda of the University (Entrepreneurial Agenda) and the Entrepreneurial Intention of Students in the Faculty, with standardized path coefficients reported

**Table 6:** Regression coefficients, standard errors, and model summary information for the tested model

Predictor Variable		Self-efficacy (M)			Predicted Variable			
		Coeff.	SE	p	Coeff.	SE	p	
Entrepreneurial Agenda (Y)	a	0.147	0.060	0.015*	c'	-0.158	0.131	0.231
Self-Efficacy (M)		-	-	-	b	0.658	0.164	0.000**
Constant		3.030	0.210	0.000		0.825	0.672	0.221
		$R^2 = 0.034$			$R^2 = 0.086$			
		$F(2, 173) = 6.083, p < 0.05$			$F(2, 173) = 8.174, p < 0.05$			

\* $p \leq 0.05$ ; \*\* $p \leq 0.01$

### 5. Discussion

This study aims to investigate the effect of the entrepreneurial education agenda of a University in central Portugal on the entrepreneurial intention of the students of one of its Faculties while exploring whether this effect is direct or indirect with self-efficacy as a possible mediator. Secondly, it comprises an effort to analyze the academy's entrepreneurial education effectiveness in promoting entrepreneurial intention amongst students as well as highlighting the importance of the development of self-efficacy during the process.

Previously, we highlighted a light on the importance of entrepreneurship in the job market which is in constant change, and the importance of Higher Education Institutions in the dissemination of entrepreneurial knowledge as they act as a critical access point to the world of work (Islam et al., 2018; Moriano et al., 2006; Omid et al., 2016; Parreira et al., 2018). Several studies referred that self-efficacy is a crucial factor in the relationship between Entrepreneurial Education and Entrepreneurial Intention (Wang et al., 2016; Zhao et al., 2005), therefore, it was established as a premise that Self-Efficacy could function as a mediator in this relationship.

Students in the Faculty had low levels of entrepreneurial intention ( $M=2.606$ ), medium levels of self-efficacy ( $M=3.618$ ), and overall, they characterized the entrepreneurial level of the HEI as medium ( $M=3.445$ ), meaning that it has not yet, in their perception, established itself as an entrepreneurial institution. Also, we were unable to establish a correlation between the entrepreneurial education agenda and entrepreneurial intention. This is in line with the idea that even though, entrepreneurial education has proven benefits in stimulating entrepreneurial intention (Jahani et al., 2018), merely traditional methods of teaching mostly fail to have an impact on the entrepreneurial intention of students (Gurel et al., 2010; Islam et al., 2018). Purely knowledge-based education and especially without self-efficacy in the equation, will not translate into an entrepreneurial intention nor action (Farhangmehr et al., 2016). Some studies were unable to establish a direct correlation between entrepreneurial education and entrepreneurial intention, stating that the result of the first in the latter, is dependent on the promotion of motivation to perform an entrepreneurial action (Farhangmehr et al., 2016; Zhao et al., 2005). This was visible when analyzing the mediating model designed for the third hypothesis (students' self-

efficacy acts as a mediator in the relationship between the entrepreneurial education agenda of the University and the students' entrepreneurial intention). Even though a direct relationship between the entrepreneurial education agenda of the University and the entrepreneurial intention of students of the Faculty could not be established, nor a direct effect could be proven, an indirect effect of the entrepreneurial education agenda through the presence of self-efficacy as total mediator was evident.

The Entrepreneurial world is uncertain. If one does not possess a strong self-efficacy, they will not be confident in their ability to produce a positive outcome and, therefore, are less likely to perceive themselves as capable of engaging in an entrepreneurial action (Manyaka-Boshielo, 2019). Since entrepreneurial intention represents the motivation that one person holds to carry out an entrepreneurial action (Baidi and Suyatno, 2018; Moriano et al., 2012), it is logical to assume that the individual would be likely to have a low entrepreneurial intention as it was confirmed with the support of hypothesis two ("Self-efficacy of the students from the Faculty has a positive influence in the Entrepreneurial Intention of its students").

In this study, 22% of the students reported having entrepreneurial classes as part of their curriculum. While there was established a correlation between the classes outside of the Faculty and entrepreneurial intention, there was no correlation found between the classes taken as part of the curriculum and the Entrepreneurial Intention, which may suggest both the lack of investment in providing entrepreneurial education in the courses' curriculum and poor effectiveness of the existing options. The perception of the dimension "Entrepreneurial Teaching and Learning" had medium scores when regarding the University ( $M=3.377$ ) and the Faculty ( $M=2.946$ ). Considering that this dimension portrays the teaching and learning of entrepreneurship through innovative methods and entrepreneurial experiences that stimulate the entrepreneurial spirit and develop an entrepreneurial mindset (OECD, 2014), one possible explanation would be that the educational efforts from the institution are still largely considered to be traditional and mostly knowledge-based while failing to provide entrepreneurial experiences that would develop the necessary competencies to endure an entrepreneurial action or incite entrepreneurial intention (Farhangmehr et al., 2016; Mahendra et al., 2017).

The dimension "Preparing and Supporting Entrepreneurs" had medium scores relating to the University ( $M=3.317$ ) and low scores in the Faculty ( $M=2.683$ ). Considering that, we can suppose that the students do not perceive their University or their Faculty as supportive of entrepreneurial actions in a way that would provide them with some security and backup. One of the most common reasons for individuals not to partake in entrepreneurial activities is the fear of failure and the uncertainty in

the field (Cacciotti and Hayton, 2015; Martinho, 2010; Van Praag, 1999), therefore if there is not a widely spread perception of support from the institution, students will be more reticent to initiate an entrepreneurial activity. This is supported by the fact that no correlation was found between entrepreneurial intention and this dimension.

Finally, there were found some significant differences in the perception coming from students with high and very high self-efficacy ( $M \geq 4.00$ ), and the rest of the sample ( $M < 4.00$ ) regarding the University's overall score in the perception of the entrepreneurial education agenda. Self-Efficacy has been referred to as influencing the perception of effort, pain, and discomfort especially after the experience (Hutchinson et al., 2008) and also the perception of individual learning in teams (Yoon and Kayes, 2016). Therefore, we may assume that this construct has a role in shaping the perception of one's reality. In this case, we can hypothesize that students who report a higher degree of Self-Efficacy will have a better perception of the tools they were given because they are more likely to have more confidence in their mastery (Yoon and Kayes, 2016), their value, and perceive more opportunities to apply them (Krueger and Dickson, 1994; Schmitt et al., 2018). Hence, these students will be more optimistic when evaluating the University's Entrepreneurial Agenda when compared to students with low self-efficacy.

## 6. Conclusion

This study permitted us to determine, firstly, that there is no direct effect of the entrepreneurial education agenda of this University in central Portugal on the entrepreneurial intention of the students from one of its faculties. The effect of entrepreneurial education only happened through the mediating effect of self-efficacy. Secondly, we were able to conclude that the programs in place may have not been producing the desired outcome, meaning, promoting entrepreneurial intention. Both the University and the Faculty are not perceived by the analyzed sample as being entrepreneurial institutions. Only when self-efficacy was present in the equation, the relationship between the University's entrepreneurial agenda and the entrepreneurial intention of students occurred. Therefore, initiatives to foster this construct should be integrated into the entrepreneurial education programs and any future endeavors that aim to incentivize Entrepreneurship in the University. Those practices include vicariant experience learning and practical experiences that aim to develop the students' sense of mastery over entrepreneurial actions (being that starting a business or creating something new in a different context). This will equip the students with some of the necessary tools to both deal with and minimize the impact of the risk and uncertainty expected when embarking on the entrepreneurial world.

Throughout the study, a few limitations were noticed. The first would be the size of the sample. Even though the data shows decent reliability, some caution when generalizing is advised. With 176 students, the sample could have had a more balanced distribution and representation of the students' year, and a stronger representation of the male-female ratio. Another limitation would be the fact that this research did not detail nor analyze the specific programs present at the University or the Faculty. Future studies should consider this step to be able to produce more specific and adequate insights into the development and improvement of the mentioned programs. Besides that, further data would have been necessary to explore the reason behind the lower values on the perception of the Faculty as an entrepreneurial institution when compared to the University.

Finally, as a result of a human error, the last three items of the dimension "Measuring Impact" were deleted from the questionnaire. It is important to address this matter as the scale was not fully applied as it was intended to. However, both the dimension and the general scale still presented good reliability values.

This research provides a base from which more detailed and wider-spread studies in this University can occur. As a result, improvements can be made to provide the students not only with quality education but also with the necessary skills to strive in a job market that is in constant change, often outpacing the ability of Higher Education Institutes to adapt.

## 7. Strengths and limitations

This research was inspired by the European objectives for the development and sustainability of the economy and overall quality of life within the EU (European Union). Following the adaptation of the HEInnovate instrument to the Portuguese population that was a pioneer in allowing a picture of entrepreneurship profile from the perspective of the students (rather than the top-down evaluation in the original scale).

This study could be considered benchmark research across Portuguese Higher Education Institutions and Europe. This work reflected the power of collaboration across different areas of knowledge, as the researchers' backgrounds are quite different and aim to inspire the usage and further development of tools to improve the entrepreneurial competencies among the youth.

It is important in future research to compare profiles from different departments and faculties within the university to provide a clear picture of the strengths and the weakness, creating opportunities to adjust entrepreneurship programs allowing at the same time the comparing good practices.

Nonetheless, this constitutes the first step towards a more comprehensive view of the overall picture of entrepreneurship in Portuguese higher education institutions and even European ones, as

we aim to give further visibility to this topic and its importance in today's Europe.

## Compliance with ethical standards

## Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

## References

- Ajzen I (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2): 179-211. [https://doi.org/10.1016/0749-5978\(91\)90020-T](https://doi.org/10.1016/0749-5978(91)90020-T)
- Arbuckle JL (2013). *Amos 22 user's guide*. SPSS, Chicago, USA.
- Arranz N, Ubierna F, Arroyabe MF, Perez C, and Fdez. de Arroyabe JC (2017). The effect of curricular and extracurricular activities on university students' entrepreneurial intention and competences. *Studies in Higher Education*, 42(11): 1979-2008. <https://doi.org/10.1080/03075079.2015.1130030>
- Baidi B and Suyatno B (2018). Effect of entrepreneurship education, self-efficacy and need for achievement toward students' entrepreneurship intention: Case study in Febi, Iain Surakarta, Indonesia. *Journal of Entrepreneurship Education*, 21(2): 1-16.
- Bandura A (1977). Self-efficacy: Toward a unifying theory of behavioral change. *Psychological Review*, 84(2): 191-215. <https://doi.org/10.1037/0033-295X.84.2.191> **PMid:847061 PMCID:PMC4010856**
- Beeftink F, Van Eerde W, Rutte CG, and Bertrand JWM (2012). Being successful in a creative profession: The role of innovative cognitive style, self-regulation, and self-efficacy. *Journal of Business and Psychology*, 27(1): 71-81. <https://doi.org/10.1007/s10869-011-9214-9> **PMid:22363100 PMCID:PMC3278614**
- Bentler PM (1990). Comparative fit indexes in structural models. *Psychological Bulletin*, 107(2): 238-246. <https://doi.org/10.1037/0033-2909.107.2.238> **PMid:2320703**
- Bollen KA (1989). *Structural equations with latent variables*. Volume 210, John Wiley and Sons, Hoboken, USA. <https://doi.org/10.1002/9781118619179>
- Brown TA (2015). *Confirmatory factor analysis for applied research*. Guilford publications, New York, USA.
- Cacciotti G and Hayton JC (2015). Fear and entrepreneurship: A review and research agenda. *International Journal of Management Reviews*, 17(2): 165-190. <https://doi.org/10.1111/ijmr.12052>
- Chen SC, Hsiao HC, Chang JC, Chou CM, Chen CP, and Shen CH (2015). Can the entrepreneurship course improve the entrepreneurial intentions of students? *International Entrepreneurship and Management Journal*, 11(3): 557-569. <https://doi.org/10.1007/s11365-013-0293-0>
- Cohen JW (1988). *Statistical power analysis for the behavioral sciences*. 2<sup>nd</sup> Edition, Lawrence Erlbaum Associates, Hillsdale, USA.
- Corso R (2020). Building an innovative and entrepreneurial dimension in an institution of higher education. *Higher Education for the Future*, 7(2): 200-214. <https://doi.org/10.1177/2347631120930559>
- Davidsson P (2003). The domain of entrepreneurship research: Some suggestions. In: Katz JA and Shepherd DA (Eds.), *Cognitive approaches to entrepreneurship research (Advances in entrepreneurship, firm emergence and growth)*: 315-372. Volume 6, Emerald Group Publishing Limited,

- Bingley, UK.  
[https://doi.org/10.1016/S1074-7540\(03\)06010-0](https://doi.org/10.1016/S1074-7540(03)06010-0)
- EC (2012). Communication from the commission to the European parliament, the council, the European economic and social committee and the committee of the regions, a blueprint to safeguard Europe's water resources. European Commission Brussels, Belgium.
- Esfandiar K, Sharifi-Tehrani M, Pratt S, and Altinay L (2019). Understanding entrepreneurial intentions: A developed integrated structural model approach. *Journal of Business Research*, 94: 172-182.  
<https://doi.org/10.1016/j.jbusres.2017.10.045>
- Farhangmehr M, Gonçalves P, and Sarmento M (2016). Predicting entrepreneurial motivation among university students: The role of entrepreneurship education. *Education and Training*, 58: 861-881. <https://doi.org/10.1108/ET-01-2016-0019>
- Fornell C and Larcker DF (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1): 39-50.  
<https://doi.org/10.1177/002224378101800104>
- Gibb A and Hannon P (2006). Towards the entrepreneurial university. *International Journal of Entrepreneurship Education*, 4(1): 73-110.
- Gurel E, Altinay L, and Daniele R (2010). Tourism students' entrepreneurial intentions. *Annals of Tourism Research*, 37(3): 646-669.  
<https://doi.org/10.1016/j.annals.2009.12.003>
- Hartsenko J and Venesaar U (2017). Impact of entrepreneurship teaching models on students' entrepreneurial intentions: The case of Estonia and Hungary. *Research in Economics and Business: Central and Eastern Europe*, 9: 72-92.
- Hayes A (2013). *Introduction to mediation, moderation and conditional process analysis: A regression-based approach*. The Guilford Press, New York, USA.
- Hill MM and Hill A (2012). *Investigação por questionário*. 2<sup>nd</sup> Edition. Edições Sílabo, Lisboa, Portugal.
- Hutchinson JC, Sherman T, Martinovic N, and Tenenbaum G (2008). The effect of manipulated self-efficacy on perceived and sustained effort. *Journal of Applied Sport Psychology*, 20(4): 457-472.  
<https://doi.org/10.1080/10413200802351151>
- Islam T, Ali G, and Niazi AAK (2018). Entrepreneurial intentions: The role of entrepreneurial education. *Journal of Research and Reflections in Education*, 12: 56-67.
- Jahani S, Babazadeh M, Haghighi S, and Cheraghian B (2018). The effect of entrepreneurship education on self-efficacy beliefs and entrepreneurial intention of nurses. *Journal of Clinical and Diagnostic Research*, 12(6): 8-21.  
<https://doi.org/10.7860/JCDR/2018/31525.11654>
- Jang Y, Hadley B, Son J, and Song C (2019). Determinants of students' entrepreneurial intention to compete in a fast-pitch competition. *Journal of Education for Business*, 94(6): 359-368.  
<https://doi.org/10.1080/08832323.2018.1540389>
- Kline RB (2015). *Principles and practice of structural equation modeling*. Guilford Publications, New York, USA.
- Kolvreid L and Moen Ø (1997). Entrepreneurship among business graduates: Does a major in entrepreneurship make a difference? *Journal of European Industrial Training*, 21(4): 154-160. <https://doi.org/10.1108/03090599710171404>
- Kramer FR (1985). A overview of descriptive research. *Journal of the Association of Pediatric Oncology Nurses*, 2(2): 41-45.  
<https://doi.org/10.1177/104345428500200208>  
**PMid:3848484**
- Kritskaya L and Kritskaya V (2016). Analyzing educators' perspectives on the effects of entrepreneurship education on students' entrepreneurial intentions. In *The 11<sup>th</sup> European Conference on Innovation and Entrepreneurship*, Jyväskylä, Finland: 425-434.
- Krueger N and Dickson PR (1994). How believing in ourselves increases risk taking: Perceived self-efficacy and opportunity recognition. *Decision Sciences*, 25(3): 385-400.  
<https://doi.org/10.1111/j.1540-5915.1994.tb01849.x>
- Leite DAEM, Ribeiro HNR, Alves SR, Kurowska-Pysz J, and da Silva AF (2021). Business lessons from an early entrepreneur: The case of Doña Gracia Nasi. In: Aleksic A, Ruzic V, and Baracskai Z (Eds.), *Economic and social development (Book of Proceedings; 65<sup>th</sup> International Scientific Conference on Economic and Social)*: 172-179. Varazdin Development and Entrepreneurship Agency, Varazdin, Croatia.
- Levin KA (2006). Study design III: Cross-sectional studies. *Evidence-Based Dentistry*, 7(1): 24-25.  
<https://doi.org/10.1038/sj.ebd.6400375> **PMid:16557257**
- Low MB and MacMillan IC (1988). Entrepreneurship: Past research and future challenges. *Journal of Management*, 14(2): 139-161. <https://doi.org/10.1177/014920638801400202>
- Mahendra AM, Djatmika ET, and Hermawan A (2017). The effect of entrepreneurship education on entrepreneurial intention mediated by motivation and attitude among management students, state university of Malang, Indonesia. *International Education Studies*, 10(9): 61-69.  
<https://doi.org/10.5539/ies.v10n9p61>
- Manyaka-Boshielo SJ (2019). Towards entrepreneurship education: Empowering township members to take ownership of the township economy. *HTS: Theological Studies*, 75: 1. <https://doi.org/10.4102/hts.v75i1.5166>
- Marôco J (2014). *Análise de equações estruturais: Fundamentos teóricos, software and aplicações*. 2<sup>nd</sup> Edition, ReportNumber, Pêro Pinheiro, Portugal.
- Martinho V (2010). Entrepreneurship: What's happening? *Millennium*, 39: 163-176.
- Mónico L, Carvalho C, Nejati S, Arraya M, and Parreira P (2021). Entrepreneurship education and its influence on higher education students' entrepreneurial intentions and motivation in Portugal. *Brazilian Administration Review*, 18(3), e190088.  
<https://doi.org/10.1590/1807-7692bar2021190088>
- Moriano JA, Gorgievski M, Laguna M, Stephan U, and Zarafshani K (2012). A cross-cultural approach to understanding entrepreneurial intention. *Journal of Career Development*, 39(2): 162-185.  
<https://doi.org/10.1177/0894845310384481>
- Moriano JA, Palací FJ, and Morales JF (2006). Adaptación y validación en España de la escala de Autoeficacia Emprendedora. *Revista de Psicología Social*, 21(1): 51-64.  
<https://doi.org/10.1174/021347406775322223>
- Mwasalwiba ES (2010). Entrepreneurship education: A review of its objectives, teaching methods, and impact indicators. *Education and Training*, 52(1): 20-47.  
<https://doi.org/10.1108/00400911011017663>
- Noel TW (2001). Effects of entrepreneurial education on intent to open a business. *Frontiers of Entrepreneurship Research*, 5: 78-146.
- Nunnally JC. (1978). *Psychometric methods*. 2<sup>nd</sup> Edition, McGraw Hill, New York, USA.
- Obembe E, Otesile O, and Ukpong I (2014). Understanding the students' perspectives towards entrepreneurship. *Procedia-Social and Behavioral Sciences*, 145: 5-11.  
<https://doi.org/10.1016/j.sbspro.2014.06.005>
- OECD (2014). *HEinnovate reviews: Universities, entrepreneurship, and local development*. Organisation for Economic Co-operation and Development, Paris, France.
- Oliveira BMDF, Vieira DA, Laguía A, Moriano JA, and Salazar Soares VJ (2016). Entrepreneurial intention among university



- students: Adaptation and validation of a scale (QIE). *Avaliação Psicológica*, 15(2): 187-196.  
<https://doi.org/10.15689/ap.2016.1502.07>
- Omidi NM, Zamani M, and Mirdamadi M (2016). Designing a model for entrepreneurial intentions of agricultural students. *Journal of Education for Business*, 91(6): 338-346.  
<https://doi.org/10.1080/08832323.2016.1218318>
- Paço AMF, Ferreira JM, Raposo M, Rodrigues RG, and Dinis A (2011). Behaviors and entrepreneurial intention: Empirical findings about secondary students. *Journal of International Entrepreneurship*, 9(1): 20-38.  
<https://doi.org/10.1007/s10843-010-0071-9>
- Parreira PMDS, dos Santos Mónico L, de Carvalho CMS, and da Silva ACR (2018). Entrepreneurship in higher education: The effect of academy, motivation, resources, incentives, and self-efficacy in the entrepreneurship potential. In: Mura L (Ed.), *Entrepreneurship: Development tendencies and empirical approach: 329-350*. BoD-Books on Demand, Norderstedt, Germany. <https://doi.org/10.5772/intechopen.71695>
- Parreira PMSD, Carvalho CMSD, Mónico LDS, and Santos ASMDOP (2017). Empreendedorismo no ensino superior: Estudo psicométrico da escala oportunidades e recursos para empreender. *Revista Psicologia Organizações e Trabalho*, 17(4): 269-278.  
<https://doi.org/10.17652/rpot/2017.4.13736>
- Prodan I and Drnovsek M (2010). Conceptualizing academic-entrepreneurial intentions: An empirical test. *Technovation*, 30(5-6): 332-347.  
<https://doi.org/10.1016/j.technovation.2010.02.002>
- Proença S and Sanches P (2016). Práticas de Educação para o Empreendedorismo– o caso do Politécnico de Coimbra. In: Foa C, Crespo M, and Cardoso G (Eds.), *Atas das II Jornadas Ensino do Empreendedorismo: 249-264*. Pedro Nunes Institute, Coimbra, Portugal.
- Rae D and Woodier-Harris NR (2013). How does enterprise and entrepreneurship education influence postgraduate students' career intentions in the New Era economy? *Education+ Training*, 55(8-9): 926-948.  
<https://doi.org/10.1108/ET-07-2013-0095>
- Schmitt A, Rosing K, Zhang SX, and Leatherbee M (2018). A dynamic model of entrepreneurial uncertainty and business opportunity identification: Exploration as a mediator and entrepreneurial self-efficacy as a moderator. *Entrepreneurship Theory and Practice*, 42(6): 835-859.  
<https://doi.org/10.1177/1042258717721482>
- Schumacker RE and Lomax RG (2004). *A beginner's guide to structural equation modeling*. Psychology Press, Hove, UK.  
<https://doi.org/10.4324/9781410610904>
- Schumpeter JA (1947). The creative response in economic history. *The Journal of Economic History*, 7(2): 149-159.  
<https://doi.org/10.1017/S0022050700054279>
- Sultan MF, Maqsood A, and Shrif HM (2016). Impact of entrepreneurial education on students entrepreneurial intentions. *KASBIT Business Journals*, 9(1): 131-153.
- Teixeira AA and Davey T (2010). Attitudes of higher education students to new venture creation: A preliminary approach to the Portuguese case. *Industry and Higher Education*, 24(5): 323-341. <https://doi.org/10.5367/ihe.2010.0005>
- Thompson CL, Kuah AT, Foong R, and Ng ES (2020). The development of emotional intelligence, self-efficacy, and locus of control in Master of Business Administration students. *Human Resource Development Quarterly*, 31(1): 113-131.  
<https://doi.org/10.1002/hrdq.21375>
- Van Praag CM (1999). Some classic views on entrepreneurship. *De Economist*, 147(3): 311-335.  
<https://doi.org/10.1023/A:1003749128457>
- Wang JH, Chang CC, Yao SN, and Liang C (2016). The contribution of self-efficacy to the relationship between personality traits and entrepreneurial intention. *Higher Education*, 72(2): 209-224. <https://doi.org/10.1007/s10734-015-9946-y>
- Wennekers S and Thurik R (1999). Linking entrepreneurship and economic growth. *Small Business Economics*, 13(1): 27-56.  
<https://doi.org/10.1023/A:1008063200484>
- Yoon J and Kayes DC (2016). Employees' self-efficacy and perception of individual learning in teams: The cross-level moderating role of team-learning behavior. *Journal of Organizational Behavior*, 37(7): 1044-1060.  
<https://doi.org/10.1002/job.2092>
- Zhao H, Seibert SE, and Hills GE (2005). The mediating role of self-efficacy in the development of entrepreneurial intentions. *Journal of Applied Psychology*, 90(6): 1265-1272.  
<https://doi.org/10.1037/0021-9010.90.6.1265>  
**PMid:16316279**