

Proceedings of  
the 34<sup>th</sup> International Business Information Management Association Conference  
(IBIMA)

13-14 November 2019  
Madrid, Spain

ISBN: 978-0-9998551-3-3

Vision 2025: Education Excellence and Management of Innovations  
through Sustainable Economic Competitive Advantage

**Editor**

**Khalid S. Soliman**

International Business Information Management Association (IBIMA)

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## **Entrepreneurial Self-Efficacy in Portugal: A Cross-Sectional Study in Higher Education Students**

Maria I. B. RIBEIRO

Escola Superior Agrária, Instituto Politécnico de Bragança, Centro de Investigação de Montanha,  
Campus Santa Apolónia, Bragança, Portugal e Centro de Estudos Transdisciplinares para o  
Desenvolvimento (CETRAD)-Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal  
[xilote@ipb.pt](mailto:xilote@ipb.pt)

Isabel M. LOPES

Escola Superior de Tecnologia e Gestão, Instituto Politécnico de Bragança, Unidade de Pesquisa  
Aplicada em Gestão – IPB, Campus de Santa Apolónia, Bragança  
Centro ALGORITMI da Universidade do Minho, Portugal  
[isalopes@ipb.pt](mailto:isalopes@ipb.pt)

António J. G. FERNANDES

Escola Superior Agrária, Instituto Politécnico de Bragança, Centro de Investigação de Montanha,  
Campus Santa Apolónia, Bragança, Portugal e Centro de Estudos Transdisciplinares para o  
Desenvolvimento (CETRAD)-Universidade de Trás-os-Montes e Alto Douro, Vila Real, Portugal.  
[toze@ipb.pt](mailto:toze@ipb.pt)

Francisco J. L. S. DINIZ

Centro de Estudos Transdisciplinares para o Desenvolvimento (CETRAD)-Universidade de Trás-os-  
Montes e Alto Douro, Vila Real, Portugal.  
[fdiniz@utad.pt](mailto:fdiniz@utad.pt)

### **Abstract**

This study aimed to determine the level of entrepreneurial self-efficacy in higher education students and to verify if there were differences statistically significant, taking into account the scientific area of the course attended by the student, in the five dimensions of the entrepreneurial self-efficacy scale, namely: Developing new products or new market opportunities; Developing critical human resources; Initiating investor relations; Building innovative environments; and Working under stress. A total of 795 students attending the 1st year at a Portuguese higher education institution, aged between 17 and 52 years old, participated in the study. The students registered a medium level of entrepreneurial self-efficacy. Statistically significant differences were found in entrepreneurial self-efficacy taking into account the students' scientific area. It was the Technology and Management students who had the highest levels of entrepreneurial self-efficacy and the students in the Education area who had the lowest levels. Entrepreneurial self-efficacy contributes to the generation of ideas and the creation of new businesses with success. Therefore, higher education institutions should be able to improve the entrepreneurial skills and increase the self-efficacy of their students.

**Keywords:** Entrepreneurial self-efficacy, Higher Education, Business, Employment, Professional career.

### **Introduction**

Most countries currently face serious unemployment issues, mainly among the young population. In Portugal, in 2018, the unemployment rates among young adults with secondary or higher education qualifications were 8.2% and 5.4%, respectively (PORDATA, 2019). Within this context, entrepreneurship is viewed as one of the most important promoters of economic and social growth (Basol & Karatuna, 2017). Considering the increasingly unstable professional careers, entrepreneurship

may help individuals develop their own professional path successfully (Newman, Obschonka, Schwarz, Cohen & Nielsen, 2018). Entrepreneurial decisions and behavior are usually associated with numerous factors such as personal factors like entrepreneurial self-efficacy (Basol & Karatuna, 2017). Entrepreneurial self-efficacy can be defined as individuals' conviction of their ability to perform tasks and duties aiming to obtain entrepreneurial results (Chen, Greene & Crick, 1998). According to Lunenburg (2011), entrepreneurial self-efficacy is paramount to the adoption of entrepreneurial behaviors and the choice and pursuit of a successful career. Entrepreneurial self-efficacy influences the learning capacity, motivation and performance of individuals attempting to learn and execute tasks that they believe will be successful. Entrepreneurial self-efficacy interferes with cognitive patterns of problem solving, motivation, emotional and physical excitement, with behavioral patterns and consequently, with performance quality (Krekar & Coric, 2013). Entrepreneurial self-efficacy is a good predictor of the intention of creating a company or being self-employed (Ayodele, 2013; Jiang, Xiong & Cao, 2017; Moriano, Palací & Morales, 2006). As far as undergraduates are concerned, besides being an early predictor of current and future entrepreneur activities, entrepreneurial self-efficacy is also decisive in the process generating business ideas (Ziębał & Golik, 2018). Also, the higher the level of individuals' entrepreneurial self-efficacy, the higher the probability of their success in business (Dessyana & Riyanti, 2017). Entrepreneurial self-efficacy is a key factor for success in several areas, namely academic, professional and interpersonal, and consequently, it is paramount to personal development and change (Bandura, 1997). In this context, this study aims to determine the level of entrepreneurial self-efficacy in students from a public higher education institution located in the northeast of Portugal.

## **Background**

Bandura (1986) defines self-efficacy as the perceived ability of an individual to perform a given task. It is based on the strong belief that an individual initiates and maintains an activity until the result achieved has a positive impact (Konakll, 2015). What distinguishes an individual with high self-efficacy from one who has low self-efficacy is that the former does not give up, he/she is persistent and he/she deals with his/her flaws by continually adapting. According to the literature, individuals with high self-efficacy are more likely to take bold action compared to those with low self-efficacy.

In the field of entrepreneurship, self-efficacy is understood as the individual's ability to successfully engage and perform any entrepreneurial activities. The concept of entrepreneurial self-efficacy is based on the sociocognitive approach that studies the dynamic interaction between the individual and the environment, explaining that cognitive, motivational and affective processes are present in his/her decision to engage in entrepreneurial activities (Baron, 2004).

In the context of entrepreneurship education, self-efficacy is students' perception of their ability to successfully create a new venture and successfully perform the tasks and roles of an entrepreneur (Chen, Greene & Crick, 1998). That is, entrepreneurial self-efficacy is the confidence/belief of an individual in his/her skills, abilities or competencies to perform successful entrepreneurial roles and tasks (Hmieleski & Corbett, 2008; Slavec & Prodan, 2012). Students with high entrepreneurial self-efficacy are more likely to exploit entrepreneurial opportunities, to strive against uncertainties and difficulties, and to persist in order to achieve their purpose (Segal, Borgia & Schoenfeld, 2005; Zhao, Seibert & Hills, 2005). According to several studies, self-efficacy positively correlates with personal creativity, risk propensity and self-confidence, and is a determining factor in entrepreneurial behavior and entrepreneurship education (Barakat, Boddington & Vyakarnam, 2014; Konakll, 2015; Sajilan, Hadi & Tehseen, 2015; Sreih, Assaker & Hallak, 2016; Smith & Woodworth, 2012).

## **Methods**

This cross-sectional study aimed to determine the level of entrepreneurial self-efficacy in students attending one higher education institution, assess possible differences in the level of entrepreneurial self-efficacy depending on the scientific area of the degree course they attend, and identify the limitations which might deserve special attention regarding students' training so as to better respond to

the needs of the labor market as well as to support and promote the development and implementation of their own business. The following hypotheses were formulated:

- H<sub>01</sub>: The undergraduates show similar levels of self-efficacy in all the dimensions of entrepreneurial self-efficacy.
- H<sub>02</sub>: The several dimensions of entrepreneurial self-efficacy are not correlated.
- H<sub>03</sub>: The undergraduates show similar levels of entrepreneurial self-efficacy regardless of the scientific area of the degree course they attend.

This research work was based on a probability sample composed of 795 1st year students of a polytechnic higher education institution located in the northeast of Portugal. In the academic year of 2018/2019, 2800 students were enrolled in the institution, in the 1st year. The margin of error was 2.94%. The sample subjects attended a degree course within four different scientific areas, existent in the institution, namely Education (54.4%), Technologies and Management (23.2%), Agriculture (8.3%) and Health (14.1%). As shown in Table 1, the majority was female (56.9%), Portuguese (83.3%), 17 to 19 years old (59.0%) and attended a 1st cycle degree course (80.1%) in a normal full-time attendance mode (97.7%).

**Table 1: Sample characterization**

Variable	Group	n	%
Nationality	Portuguese	702	83.3
	Other	93	16.7
Gender	Female	452	56.9
	Male	343	43.1
Age classes	17-19 years old	469	59.0
	≥ 20 years old	326	41.0
Scientific area	Education	433	54.4
	Technologies and Management	184	23.2
	Agriculture	66	8.3
	Health	112	14.1
Degree	PHTC <sup>1</sup>	115	14.5
	Graduate	637	80.1
	Post-graduate	6	0.8
	Master	37	4.6
Degree with integrated internship	Yes	657	82.6
	No	138	17.4
Attendance mode	Ordinary	777	97.7
	Worker	18	2.3

<sup>1</sup> Professional Higher Technological Course

The respondents' participation in this study was voluntary. The surveys were filled out in the classroom, from October 2018 to January 2019. All the participants were informed of the survey anonymity and confidentiality.

In order to measure the level of entrepreneurial self-efficacy among the students, a questionnaire developed by Noble, Jung and Ehrlich (1999) and adapted by Moriano, Palací and Morales (2006) was used. This tool is composed of 19 factors which were subsequently distributed and classified according to five dimensions (Table 2), namely: (1) developing new products or new market opportunities, an individual's creative ability to find market opportunities that will enable them to develop their products or services and adapt to change, (2) developing critical human resources, an individual's ability to attract and retain the human resources that are essential for setting up a new business, (3) initiating investor relationships, the individual's ability to use social networks and networking to harness the resources needed to start his/her own business, (4) building an innovative environment, the individual's ability to create a risky environment that favors innovation, and (5) working under stress, the

individual's ability to work under uncertainty, requires tolerance against ambiguity and adaptation to change. For each factor, integrated within one of the five dimensions, the respondents had to use a Likert scale and choose one of the seven options according to their level of agreement (1- totally disagree to 7- totally agree), with the midpoint of the interval of answer at 4.0.

**Table 2: Dimensions and factors of the entrepreneurial self-efficacy scale**

<b>Dimensions</b>	<b>Factors</b>
1. Developing new products or new market opportunities	Discovering new ways to improve existing products Identifying new areas of potential growth Designing products that solve common problems Create products that meet customer needs
2. Developing critical human resources	Recognizing new opportunities in the market for new products and services Recruiting and training key employees Establishing the vision and values of the organization Developing appropriate staffing planning to fill key company positions
3. Initiating investor relationships	Developing and maintaining favorable relationships with potential investors Developing relationships with key people to raise capital Identifying potential funding resources Identifying and building management teams Forming partnerships or alliances with other partners
4. Building an innovative environment	Tolerating unexpected changes in business conditions Creating a work environment that allows people to be their own boss Developing a work environment that encourages people to try new things Motivating people to take initiative and responsibility for their ideas and decisions regardless of their results
5. Working under stress	Working effectively in conflict situations Persisting against adversity

Source: Moriano, Palací and Morales, 2006.

Descriptive statistics were calculated, namely frequencies (absolute and relative), measures of central tendency (mean ( $\bar{X}$ ) and median ( $\bar{X}$ )) and dispersion measures (minimum, maximum and standard deviation (S)) (Pestana & Gageiro, 2014; Maroco, 2018). Cronbach's Alpha coefficient was applied to analyze the questionnaire's reliability and the answers' internal consistency. The value must be positive, ranging from 0 to 1; values higher than 0.9 mean that consistency is very good; between 0.8 and 0.9 mean it is good; between 0.7 and 0.8 correspond to reasonable; between 0.6 and 0.7 to weak; and values below 0.6 are not admissible (Nunnally & Bernstein, 1994).

In order to compare the levels of the five dimensions in the entrepreneurial self-efficacy scale, Fiedman's statistic test was used (Pestana & Gageiro, 2014; Maroco, 2018). This test enables testing the null hypothesis in the equality of medians ( $H_0: \eta_1 = \eta_2 = \eta_3 = \eta_4 = \eta_5$ ) against the alternative hypothesis of not all being equal ( $H_1: \exists i, j: \eta_i \neq \eta_j$ ), where  $\eta$  is the median and the indexes 1 to 5 represent the 5 dimensions of entrepreneurial self-efficacy (1 - developing new products or new market opportunities, 2 - developing critical human resources, 3 - initiating investor relationships, 4 - building an innovative environment, and 5 - working under stress).

In order to study the correlation between the various dimensions of entrepreneurial self-efficacy, Spearman's ordinal correlation test was used (Pestana & Gageiro, 2014). It tests the null hypothesis  $H_0$ : *entrepreneurial self-efficacy and its dimensions are not correlated* against the alternative hypothesis  $H_1$ : *entrepreneurial self-efficacy and its dimensions are correlated*. Spearman's correlation

coefficient or Spearman’s Rho ( $\rho$ ) varies between -1 (perfect inverted or negative correlation) and 1 (perfect direct or positive correlation).

Finally, the Kruskal-Wallis test was used to determine the existence of statistically significant differences between each scientific area and the five dimensions of the entrepreneurial self-efficacy scale (Pestana & Gageiro, 2014; Maroco, 2018). The Kruskal-Wallis test enables testing the null hypothesis of the equality of medians ( $H_0: \eta_1 = \eta_2 = \eta_3 = \eta_4$ ) against the alternative hypothesis of not all being equal ( $H_1: \exists i, j: \eta_i \neq \eta_j$ ), where  $\eta$  is the median and the indexes 1 to 4 represent the scientific areas, namely (1- Education, 2 – Agriculture, 3 – Technologies and Management and 4 – Health).

For the execution of the analytical study, a degree of confidence (1-  $\alpha$ ) of 99% was used, to which corresponds a level of significance ( $\alpha$ ) of 1%. The statistical decision rule is to reject the null hypothesis ( $H_0$ ) when the p-value or significance probability is inferior or equal to  $\alpha$  (Maroco, 2018). In the correlation study, it was possible to increase the degree of confidence to 99.9%. The data were edited and analyzed by using the software IBM SPSS Statistics version 25.0.

## Results

Friedman’s test showed that there were no significant differences between the five dimensions under analysis (p-value = 0.053), since the results did not allow the rejection of the hypothesis  $H_{01}$ . However, the dimension ‘Developing critical human resources’ registered the lowest level of self-efficacy’, while ‘Building an innovative environment’ was the dimension which registered the highest level of self-efficacy (Table 3).

**Table 3: Comparison of the entrepreneurial self-efficacy dimensions**

Dimension	Mean ranks	p-value
1. Developing new products or new market opportunities	2.99	0.053
2. Developing critical human resources	2.90	
3. Initiating investor relationships	3.00	
4. Building an innovative environment	3.12	
5. Working under stress	2.98	

Figure 1 shows the distribution of the sample subjects by level of self-efficacy in the five dimensions of entrepreneurial self-efficacy. It is observed that 19% of the undergraduates registered a high level of entrepreneurial self-efficacy; 16.6% revealed a low or very low level; and the remaining 64.4% showed a medium. The dimension ‘Working under stress’ was the one which registered more students with high levels of self-efficacy (28.8%). In all dimensions, the percentage of students with low entrepreneurial self-efficacy was above 15.0%.

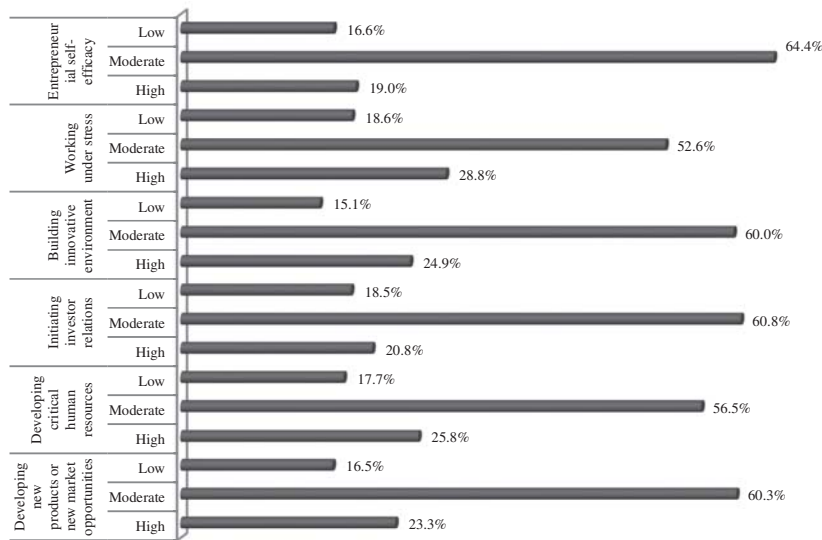


Fig. 1: Students' distribution by level of entrepreneurial self-efficacy

Considering the scientific areas existent in the institution, both the levels of entrepreneurial self-efficacy and the levels of self-efficacy registered in the various dimensions were moderate, as shown in Table 4.

Table 4: Entrepreneurial self-efficacy by scientific area

Scientific area		Self-efficacy	Dimension				
			1	2	3	4	5
Education	$\bar{X}$	4.36	4.36	4.38	4.33	4.39	4.27
	S	1.08	1.15	1.21	1.1	1.15	1.27
	$\tilde{X}$	4.26	4.25	4.25	4.2	4.25	4
Technologies and Management	$\bar{X}$	4.77	4.74	4.74	4.77	4.79	4.83
	S	1.13	1.21	1.21	1.16	1.19	1.25
	$\tilde{X}$	4.79	4.75	4.5	4.7	4.75	5
Agriculture	$\bar{X}$	4.63	4.64	4.53	4.65	4.68	4.7
	S	1.01	1.09	1.01	1.08	1.13	1.1
	$\tilde{X}$	4.9	4.75	4.75	4.8	5	5
Health	$\bar{X}$	4.52	4.43	4.5	4.57	4.55	4.54
	S	0.98	1.09	1.1	1.05	1.03	1.1
	$\tilde{X}$	4.58	4.5	4.5	4.6	4.5	4.5

Entrepreneurial self-efficacy and its dimensions all presented statistically significant, strong and direct correlations between each other. Such results enabled the rejection of the hypothesis H<sub>02</sub> (Table 5). This means that the more the capacity to entice entrepreneurial tasks increases, the more entrepreneurial self-efficacy increases, and so does the ability to perform other entrepreneurial tasks. Such results were expected since it is claimed that if the dimensions enable the measurement of entrepreneurial self-efficacy, then they must be correlated with each other (Moriano, Palací & Morales, 2006).

**Table 5: Correlations between entrepreneurial self-efficacy (0) and its dimensions (1 to 5)**

		0	1	2	3	4	5
0	$\rho$	1.000					
	p-value	.					
1	$\rho$	.929**	1.000				
	p-value	.000	.				
2	$\rho$	.903**	.812**	1.000			
	p-value	.000	.000	.			
3	$\rho$	.963**	.860**	.825**	1.000		
	p-value	.000	.000	.000	.		
4	$\rho$	.908**	.849**	.759**	.861**	1.000	
	p-value	.000	.000	.000	.000	.	
5	$\rho$	.865**	.774**	.771**	.798**	.793**	1.000
	p-value	.000	.000	.000	.000	.000	.

\*\* The correlation is significant at the significance level of 0.01% (bilateral)

The reliability test showed that the entrepreneurial self-efficacy scale is adequate to measure students' performance regarding the execution of tasks and duties aimed at obtaining entrepreneurial results in the various scientific areas under study (Cronbach's Alpha > 0.9), as shown in Table 6. The values of Cronbach's Alpha coefficient higher than 0.9 mean that the measurement tool used has good internal consistency (Nunnally & Bernstein, 2014). When considering the dimensions of entrepreneurial self-efficacy, the results showed that the values of Cronbach's Alpha coefficients in dimensions 1 to 4 remained above 0.8 and close to 0.9. However, Cronbach's Alpha coefficients recorded for dimension 5 'Working under stress' were close to 0.6, which might be explained by the lower number of factors (2) included in this dimension in the adapted self-efficacy scale (Moriano, Palací & Morales, 2006). Therefore, this aspect could be improved through the inclusion of new factors or tasks related to this dimension.

The results proved the existence of statistically significant differences between the levels of Entrepreneurial Self-efficacy according to the scientific area (p-value < 0.01). Indeed, the results presented in Table 6 lead to the rejection of the hypothesis H<sub>03</sub>.

**Table 6: Comparison of entrepreneurial self-efficacy and its dimensions by scientific area**

Dimensions	Scientific area	Cronbach's Alpha	Mean Ranks	p-value
0. Entrepreneurial self-efficacy	Education	0.964	368.16	0.000*
	Agriculture	0.969	430.10	
	Technologies and Management	0.969	453.02	
	Health	0.958	396.44	
1. Developing new products or new market opportunities	Education	0.850	374.22	0.002*
	Agriculture	0.821	434.17	
	Technologies and Management	0.869	445.57	
	Health	0.858	382.96	
2. Developing critical human resources	Education	0.897	375.97	0.009*
	Agriculture	0.856	407.31	
	Technologies and Management	0.899	444.26	
	Health	0.848	394.20	
3. Initiating investor relationships	Education	0.860	365.08	0.000*
	Agriculture	0.878	431.27	
	Technologies and Management	0.880	451.50	

	Health	0.871	410.12	
4. Building innovative environment	Education	0.851	369.94	0.001*
	Agriculture	0.894	427.49	
	Technologies and Management	0.857	448.10	
	Health	0.815	399.21	
5. Working under stress	Education	0.680	362.20	0.000*
	Agriculture	0.636	436.13	
	Technologies and Management	0.755	458.76	
	Health	0.625	406.41	

\* There are statistically significant differences at a significance level of 1%.

In each dimension, the following factors were identified as registering lower, although moderate, levels of self-efficacy: ‘Designing products that solve common problems’ ( $\bar{x} = 4.43$ ;  $S = 1.384$ ), ‘Developing appropriate staffing planning to fill key company positions’ ( $\bar{x} = 4.43$ ;  $S = 1.377$ ), ‘Tolerating unexpected changes in business conditions’ ( $\bar{x} = 4.43$ ;  $S = 1.410$ ), ‘Developing relationships with key people to raise capital’ ( $\bar{x} = 4.42$ ;  $S = 1.388$ ) and ‘Working effectively in conflict situations’ ( $\bar{x} = 4.35$ ;  $S = 1.470$ ), as shown in Table 7.

**Table 7: Descriptive statistics of the entrepreneurial self-efficacy factors**

#	Factors	$\bar{X}$	S	$\tilde{X}$
1	Discovering new ways to improve existing products	4.47	1.454	4
	Identifying new areas of potential growth	4.45	1.349	4
	Designing products that solve common problems	4.43	1.394	4
	Creating products that meet customer needs	4.56	1.393	5
2	Recognizing new opportunities in the market for new products and services	4.50	1.385	4
	Recruiting and train key employees	4.49	1.384	5
	Establishing the vision and values of the organization	4.54	1.392	5
	Developing appropriate staffing planning to fill key company positions	4.43	1.377	4
3	Developing and maintain favorable relationships with potential investors	4.49	1.373	4
	Developing relationships with key people to raise capital	4.42	1.388	4
	Identifying potential funding resources	4.52	1.360	5
	Identifying and build management teams	4.48	1.382	4
	Forming partnerships or alliances with other partners	4.53	1.422	5
4	Tolerating unexpected changes in business conditions	4.43	1.410	4
	Creating a work environment that allows people to be their own boss	4.54	1.373	5
	Developing a work environment that encourages people to try new things	4.55	1.400	5
	Motivating people to take initiative and responsibility for their ideas and decisions regardless of their results	4.58	1.371	5
5	Working effectively in conflict situations	4.35	1.470	4
	Persisting against of adversity	4.60	1.401	5

## Discussion

The main aim of this cross-sectional study was to determine the level of entrepreneurial self-efficacy in students attending a public higher education institution located in the northeast of Portugal. For this, a survey was conducted with 795 undergraduates who, in the academic year of 2018/2019, were attending the 1st year of a degree course in one of the following scientific areas: Education (54.4%), Technologies and Management (23.2%), Agriculture (8.3%), and Health (14.1%). The majority of the sample subjects was female (56.9%), 17 to 19 years old, Portuguese (83.3%), attending a 1st cycle degree course (80.1%) in an ordinary attendance mode (97.7%).

The students registered a moderate level of entrepreneurial self-efficacy. The same results were obtained in a study conducted in Malaysia involving 345 engineering students from various higher education institutions (Saraih, Zuraini, Aris, Mutalib, Salha, Ahmad & Abdullah, 2018). A study conducted in Indonesia with 199 participants from three courses, namely, International Business Management, Visual Communication Design and Psychology, found that overall the level of Business Self-efficacy among students was high, however, the aim of this study was to examine the students' level of self-efficacy after attending four complete semesters of entrepreneurial education (Setiawan, 2014).

A moderate level of entrepreneurial self-efficacy may partly reflect teachers' inability to transfer their own entrepreneurial self-efficacy (Pihie & Bagheri, 2011). In this sense, students can avoid being fully involved in learning activities and opportunities and consequently fail to improve their entrepreneurial self-efficacy (Pittaway & Cope, 2007; Zhao, Seibert & Hills, 2005).

About 17.0% of the undergraduates showed a low or very low level of entrepreneurial self-efficacy. In a study conducted in Indonesia, only 2.0% of the students revealed a low level of entrepreneurial self-efficacy (Setiawan, 2014). This discrepancy may be due to the fact that the Indonesian students had attended a four-semester course in Entrepreneurship. Indeed, culture does not seem to be a discriminating factor of entrepreneurial self-efficacy in undergraduates since the results of a study conducted in Turkey and in Poland revealed an absence of significant differences (Basol & Karatuna, 2017).

The dimension 'Working under stress' was the one which registered more students with high levels of self-efficacy (28.8%), contrarily to the study conducted in Indonesia, in which the students showed not to know whether they could work productively under continuous stress, pressure and conflict (Setiawan, 2014).

The level of self-efficacy was similar in the several dimensions, these results contradict those obtained in a study conducted in Indonesia, in which statistically significant differences were found (Setiawan, 2014).

Also, the results showed the existence of statistically significant differences in the levels of self-efficacy depending on the scientific area of the degree course attended by the student. The undergraduates from the Education scientific area recorded the lowest levels in all the entrepreneurial self-efficacy dimensions. The students attending a degree course in the area of Technologies and Management recorded a higher level of entrepreneurial self-efficacy when compared to those attending a degree course in other scientific areas, namely Education, Agriculture and Health. This might be due to the fact that the training courses within the technological and management area are more project-oriented. Furthermore, according Kazeem and Asimiran (2016) usually students from the business and management areas have levels of self-efficacy higher compared to students of other scientific areas.

Entrepreneurial self-efficacy is considered an asset for the generation of new ideas and the creation of new successful businesses. Therefore, higher education institutions must be able to provide training aimed at improving their students' entrepreneurial skills and levels of self-efficacy. These will be paramount, not only for these individuals to look for a job but also for them to create jobs, enabling them to follow their own professional path successfully (Setiawan, 2014). As stated in literature, individuals with higher levels of entrepreneurial self-efficacy are the ones who develop more actions targeted at the achievement of goals (de Noble, Jung & Ehrlich, 1999; Jung, Ehrlich, de Noble & Baik, 2001; Setiawan, 2014). As argued by Basol and Karatuna (2017), improving the entrepreneurial self-efficacy of students, future entrepreneurs, implies improving entrepreneurial momentum. To this end, students should be encouraged to attend entrepreneurship courses to gain and/or improve their entrepreneurial skills and abilities. In this sense, it is essential for higher education institutions to implement and to emphasize strategies to increase the level of entrepreneurial self-efficacy among students as a way to increase the level of entrepreneurial intention (Saraih et al., 2018).

## **Limitation and future Research**

As previously stated, this research is a cross-sectional study, which constitutes a limitation of the study in itself. In fact, using a cross-sectional design limits the ability to capture changes or improvements in entrepreneurial self-efficacy over time. A longitudinal study approach, which allow to follow individuals over time, is the best design to understand the process of improving entrepreneurial self-efficacy. Such limitation can be overcome in future research works which enable to monitor the evolution of undergraduates' skills to develop entrepreneurial tasks over time.

It would be interesting in future research to analyze entrepreneurial self-efficacy taking into account sociodemographic factors such as gender and age of students, as well as to ascertain the level of entrepreneurial self-efficacy of students taking into account the frequency regime (normal full-time attendance/ordinary or student worker).

Finally, the respondents were all students attending a course from one of the four existing scientific areas existent in the institution, namely, Education, Technology and Management, Health and Agriculture. It would be interesting to extend the study to other higher education institutions and other scientific areas to compare results.

## **Conclusion**

This work was based on the application of the entrepreneurial self-efficacy scale developed by Noble, Jung and Ehrlich (1999) and adapted by Moriano, Palací and Morales (2006) to higher education students who attended, in the academic year 2018/2019, the first year of a course in one of the following scientific areas: Education, Technology and Management, Health and Agriculture. The results showed that the students' self-efficacy level was moderate, however, 16.6% of students shown a low or very low level of entrepreneurial self-efficacy. Students' entrepreneurial self-efficacy can be enhanced by working together with entrepreneurs, people with an entrepreneurial mentality, people who can give them positive feedback on their performance, and improve their awareness of the importance of entrepreneurship for their personal and social development (Pittaway & Cope, 2007; Wilson, Kickul & Marlino, 2007).

Students who have a low level of entrepreneurial self-efficacy deserve special attention and effort from the higher education institution. In this context, the institution where this study was conducted has been taking action so as to involve the teachers from the various scientific areas in the implementation and generalization of innovative pedagogical practices based on the process of co-creation, which enables the development of students' skills to fulfil entrepreneurial tasks. Besides these initiatives, a master's degree has been created in which such practices have been adopted under the Demola Project. This project of Finnish origin, brings together companies, students and researchers to try to solve corporate business problems.

## **Acknowledgements**

The authors are grateful to (a) the Foundation for Science and Technology (FCT, Portugal) and the ERDF under the program PT2020 for financial support to CIMO (UID/AGR/00690/2019) and (b) CETRAD. This research is financed by national funds, through the FCT – Portuguese Foundation for Science and Technology under the UID/SOC/04011/2019 Project.

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