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Understanding triggering skills for entrepreneurs: The case of ESIC

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Abstract

The aim of this paper is to present the methodology and results of a study on the role played by an institution in higher education, the ESIC Business & Marketing School, in teaching different master's degree programmes to examine whether they respond to the demands of potential entrepreneurs who are seeking to acquire the tools and develop the skills necessary to eventually become successful. The main conclusions were that the students with the intention of achieving a higher level of entrepreneurial skills were enrolled in the Executive Master of Business Administration (EMBA) programme without omitting other master's degree programmes also chosen by students with entrepreneurial concerns. It was also found that the variable with the highest impact on entrepreneurial motivation was family environment. Our data lead us to maintain that these students were not always going to start up a new business. The originality of this paper comes from our survey with 1,135 responses from the master's degree programmes taught in five cities in Spain with the inclusion of an analysis for LATAM students.

1. Introduction

Historically, the ESIC Business & Marketing School has aimed to be a centre that provides useful tools for future entrepreneurs and executives, both male and female, so that young students may acquire the necessary skills and knowledge to be successful in their jobs. Ultimately, the ESIC’s role and good work will be rewarded by the success acquired by the students during this training period due to the knowledge they learn. Within this area, our analysis focused on the master’s programmes run by ESIC because the school has a great tradition of providing more specific training programmes based on business management and entrepreneurial skills.

One of the most relevant phenomena in recent years in Spain has been the development of an interest in entrepreneurial talent. For this reason, entrepreneurs have found an increasingly important place in Spanish society.

Consequently, one of the key questions we asked ourselves for this study was whether we have improved these skills. In 2015, Freire-Rubio and Rosado-Cubero analysed a cohort of variables to examine the entrepreneurial skills of ESIC students. Now it is time to compare those results with the latest ones obtained by a further survey. The underlying goal was to confirm that ESIC has been able to adapt to the new times and, as proposed in that article, the teaching approach has adapted to the demands of students who require new skills in a changing environment.

The objective of this paper is to use the quantitative and qualitative measures collected through a questionnaire to show the characteristics of ESIC students as entrepreneurs. There are several published articles about this topic using samples from various countries and students from different universities. Examples include the entrepreneurial potential amongst higher education students (Varamaki et al., 2015) or students from an entrepreneurial university to society (Audretsch, 2014), whether engineering or business was the best field for entrepreneurship (Wagner, 2011), the entrepreneurship education in European universities using Spain as a case study (Lanero et al., 2011) using the entrepreneurial aptitude test (TAI) to shape entrepreneurial profiles (Cubico et al., 2010) or how students choose a career (Carter et al., 2015). We would like to fill the gap in Spain by asking ESIC students directly to complete a questionnaire. The main contribution of the paper is to shape ESIC students as entrepreneurs and diminish the weakness of master’s programmes to adjust according to present times.

The main results of our paper were that gender was statistically significant, in favour of males, both for the direct question “have you already opened a company?” and for the proxy “do you intend to open a company in the next 12 months?” Family environment was statistically significant both for the direct question and for the proxy. When we analysed differences between the master’s degree programmes for students linked to entrepreneurship, it turned out that both EMBA and...
MBA are remarkable programmes in which students enrol to improve their entrepreneurial capacities.

The remarkable items for entrepreneurship are the following: Item 1, The knowledge acquired in my education, both undergraduate and postgraduate, has helped me to create a business; Item 3, I possess enough personal initiative to undertake projects and Item 17, I see myself as someone who is open to new experiences and multifaceted. Finally, business and economic studies have been shown to be the best for entrepreneurial intentions, and nationality is a specific variable to consider because LATAM students showed a higher tendency to start a new business than Spaniards.

The results are discouraging: we have lost a high percentage of intention to be entrepreneurs amongst our students from 2012 to 2019. Despite the fact that the EMBA (Executive Masters of Business Administration, see Appendix 2) programme still enrolls students with the highest level of entrepreneurial spirit, the intention to start a business has declined dramatically in every master’s programme. In 2012, 61.39% of EMBA and 53.47% of GESCO (Master en Gestión Comercial y Marketing) students intended to open a company. Data from the 2019 survey show that 28.18% of EMBA students had already opened a new company, and 26.70% of EMBA intended to open a company in the next 12 months. In 2019, GESCO entrepreneurial student intentions were below 20%.

This new information suggests that we need to identify some of the reasons for this decline in order to understand the decrease in entrepreneurial intentions (Carter et al., 2003). The improvement in macroeconomic data, as represented by increased GDP, is an indicator of the changing tendencies for employability from self-employment or entrepreneurship to being employed by a company. Additionally, students are increasingly more internationally mobile, and the mobility between countries and better job opportunities across Europe drive students to consider alternative paths to employability. We seek to find the motivation and development of entrepreneurship amongst students nonetheless.

There are several approaches to entrepreneurship analysis (Audretsch, 2012): successful entrepreneurs act effectively by transmitting enthusiasm to the people around them and creating a favourable environment to achieve their goals. This statement is based on three elements demonstrated by experience:

1. Entrepreneurs have net personality traits that constitute a psychological profile, which compels them to start a creative process, transform it, and take risks.
2. This profile is associated with certain behaviours that can be trained, which would influence the level of effectiveness or outcome of the venture.

The method chosen to explain how ESIC students reached entrepreneurial decisions was a survey, bearing in mind that the Spanish context presented a number of particularities during the two periods analysed.

Our research project aimed to identify the characteristics or qualities of successful entrepreneurs using the 19 items proposed in the questionnaire. We also introduced variables regarding gender, age, master’s degree programme, family environment, city, and professional experience, seeking to promote a discussion on whether there is enough evidence to suggest different entrepreneurial behaviours depending on the particular values of these variables. The authors decided to conduct the analysis of the survey from two angles: first, more quantitative; and second, more qualitative.

The first objective of the study was to understand the profile of students who become, or aim to become, entrepreneurs and, as a consequence, to propose academic content accordingly. Second, we compared the later survey’s results with those of the earlier survey run in 2012. Finally, we propose some suggestions to improve ESIC’s master’s programmes in order to further ramp up students’ entrepreneurial abilities. The last part of this paper is devoted to analysing one particular master’s degree programme since the EMBA was the most attractive programme for students aiming at entrepreneurship.

2. Theoretical background

All the literature that has examined the entrepreneurial process and the characteristics that make an entrepreneur effective agree that “This entrepreneur tendency is especially evident in individuals with a greater need for inner control and achievement, a greater propensity for risk taking, and a greater tolerance for ambiguity” (Espiritu Olmos and Sastre Castillo, 2015).

In addition, the Global Entrepreneurship Monitor in Spain maintains that the essential ingredient for deciding to become an entrepreneur is the identification of a business opportunity (GEM 2018–2019). Other authors state that the link between ideas and action is critical to understanding the entrepreneurial process and that the quality and quantity of academic and vocational performance can be predicted by a combination of factors (Carsrud and Brannback, 2011). Some factors such as openness to experience or extraversion affect the decision to become self-employed; risk tolerance also has a positive influence (Caliendo et al., 2014). Other studies have analysed personal interests and personality (Larson et al., 2002), found that entrepreneurs scored higher on conscientiousness and openness to experience and lower on neuroticism and agreeableness (Zhuo and Selbe, 2006), assessed other psychological characteristics (Cubico et al., 2010), and found that entrepreneurs are used to rule-breaking and that they resolve issues in the relationships with their agents (Obschonka et al., 2013).

Learning how to be an effective entrepreneur is a long and complex process that requires a method and the practical application of certain instruments; in fact, individuals create balanced skills by investing in a varied education and by working in a variety of activities (Astebro and Thompson, 2011). First, it is necessary to develop cognitive, emotional and social techniques. Second, the entrepreneur needs certain knowledge and skills to express these techniques in an effective way; this is what we term entrepreneurial skills. Teaching entrepreneurship is a good way to convince students and drive them towards creating new companies (Astebro and Bazzazian, 2010) (Rosado-Cubero and Freire-Rubio, 2012). In the late twentieth century, an economic theory known as the ‘theory of human capital accumulation’ emerged, and it argues that companies not only accumulate physical capital but also accumulate human capital; therefore, much of this capital has been acquired by the method of “learning by doing”. This idea could be transferable to university education since it takes students from a more theoretical standpoint towards a more practical one. Business schools gather this experience and make it their own by training professionals with a different approach, using more tools and skills, and abandoning the old ways of teaching. In Spain, the conviction that universities are the starting point for economic and social growth with the responsibility to promote an entrepreneurial culture amongst young people led us to create the right conditions for an entrepreneurial ecosystem (Ruíz Navarro, Ramos Rodríguez, and Lechuga Sancho, 2019). The curious thing about this initiative is that in the United States, incubators and start-ups produce high rates of return, primarily via taxation, but also through synergies between the entrepreneurs working in the same incubator (Erlewine, 2007).

In Europe, the conclusion on the relevance of universities teaching entrepreneurship could be considered positive and includes active methods, such as project-based learning or active-learning based on attitudes (Varamaki et al., 2015). The concept of entrepreneurial intention, defined as the commitment to starting a new business after graduation, was analysed by several authors (Krueger and Carsrud, 1993) (Bosma et al., 2012) (Audretsch, 2014). In Spain, the analysis run on undergraduate students showed that the perception of feasibility is a predictor of entrepreneurial intention. In addition, from
the model, it was concluded that higher education is a precursor of entrepreneurship attitudes, intentions and actions (Lanero et al., 2011), a conclusion that matched our own findings.

The Global Entrepreneurship Monitor Spain 2018 detected that women scored lower in perceptions that encourage entrepreneurial behaviour (perception of business opportunities, confidence in skills to be entrepreneurial and the knowledge of other entrepreneurs) and higher in the perceptions that inhibit entrepreneurial behaviour, such as the fear of failure (GEM, 2018–2019). In fact, data show that 53.1% of new companies in the last year were created by males while 46.9% were created by females (Ruiz Navarro, Ramos Rodríguez, and Lechuga Sancho, 2019). Similar conclusions can be found in (Espíritu Olmos and Sastre Castillo, 2012). Additionally, males rated innovation and making money higher than females as a reason for choosing a career (Carter et al., 2003). Thus, we propose the following hypothesis:

**H1.** Males have a greater propensity for entrepreneurship.

When students’ families already have a business, graduates tend to be more optimistic (Puri and Robinson, 2013). Another argument is the relevance of family involvement in executive management and generational transfer (Sánchez, Carrasco, Danvila and Sastre, 2016), as well as the parental influence on entrepreneurial interests (Schmitt-Rodermund, 2004, 2007) (Luis-Rico et al., 2020). Thus, we propose the following hypothesis:

**H2.** Family environment positively influences entrepreneurship.

We have collected information from each of the ESIC master’s degree programmes and campuses (see Appendix 2). Analysis of the questionnaires and comparison of the results for different programmes should help identify which programme(s) are more attractive for students with entrepreneurial intentions. Thus, we form the following hypothesis:

**H3.** There are differences between the master’s degree programmes for students linked to entrepreneurship.

Furthermore, we are interested in detecting the most noticeable items that determine entrepreneurship. In a former survey of ESIC master’s degree programmes (Freire-Rubio and Rosado-Cubero, 2015), the relevant items were ‘knowledge helps create businesses’, ‘the skills to manage teams’ and ‘perseverance to achieve objectives’ whereas ‘visualize market opportunities’ was less effective at explaining entrepreneurship. We would like to ascertain whether these items have changed in their relevance and which ones are the key for entrepreneurial intentions amongst the ESIC students.

**H4.** Knowledge, initiative, continuing education, and multifaceted people are the most significant items to detect an entrepreneur.

By running a simple descriptive statistical analysis of the obtained responses, we can see that the profiles of students involved in GESCO and EMBA are very similar. Both are key ESIC master’s degree programmes. GESCO is a master’s degree programme to improve and develop skills and abilities, strategic vision and operational development by focusing on news, trends and digital marketing media. EMBA is a master’s degree programme to improve the students’ management, planning and comprehensive strategy skills for any business. Fig. 1 shows the average student responses to the 19 items (see Appendix 1).

Focusing on the GESCO, the data confirmed that it was not the best master’s degree for entrepreneurs since this was not the intention of the students in that programme. Regarding our concerns, i.e., the success of the education courses, the answers confirmed (see star plot 1) the very positive value of question 10: “Continuing education is key when taking on new professional challenges, it provides peace of mind when taking action and facing challenges”. The mean score was 6 (vs. 7 max) on all campuses. This is very positive since this is precisely ESIC’s main task, and the students’ recognition of the work done and their support for programmes encourage the institution to continue.

In addition, although GESCO students had no intention of starting up a new company, they considered themselves as self-critical, and the scores for questions 16 and 17 were over 6. Indeed, they saw themselves as reliable, self-disciplined, open to new experiences and multifaceted individuals. Item 14, I can generate empathy in my environment to build networks of support for my projects, also had a score of approximately 6, which was very positive. The conclusion would be that even if students recognized their managerial skills, they were not very willing to start a new business. The interpretation of those results would be that the GESCO students were willing to offer new ideas and some proposals to improve the company where they were already working. **Intrafirm entrepreneurship** is the technical name of this method of implementing new business ideas when one is not necessarily starting a new firm.

EMBA has been the programme with a higher number of entrepreneurial students enrolled; therefore, we analysed this particular master’s programme in more depth. The highest percentages of business activity are seen in the social science and legal affairs degrees with a considerable 45.9%, followed by those of engineering and architecture with 21.9% (Ruiz Navarro, Ramos Rodríguez, & Lechuga Sancho, 2019). Following (Wagner, 2011), who compared engineering and business students, we classified EMBA students’ past degrees into three categories, including: business and economics, engineering and “other”, in order to confirm the conclusions of the former study. We hypothesized the following:

**H5.** Business and economics studies positively influence entrepreneurship.
Finally, several students from Latin American countries (LATAM students) enrolled in the EMBA programme, mainly on the Madrid and Barcelona campuses. We have decided to test whether nationality is relevant to entrepreneurship. We have not found previous analysis to support whether nationality influences entrepreneurship, but we have considered that it would be of interest to test the following hypothesis:

H6. LATAM students have a greater propensity for entrepreneurship.

3. Methods

We aimed to assess the relationship between entrepreneurship and the academic training of future entrepreneurs. For this purpose, we selected master’s programmes where a future entrepreneur could find additional programmes to supplement their main training in business administration. Then, we formed a questionnaire to identify the common entrepreneurship traits amongst students who were already participating in our master’s programmes.

The data were analysed using different statistical techniques to establish their entrepreneurial drive, the tools they considered appropriate for achieving their degrees, and what they thought was the best way to start a new business. In addition, we compared these results with those from the previous survey run seven years earlier using nonparametric tests in order to identify the similarities and differences with the goal to understand whether ESIC has succeeded in improving the training required by future entrepreneurs.

The methodology and techniques used to achieve this goal will be discussed below.

3.1. Questionnaire design and sample selection

The questionnaire was designed following the earlier 2012 survey in order to better compare and contrast the validity of the conclusions seven years later. We included and removed a few items, for instance, the Spanish province where students were already involved in a particular master’s degree programme. This new way of characterizing items enabled us to identify the differences between master’s degrees, nationality, gender, provinces, and qualitative items.

The objective of this survey and its results was to detect whether students enrolled in postgraduate programmes and master’s degrees were obtaining better entrepreneurship training. To achieve the objective of the survey questions, we sought to identify students’ profiles for the different training programmes. Thus, the results should show us the profile of potential entrepreneurs. Furthermore, we would be able to propose improvements for these programmes in order to develop the skills and knowledge expected by the students and help them to achieve entrepreneurial success.

Former studies have also shown that creativity, innovation and controlled risk-taking are the traits that define every entrepreneurial profile “per se” according to business entrepreneur critics (Carsrud and Brännback, 2011) (Audretsch, 2012) (Caliendo et al., 2014) (Larson et al., 2002). We could also name another set of attributes that are to a greater or lesser extent commonly associated with an entrepreneurial profile, although these features, trained or developed, are also present in nonentrepreneurs, which influence the level of success of the venture. Research in this area, combined with practical knowledge, leads us to postulate that entrepreneurs have effective behaviour associated with five main traits or skills of their personality:

1. Strong self-awareness and self-confidence.
2. High motivation for achievement.
3. Optimism and being a true visionary.
4. Planning and organizational capacity.
5. Effective communicator and network generation supporter.

Based on these premises, the survey was run on graduate students to accomplish the following:

1. Verify the presence of a certain natural ability that promoted entrepreneurship.
2. Check whether they aimed to acquire some specific training in order to acquire skills that would enable them to be more confident in creating businesses. It should not be forgotten that undertaking a project is also a combination of innovation and risk, even if this is obviously a measured risk.
3. Check whether these natural abilities, knowledge and training were boosted by an entrepreneurship background in the family.

The relationship of variables or items used in the design of the survey is shown in Appendix 1, which includes a description of each of the variables.

The questionnaire items were evaluated using a 7-point Likert scale (Likert, 1932). The degree of agreement or disagreement that subjects had for each item ranged from 1 Strongly disagree to 7 Strongly agree.

The participants that completed the survey provided their general demographic data: age, gender, nationality and level of education. We include some qualitative measures of the survey, such as the following:

A. Have you already opened a company? Yes, or no.
A.1. If yes, within which sector: _______.
A.2. If not, do you intend to open a company in the next 12 months? If yes, within which sector: _______.
B. In your close family environment, has anyone started up their own company? Yes, or no.
If yes, within which sector: _______.
Sampling process

A final sample of 1135 questionnaires was collected from the ESIC Business & Marketing School master’s degree programme and from the Madrid, Valencia, Barcelona, Bilbao, Granada, Zaragoza, Málaga and Navarra campuses on a face-to-face basis from 13th to 22nd December 2019. The authors gave instructions to the teachers in charge of the class who were responsible for the distribution and collection of the data. There was no second opportunity for those students who did not attend that particular session. Although the sample size was acceptable, the sources of bias could have been avoided. The questionnaire was administered to all ESIC Master’s degree students who attended class; we estimated students’ attendance to be over 90%, so it is highly representative.

The sample was collected from these ESIC precise campuses because this school holds significant weight within the Spanish education market. Furthermore, the classic ESIC training for entrepreneurship is very relevant in Spain, and the ESIC has the advantage of having a number of different offshoots throughout Spain. Taken together, this all enabled us to gather enough information to study the data and draw conclusions while providing us with different data to distinguish between diverse geographical areas, e.g., to define a common variable between future entrepreneurs or to even categorize some resources or entrepreneurship based on the social characteristics of different areas. Once the data were analysed, we did not find significant differences over ESIC campuses, and so location is not a significant variable for entrepreneur intentions.

A final sample of 1135 questionnaires was collected on a face-to-face basis in December 2019 (all the collected questionnaires were valid), from which we attempted to obtain indicative results on the skills and knowledge of participants studying in a master’s programme in order to promote and categorize the profile of future entrepreneurs.

3.2. Statistical tools

In a preliminary analysis, chi-squared tests were used in order to determine which control variables were significant when considering
either the direct or proxy question on entrepreneurship intention. However, the study of these questions individually is insufficient for our purposes. Consequently, the statistical technique used for the analysis of the questionnaire will be a logistic regression model where the student’s intention to start an entrepreneurial project in the coming months (or the fact that he/she has already done this) was taken as the dependent variable. This technique enabled us to study the impact of each of the variables (both items and control variables) on entrepreneurial intention.

The majority of students with a clear vocation towards entrepreneurship were enrolled in the EMBA. We consider that this precise master's degree programme merits a deep-seated and particular statistical analysis according to (Liñán et al., 2013), (Liñán et al., 2013), and (Gieure et al., 2020); therefore, we set another logistic regression model only for those students enrolled in this programme.

Logistic models can be applied to many research problems where the goal is the analysis and prediction of a dichotomous variable, such as yes (value 1) as opposed to no (value 0) in our study. These models do not assume a linear relationship between the dependent and independent variables, and independent variables do not need to be interval or normally distributed. In fact, a logistic regression is especially beneficial to research seeking to interpret binary and categorical data.

Regarding the Goodness of Fit (GoF) of the model, there are many different ways to calculate the so-called pseudo R-squared for a logistic regression. (Mittlböck and Schemper, 1996) reviewed 12 different measures; Menard considered several others (Menard, 2000). One of the most often reported measures in statistical software packages is usually attributed to Cox and Snell (1989). A major issue with the Cox-Snell R-squared is that it has an upper limit that is less than 1.0. There is a simple correction, and it is to divide this by its upper limit, which produces the R-squared attributed to Nagelkerke (Nagelkerke, 1991). We will also report the results of the Lemeshow and Hosmer test (Lemeshow and Hosmer, 1982) based on the grouping of observations according to the distribution of probability values estimated by the model. A stepwise selection method was chosen.

All analyses were run using IBM SPSS Statistics for Windows, Version 25.0.

4. Results

We have analysed the different hypotheses described in section 2. When we analysed the entire sample, gender was statistically significant in favour of males both for the direct question A.1) Have you already opened a company? (62.2% vs 37.8% with a p-value of the chi-square test 0.007).

Table 1
Crosstab and Chi-Squared test of A1 and A2 vs G1 (Gender).

|                  | Female | Male | Total |
|------------------|--------|------|-------|
| **A1: Have you already opened a company?** |        |      |       |
| Yes               | 68     | 112  | 180   |
| Total sample      | 37.8%  | 62.2%| 100.0%|
| No                | 513    | 439  | 952   |
| Total sample      | 53.9%  | 46.1%| 100.0%|
| **Total**         | 581    | 551  | 1132  |
| **Pearson Chi-Squared** | 15.724 | 1    | .000  |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 87.61.

|                  | Female | Male | Total |
|------------------|--------|------|-------|
| **A.2: Do you intend to open a company in the next 12 months?** |        |      |       |
| Yes               | 85     | 109  | 194   |
| Total sample      | 43.8%  | 56.2%| 100.0%|
| No                | 378    | 312  | 690   |
| Total sample      | 54.8%  | 45.2%| 100.0%|
| **Total**         | 463    | 421  | 884   |
| **Pearson Chi-Squared** | 7.303  | 1    | .007  |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 92.39.

The authors take the logit function of the probability that the variable of interest (the dependent variable Y) takes a value of 1 (a positive answer) as the link function or linear predictor. The model can be written as

\[
\logit(p) = \log \left( \frac{p}{1 - p} \right) = \beta_0 + \beta_1 X_1 + \beta_2 X_2 + \ldots + \beta_p X_p + \epsilon = \beta X + \epsilon
\]

where \( p = P(Y = 1) \). \( \beta (\beta_1, \beta_2, \ldots, \beta_p) \) is the vector containing the parameters of the model and \( X = (X_1, X_2, \ldots, X_p) \) is the vector containing the potential predictor variables.

Interaction terms were introduced in order to consider the possible correlations amongst the explanatory variables.

After applying these models, it is possible to assess the significance and sign of the coefficients obtained for the explanatory variables. The interpretation of the significant \( \beta \) coefficients of the logit models is not obvious since they come from a logarithmic formula. The component \( p/(1-p) \) of the logit function is called the odds. To facilitate the interpretation, the value of \( \exp(\beta) \) is obtained, which does provide a direct interpretation of the effect of the independent variable on the dependant variable when the independent variable changes from 0 (a negative answer) to 1 (a positive answer). The odds ratio of an independent variable indicates to what extent the probability that the dependant variable equals 1 increases when the independent variable takes the value of 1 instead of 0; i.e., it indicates the specific weight of the coefficient in the probability of obtaining values of 1 or 0 for the dependant variable.

To evaluate the performance of a logistic regression model, it is advisable to consider the so-called confusion matrix (or classification table), which is a tabular representation of actual (observed) vs predicted (by the model) values. This table contains four cells, which correspond to True Positive (TP), True Negative (TN), False Positive (FP) and False Negative (FN) predicted values. From this information, some important metrics can be defined: the accuracy of the model [(TP + TN)/Total], the specificity [TN/(TN + FP)] and the sensitivity [TP/(TP + FN)].
Do you intend to open a company in the next 12 months? (56.2% vs 43.8% with a p-value of the chi-squared test equal to 0.007). The results are shown in Table 1. This gives some evidence for confirming H1.

Having an entrepreneur in the family was also statistically significant, both for the direct question A.1) Have you already opened a company? (69.1% vs 30.9% with a p-value of the chi-squared test equal to 0.037) and for the proxy A.2) Do you intend to open a company in the next 12 months? (72.2% vs 27.8% with a p-value of the chi-squared test lower than 0.001). The results are shown in Table 2. This gives some evidence for confirming H2.

However, when we examined the EMBA students, the family environment was statistically significant only for the proxy question (p-value of 0.277 for the direct question and 0.040 for the proxy). The results are shown in Table 3. Consequently, there was evidence that the family environment influences the intention to establish a business.

The study of these questions individually is insufficient for our purposes. Consequently, the statistical technique used for the analysis of the questionnaire will be a logistic regression. We have included a new binary dependent variable for the effects of both the direct question A.1) Have you already opened a company? and the proxy question A.2) Do you intend to open a company in the next 12 months? on entrepreneurship intention. This new variable takes a value of 1 if and only if at least one of the two original questions (direct/proxy) took a value of 1 (meaning yes). First, we will fit the model to all the individuals in our sample.

There are up to 14 significant variables in the logistic model (see Table 4) with the highest (positive) impacts associated with Q3, I own enough personal initiative to undertake projects Q17, I see myself as someone who is open to new experiences and multifaceted Q1, The

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**Table 2**

Crosstab and Chi-Squared test of A1 and A2 vs B (Family environment).

|                  | No      | Yes      | Total |
|------------------|---------|----------|-------|
| A1) Have you already opened a company? |          |          |       |
| Yes              | 55      | 123      | 178   |
| %                | 30.9%   | 69.1%    | 100.0%|
| Total            | 427     | 701      | 1128  |
| %                | 37.9%   | 62.1%    | 100.0%|
| Pearson Chi-Squared | 4.347<sup>a</sup> | 1 | .037 |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 67.38.

|                  | No      | Yes      | Total |
|------------------|---------|----------|-------|
| A.2) Do you intend to open a company in the next 12 months? |          |          |       |
| Yes              | 54      | 140      | 194   |
| %                | 27.8%   | 72.2%    | 100.0%|
| Total            | 295     | 391      | 686   |
| %                | 43.0%   | 57.0%    | 100.0%|
| Pearson Chi-Squared | 14.539<sup>a</sup> | 1 | .000 |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 76.94.

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**Table 3**

EMBA Crosstab and Chi-Squared test of A1 and A2 vs B (Family environment).

|                  | No      | Yes      | Total |
|------------------|---------|----------|-------|
| A1) Have you already opened a company? |          |          |       |
| Yes              | EMBA    | 27       | 55    | 82    |
| %                | sample  | 32.9%    | 67.1% | 100.0%|
| No               | EMBA    | 82       | 124   | 206   |
| %                | sample  | 39.8%    | 60.2% | 100.0%|
| Total            | EMBA    | 109      | 179   | 288   |
| %                | sample  | 37.8%    | 62.2% | 100.0%|
| Pearson Chi-Squared | 1.180<sup>a</sup> | 1 | .277 |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 31.03.

|                  | No      | Yes      | Total |
|------------------|---------|----------|-------|
| A.2) Do you intend to open a company in the next 12 months? |          |          |       |
| Yes              | EMBA    | 15       | 36    | 51    |
| %                | sample  | 29.4%    | 70.6% | 100.0%|
| No               | EMBA    | 63       | 74    | 137   |
| %                | sample  | 46.0%    | 54.0% | 100.0%|
| Total            | EMBA    | 78       | 110   | 188   |
| %                | sample  | 41.5%    | 58.5% | 100.0%|
| Pearson Chi-Squared | 4.205<sup>a</sup> | 1 | .040 |

a. 0 cells (0.0%) have an expected count less than 5. The minimum expected count is 21.16.
knowledge acquired in my education, both undergraduate and graduate, has helped me in creating a business. Q8, Easily visualized or detected new market opportunities that can turn into entrepreneurship Q11, An entrepreneur is the sum of their skills and knowledge, both present odds ratios associated with Q10, Continuing education is key when taking on new professional challenges. It brings tranquility to act and face challenges Q13, I am clear in defining the objectives and planning and designing consistent plans for achieving them Q19, I see myself as someone who is traditional and uncreative and the MDPO programme. The model can be written as:

\[
\text{logit}(p) = \log[p/(1-p)] = -6.271 + 0.207Q1 + 0.493Q3 + 0.640Q8 - 0.212Q10 - 0.763Q12 - 0.180Q13 + 0.278Q17 - 0.994Q19 + 0.303F + 0.357EMBA + 0.194EMBA - 1.876MDPO + 0.582G1 + 0.533B + \varepsilon
\]

Table 5 shows the associated classification table, adjusting the cut value in order to increase the sensitivity. The overall percentage of correct classifications in the chosen model is 68.3% with a sensitivity of 72.2% and a specificity of 66.5%. These are good results, given the heterogeneity of the individuals.

Table 6 shows Goodness of Fit (GoF) measures for the chosen model. Nagelkerke’s pseudo R-squared value of 0.267 is acceptable, and the Lemeshow and Hosmer test p-value is higher than 0.05.

The results show that items 1, 3 and 17 have a higher positive influence because their Exp (B) (odds) values are higher than 1 (see Table 4). Our questions were Item 1, The knowledge acquired in my education, both undergraduate and postgraduate, have helped me in creating a business, Item 3, I own enough personal initiative to undertake projects and Item 17, I see myself as someone: Open to new experiences, easily visualized or detected new market opportunities that can turn into entrepreneurship. It is worth mentioning that family environment is not a significant factor. The model reformulated for subsequent surveys.

Contradictory results. We expected the answer to be yes for the most part; however, we were wrong. The respondents answered the opposite. We believe that the reason for this is that they interpreted the question differently from our expectation, i.e., they did not receive training in managerial skills or, in the case of receiving this, they did not build the ability to be responsible and face challenges. This question should be reformulated for subsequent surveys.

Item 8, I easily visualize or detect new market opportunities, and Item 11, The entrepreneur is the sum of skills and knowledge, both present odds ratios greater than 1, and thus we considered them to be relevant as well. Item 8 is linked with the entrepreneurial skill to be a visionary, and Item 11 is connected with the capacity of business schools and universities to promote students’ entrepreneurial concerns. After analysing the relationship between continuous training and entrepreneurship through Item 10, Continuing education is key when taking on new professional challenges, we have realized that in fact this item presents a negative impact. We will have to rethink this contradictory result.

Regarding H4, we conclude that EMBA and MBA are remarkable programmes in which students enrol to improve their entrepreneurial capacities while MDPO appears to be the worst programme for entrepreneurs, according to our expectations.

High positive odds for gender (male) and family environment (yes) confirm our preliminary results on H1 and H2.

Particular results for the EMBA programme.

Now, we will fit the logistic model only to those students enroled in the EMBA programme. We have included two additional variables. The first variable represents information about the subject of the university degree (grouped in either business or engineering while the second variable represents whether the student is Spanish or LATAM (Latin American).

There are up to 7 significant variables in the logistic model (see Table 7) with the highest (positive) impacts associated with Q3, I own enough personal initiative to undertake projects Q6, I assume some self-critical failures or setbacks at work and learn from them Q11, An entrepreneur is the sum of their skills and knowledge. University Degree (Business), Gender (male) and Nationality (LATAM) and negative impacts associated with only Q12, I am persevering in achieving the objectives set and able to go the extra mile to achieve them. It is worth mentioning that family environment is not a significant factor. The model can be written as:

\[
\text{logit}(p) = \log[p/(1-p)] = -12.599 + 1.045Q3 + 0.640Q6 + 0.780Q11 - 0.763Q12 + 1.124D2 + 1.884G1 + 2.110F + \varepsilon
\]

Table 6 Goodness of Fit.

| Step | -2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square |
|------|-------------------|----------------------|--------------------|
| 36   | 997.251           | .191                 | .267               |
|      |                   |                      | 20.280             | .118 |

a. The estimation was terminated at iteration number 35 because the parameter estimates changed by less than 0.001.

Table 7 Variables in the Model.

| B     | S.E. | Wald | df | Sig. | Exp(B) |
|-------|------|------|----|------|--------|
| Step 7 Q3 |   1.045 | .285 | 13.418 | 1 | .000 | 2.845 |
| Q6    | .640  | .253 | 6.390  | 1 | .011 | 1.897 |
| Q11   | .780  | .264 | 8.752  | 1 | .003 | 2.181 |
| Q12   | -0.763 | .368 | 4.297  | 1 | .038 | .466 |
| D2 University degree(1) | 1.124 | .521 | 4.664  | 1 | .031 | 3.078 |
| G1 Gender | 1.884 | .644 | 8.550  | 1 | .003 | 6.582 |
| H Nationality(1) | 2.110 | .683 | 9.551  | 1 | .002 | 8.246 |
| Constant | -12.599 | 3.303 | 14.545 | 1 | .000 | .000 |

Table 4 Variables in the Model.

| B     | S.E. | Wald | df | Sig. | Exp(B) |
|-------|------|------|----|------|--------|
| Step 36 Q1 |   0.207 | .054 | 14.489 | 1 | .000 | 1.230 |
| Q3    | 0.493  | .088 | 31.464  | 1 | .000 | 1.636 |
| Q8    | 0.150  | .072 | 4.302  | 1 | .038 | 1.162 |
| Q10   | -0.212 | .083 | 6.473  | 1 | .011 | .763 |
| Q11   | -0.132 | .070 | 3.579  | 1 | .011 | 1.141 |
| Q13   | -0.180 | .083 | 4.662  | 1 | .031 | .640 |
| Q17   | 0.278  | .100 | 7.691  | 1 | .006 | 2.600 |
| Q19   | -0.094 | .056 | 2.822  | 1 | .093 | .910 |
| F1 Professional experience | 0.030  | .013 | 2.554  | 1 | .027 | 1.030 |
| EMBA  | 0.357  | .191 | 3.487  | 1 | .062 | 1.428 |
| MBA   | 1.947  | .660 | 8.710  | 1 | .003 | 7.007 |
| MDPO  | 1.876  | 1.056 | 3.155  | 1 | .076 | .515 |
| G1 Gender | 0.582 | .160 | 13.195 | 1 | .000 | 1.990 |
| B Family Environment | 0.533 | .168 | 10.084 | 1 | .001 | 1.704 |
| Constant | -6.271 | .914 | 47.127 | 1 | .000 | .000 |

Table 5 Classification Table.

| Observed | Predicted Entrepreneurship | Percentage Correct |
|----------|--------------------------|--------------------|
|          | No | Yes |                |
| Step 36  | Entrepreneurship | 427  | 215  | 66.5  |
|          | Yes | 86  | 223  | 72.2  |
| Overall  | Percentage | 68.3  |

*The cut value is 0.325
Table 8
Classification Table

| Observed Entrepreneurship | Predicted Entrepreneurship | Percentage Correct |
|---------------------------|-----------------------------|--------------------|
| Step 7 Entrepreneurship   | No                          | 48                 | 17                 | 73.8                           |
|                           | Yes                         | 10                 | 42                 | 80.8                           |
| Overall Percentage        |                             |                    |                    | 76.9                           |

*The cut value is 0.440

Table 9
Goodness of Fit

| Step | –2 Log likelihood | Cox & Snell R Square | Nagelkerke R Square | Lemeshow & Hosmer Test Chi-square | df | Sig. |
|------|-------------------|----------------------|---------------------|----------------------------------|----|------|
| 7    | 114.390           | .327                 | .438                | 7.467                            | 8  | .487 |

a. The estimation was terminated at iteration number 5 because the parameter estimates changed by less than 0.001.

Table 8 shows the associated classification table adjusting the cut value in order to increase the sensitivity. The overall percentage of correct classifications in the chosen model was 76.9% with a sensitivity of 80.8% and a specificity of 73.8%. Table 9 shows the GoF measures value in order to increase the sensitivity. The overall percentage of GESCO students are already employed and their ability to develop entrepreneurial concerns relies on their employer. In addition, EMBA students are focused on improving their training because they are usually younger than GESCO students.

The result that surprised us the most was that 63.6% of the youngest students enrolled in the MBA programme had the intention of creating a company in the following twelve months. One of the explanations could be found in the fact that 86.7% lived in a family environment where someone had already created their own company. The interpretation of its coefficient in the logistic model showed that the odds increased to almost 6.

The in-depth analysis made for EMBA students shows no differences in the two variables of gender and family environment compared with those in other programmes. However, the model shows that previous university degrees such as business and economics lead students to entrepreneurial intentions to a lesser degree than engineering studies, in line with our expectations. In the end, nationality is a specific variable to consider because LATAM students showed a higher tendency to start a new business than Spaniards. This is a novel discovery and confirms the increased interest from Latin American students in finishing a master's degree programme in Spain.

These conclusions are, from our point of view, the most significant ones since the study includes many important variables, as we noted, at the methodological level. A more detailed analysis would be required to provide a comprehensive analysis of the results obtained with this study, but this is beyond the scope of this paper.

The methodology used in this paper has some limitations. Some of the limitations are related to the sampling process and others to the technique used. Regarding the sampling process, the authors gave instructions to the teachers in charge of the class who were responsible for the distribution and collection of the data. There was no second call for those students who did not attend that particular session. Although the sample size was acceptable, sources of bias could have been avoided. In addition, logistic models do not make many of the key assumptions of linear regression and general linear models that are based on ordinary least squares algorithms. However, some other assumptions still apply. A logistic regression requires the observations to be independent from each other. It requires little or no multicollinearity amongst the independent variables. Finally, a logistic regression typically requires a large sample size to achieve stable, meaningful results. Because the parameter estimation procedure relies heavily on having an adequate number of samples for each combination of independent variables, small sample sizes can lead to widely inaccurate estimates of parameters. For a logistic regression, at least 50 data points per predictor are considered to be necessary to achieve stable results. Our sample consisted of 1135 data points, and we considered 19 items and 6 classification variables; therefore, a higher sample size would have been better. Finally, a logistic regression is a useful tool when researchers have already identified all the relevant independent variables. If they include the wrong independent variables, the model will have little predictive value. We have identified several variables (from previous literature on the topic), but some more could have been introduced.

The main and most practical implication is that ESIC academics should consider our findings in order to adapt the EMBA programme to business students' concerns. A review of the academic programmes should be made after a thorough analysis of the data collected by this survey.

As a future line of research, we propose replicating the study amongst next year's students and to contrast the new results with the former ones, keeping in mind that many aspects are going to change because of Covid-19. We consider that it would be a good idea to improve our analysis with the inclusion of online skills developed during the present academic course, how useful students think these newly acquired abilities are and how to use them as entrepreneurs.
## Supplementary materials

Supplementary material associated with this article can be found, in the online version, at doi:10.1016/j.techfore.2020.120380.

### Appendix A.1. Questionnaire

| Q1 | The knowledge acquired in my education, both undergraduate and graduate, has helped me in creating a business. |
|----|---------------------------------------------------------------------------------------------------------|
| Q2 | By promoting the management skills received during my training, I have generated enough confidence to take on responsibilities and face challenges. |
| Q3 | I own enough personal initiative to undertake projects. |
| Q4 | I own skills to manage teams. |
| Q5 | I have no problem in leading risk situations within the work (skill conflict management). |
| Q6 | I assume some self-critical failures or setbacks at work and learn from them. |
| Q7 | When taking a risk, I value the probabilities of success and failure before making a decision to undertake a project. |
| Q8 | Easily visualized or detected new market opportunities that can turn into entrepreneurship. |
| Q9 | The entrepreneurial family environment has been a facilitating factor when undertaking new business initiatives. |
| Q10 | Continuing education is key when taking on new professional challenges. It brings tranquility to act and face challenges. |
| Q11 | An entrepreneur is the sum of their skills and knowledge. |
| Q12 | I am persevering in achieving the objectives set and able to go the extra mile to achieve them. |
| Q13 | I am clear in defining the objectives and planning and designing consistent plans for achieving them. |
| Q14 | I can generate empathy in my environment to build networks of support for my projects. |
| Q15 | I efficiently manage and coordinate the resources, including time, money, human resources, etc., used to achieve the objectives. |
| Q16 | I see myself as someone who is reliable and self-disciplined. |
| Q17 | I see myself as someone who is open to new experiences and multifaceted. |
| Q18 | I see myself as someone who is disorganized and careless. |
| Q19 | I see myself as someone who is traditional and uncreative. |

### Appendix A. 2. Masters’ degree programmes analysed

- MPC (Master in Communication and Advertising Management)
- MDF (Master in Financial Management)
- MMS (Master in Marketing Science)
- DRHI (Master Degree in People Management and Human Resources Management)
- MML (Master in Marketing and Communication Management in Fashion & Luxury)
- LOCs (Master in Logistics and Supply Chain Management + Sap Erp)
- EMBA (Executive Master in Business Administration)
- MBM (Master in Business Management)
- MBA Full Time (Master in Business Administration Junior)
- DCNT (Master in Communication and New Technologies Management)
- MDPO (Master in People Management and Organizational Development)
- OCC (Master in Commercial Management)
- MDMD (Master in Sports Marketing Management)
- GESCO (Master in Marketing and Sales Management)
- MMGD (Master in Marketing And Digital Management)
- MMD (Master in Digital Marketing)
- PSMD (Superior Program in Digital Marketing)
- PSMA (Superior Program in Big Data)
- MITB (Master in International Trade & Business)

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