Model of Teachable Entrepreneurship Competencies (M-TEC): Scale Development

Structured abstract

Purpose – In this paper, literature regarding the definition and classification of entrepreneurship competencies is revised and areas of improvement are identified. Based on this literature review, the paper proposes the theoretical Model of Teachable Entrepreneurship Competencies (M-TEC) that is also tested empirically.

Design/methodology/approach – Data is collected from 562 college students enrolled in an entrepreneurship course to test the multi-item and multi-dimensional scale developed to measure the M-TEC in this paper. The scale is tested using confirmatory factor analysis (CFA) and structural equation modelling (SEM).

Findings – The scale consists of 38 items related to nine types of competencies classified in four dimensions: entrepreneurship, management and business, human resources and interpersonal competencies. The empirical findings of the study demonstrate the reliability and validity of the new measurement scale for the global sample, and when it is tested for male and female students independently. The findings also corroborate the adequacy of the scale to be included in causal research.

Originality/value – Although research on entrepreneurship competencies has notably increased in recent years, the definition and measurement of the concept still concern researchers and practitioners. To close this gap in literature, we focus on the identification, definition and measurement of the entrepreneurship competencies that can be specifically developed through formal education and training.

Keywords: Entrepreneurship; Competencies; Scale Development

Article classification: Research paper

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Management Area: Entrepreneurship Management and Education

1. Introduction

Formal education develops entrepreneurs with significantly higher impact on the economic wealth of nations (von Graevenitz et al. 2010; Wurthmann 2013) and who perform much better than self-made entrepreneurs (Shane 2003). This assumption has rapidly increased the number of entrepreneurship programs and courses in universities around the world (Fayolle and Gailly 2008; Oosterbeek et al. 2010; Piperopoulos and Dimov 2015). Nevertheless, research on the entrepreneurship education field is still in an early stage of development because there is no universal theoretical framework nor best practice as to how to better educate or train entrepreneurs (Fayolle and Gailly 2008; Rasmussen and Sørheim 2006).

One stream of research that is essential for the development of entrepreneurship education research focuses on how to develop effective entrepreneurship competencies among students (Man et al. 2002). In this regard, entrepreneurship competencies are defined as all those attributes possessed by a person (e.g., skills, knowledge, abilities, attitudes, beliefs) that are suitable for the creation of a company (Chell 2013). The development of entrepreneurship competencies amongst university students is expected to increase their self-perceived feasibility to start a company, which leads to higher entrepreneurial intentions (Sánchez 2011) and more successful entrepreneurship initiatives (Man et al. 2002).

The relevance of competencies in the promotion and success of the entrepreneurial process has yielded to the proposal of numerous definitions and entrepreneurial competency typologies (Chell 2013; Tehseen and Ramayah 2015). However, the typologies and classifications proposed so far are heterogeneous, and there is no consensus among scholars as to which are the most relevant competencies required within the entrepreneurship education field. In addition to this limitation of previous research, it is also observed that not all competencies associated with entrepreneurship are susceptible to be acquired through

formal education (Man and Lau 2005). In this regard, many competencies are strictly related to personality traits, motives or attitudes, which are all very stable and difficult to modify over time (Le Deist and Winterton 2005). Thus, scholars still need to find an integrated framework to understand the typologies of relevant competencies that are needed to start and run a successful company, while the entrepreneurship education field would also benefit from further research on the entrepreneurship competencies that are susceptible to be acquired through formal education and training. Deepening this line of research will allow universities and other educational institutions to know which competencies they should emphasize on to improve the quality and effectiveness of their teaching programs, while also increasing the success of their students' entrepreneurship initiatives.

In this paper, we propose a comprehensive Model of Teachable Entrepreneurship Competencies (M-TEC) based on the integration of previous literature on entrepreneurship competencies and education research. Based on this theoretical framework, we develop and empirically test a multi-dimensional scale to measure and to validate the model. In doing so, the first goal of the research is to provide scholars and practitioners with an integrated framework to deepen the study of entrepreneurship competencies. The second goal of the study is to contribute a structured, solid, reliable and valid measurement tool to operationalize the inclusion of competencies in empirical models aimed at exploring entrepreneurship intentions and behaviors.

By complying with these research goals, the contributions of the study to previous literature are four-fold.

First, the M-TEC contributes to previous literature by providing a classification of competencies that is more integrative and comprehensive than previous proposals, which have mostly focused on specific and too limited dimensions of entrepreneurship competencies (Man and Lau 2005; Morris et al. 2013; Sánchez 2011; Wu 2009).

Second, the M-TEC makes an additional contribution by focusing on behavioural competencies exclusively. As compared to the unconscious (e.g., personality, beliefs, motives) and conscious levels of competencies (e.g., values, attitudes), behavioural competencies (e.g., knowledge, skills, experience) are more susceptible to be learned through entrepreneurship education (Man and Lau 2005). However, previous scholars have frequently considered unconscious, conscious and behavioural entrepreneurship competencies indistinctively (Bamiatzi et al. 2015; Mitchelmore and Rowley 2013). Thus, their models are not entirely applicable to the entrepreneurship education field that is of interest in this paper.

Third, the empirical validation of the proposed scale is another contribution of the paper. Previous empirical studies have frequently tested their scales only in an exploratory way, through exploratory factor analyses (AFE) or principal component analyses (PCA) (Bamiatzi et al. 2015; Mitchelmore and Rowley 2013). As a plus, the multi-stage method implemented here allows us to evaluate the psychometrical properties of the scale (i.e., reliability and validity) as well as to test its adequacy for causal research modelling (SEM).

Finally, the proposed scale is tested separately among male and female students, which is the fourth contribution of the paper due to the extensive literature that has related gender to students' self-perceived feasibility, desirability and entrepreneurial intentions (Díaz-García and Jiménez-Moreno, 2010; Ventura and Quero 2013).

The remainder of the paper is as follows. First, the definition of competencies is addressed. Based on this definition, an exhaustive review of previous classifications of entrepreneurship competencies is performed and the M-TEC is presented and described. In the method section, the proposed scale is presented and the research design and sample are described. Afterwards, the findings of the study are explained and discussed. The paper

concludes with the discussion of the most significant conclusions, research and managerial implications, limitations and future lines of research derived from the study.

2. Competencies: Definition and scope

Competencies acquire particular relevance from an academic perspective since they allow to close the gap between education and job performance (van der Klink and Boon 2003) thanks to the fact that they can be developed through teaching and training (Boyatzis 2008; Man and Lau 2005; Oosterbeek et al. 2010; Tehseen and Ramayah 2015). More precisely, competencies constitute a key term in a wide array of domains such as human resources, psychology, law or entrepreneurship, which use them as primary elements in development, training, and education (Stoof et al. 2002).

Nevertheless, the use of the concept in so many different areas contribute to the considerable confusion that surrounds the definition of competencies nowadays (Sánchez 2013; Shippmann et al. 2000). The lack of consensus resides in the use of many different albeit interrelated words to refer to entrepreneurship competencies in academic literature. In this regard, many scholars refer to competency, competence, skills, experience, knowledge, ability, capacity, resources or assets indistinctly (Bamiatzi et al. 2015; Mitchelmore and Rowley 2010; Sánchez 2011), although each of these concepts usually refers only to a very limited domain within the competencies construct.

On the contrary, competencies are a global concept that refers to the set of capacities, knowledge, and skills required for a person to achieve superior performance in a specific domain (van Dam et al. 2010). Thus, they are a collection of attributes that are suitable or fit the purpose of fulfilling a particular task (Chell 2013). MacLean and Scott (2011) defines them as all those attributes such as knowledge, abilities, and attitudes that, along with performance, contribute to a better fulfilment in a professional job. In this regard, it is

generally agreed that competencies are concerned to the people who do a job and not the job itself (van der Klink and Boon 2003). Thus, they focus on the behaviours or conducts people show when performing the task (Le Deist and Winterton 2005; MacLean and Scott 2011; Mitchelmore and Rowley 2010; Winterton 2001). Based on these ideas, entrepreneurship competencies are defined in this paper as *"all those attributes possessed by a person (e.g., skills, knowledge, abilities, attitudes, beliefs) (van Dam et al. 2010) that are suitable for the creation of a company (Chell 2013)"*.

Such a definition highlights the multidimensionality of competencies (Mitchelmore and Rowley 2013), which is clearly represented by the Iceberg Model that classifies the components of competencies in three levels (Boyatzis 1982; Spencer and Spencer 1993): unconscious, conscious and behavioural. At the bottom of the iceberg lays the personal attributes that remain hidden to the person at an unconscious level, although they determine the way in which the person behaves. Among these attributes personality traits, believes and motives stand out (Spencer and Spencer 1993; Volery et al. 2013). In a second level, attributes such as personal values, attitudes, abilities, self-images and the social role of the person appear (Boyatzis 1982; Marvel et al. 2016). Even though these qualities remain hidden, they are situated on a conscious level to the person. Finally, at the tip of the iceberg reside more visible characteristics of the person that are manifested through behaviour. Some examples of this level of competencies include knowledge, skills and experience (Ployhart and Moliterno 2011; Spencer and Spencer 1993). As explained by Hayton and Kelley (2006), a competent behaviour implies a good degree of development in all the three levels of the model, taking into consideration that factors in each level can be compensated by other factors to achieve an efficient and effective behaviour. Table 1 synthesizes the factors that compose competencies in each of the three levels defined in the Iceberg Model.

Insert Table 1 here

Nonetheless, many of the factors in the Iceberg Model cannot be developed through formal education because they are innate aspects of the person that remain hidden at the unconscious or conscious levels (Le Deist and Winterton 2005). For instance, self-efficacy (self-perception regarding the personal ability to execute a given behaviour), risk-taking (decision making under uncertainty) and innovativeness (tendency towards creativity and innovation) are personality traits that have been clearly identified as distinctive features of entrepreneurs (Driessen and Zwart 2000). Although there is a stream of researchers who consider that self-efficacy is higher after completing an EE intervention (Newman et al. 2019), we here argue that it is hard to relate this increase to education directly. As we see it, self-efficacy may be higher because students have acquired certain competencies (knowledge, skills, etc.) that lead them to an increase in their self-perception regarding their personal ability to start a new venture. However, it does not mean that their own personality has changed. On the contrary, education has acted on competencies and, as a consequence, self-efficacy has increased. Therefore, in this paper we align with the more traditional perspective in academic research that defends that these personality characteristics either do not change over time or, when they do it, the change is produced over an extended period of time that makes it very difficult to establish a direct correlation between entrepreneurship education and personality traits (Oosterbeek et al. 2010). Similarly, personal attitudes and motivations that lead people to the creation of a new venture in the entrepreneurship domain are firmly related to particular characteristics with which the person is born. This is the case of the three main internal motives of entrepreneurs: the need for autonomy, need for achievement and need for power (Spencer and Spencer 1993). Therefore, these motivations are also difficult to develop through teaching (Taatila 2010). Although there are alternative proposals that consider that students' personal characteristics, such as need for achievement, risk-taking propensity or internal locus of control, can be modeled with entrepreneurship

education (Ndofirepi, 2020), the most defended perspective in academic literature suggest that they cannot be altered. For instance, Borchers and Park (2010) conclude that, for those students with a high locus of control, educational programs have to focus on something beyond the formation of competencies, so that students can perceive that it is in their hands to control what happens to them. Following this argument, in order to influence the attributes of personality traits, the education program should be focused and designed specifically for that means, as shown by Sánchez (2013). Nonetheless, Enkhbold et al. (2011) conclude that there is no evidence that personality has a direct positive impact on entrepreneurial intention. Based on this, our proposal aligns with the more traditional perspective regarding this debate.

Therefore, from a perspective of education for entrepreneurship, the most relevant level of analysis in the Iceberg Model is the behavioural level, where competencies may be developed through formal education (Man and Lau 2005; Morris et al. 2013). In this regard, knowledge, skills, and experience can be learned and improved through education (Driessen and Zwart 2000; Man and Lau 2005) and, as a consequence, they are more likely to change over an observable period of time (Oosterbeek et al. 2010). Besides, when referring to visible attributes in the behavioural level, competencies can be measured through different methods, included quantitative ones (Bird 1995), something much harder to achieve when measuring hidden attributes such as personality traits or attitudes.

Based on these ideas, the Model of Teachable Entrepreneurship Competencies (M-TEC) proposed in this paper will focus on the behavioural level exclusively due to its close link to the objectives of entrepreneurship education in university teaching.

3. Entrepreneurship competencies: Theoretical and empirical frameworks

As mentioned earlier, over the past few years the competency-based approach has become a standard framework to study the characteristics and actions of entrepreneurs (Man

et al. 2002; Rasmussen and Sørheim 2006) because it is considered that competencies are essential factors that provide a better understanding of the success and growth of new businesses (Mojab et al. 2011). In this regard, previous research recognizes the differences between entrepreneurship and management competencies, being the former needed to start a new business while the latter are required for the control and growth of existing companies (Bamiatzi et al. 2015; Tehseen and Ramayah 2015). Thus, there is a high consensus that entrepreneurship competencies are specifically owned by the people who start a new business (Mojab et al. 2011) and they are especially relevant given the direct link between them and the creation, survival, and growth of businesses (Mitchelmore and Rowley 2010).

Nonetheless, and despite its importance in the entrepreneurship education field, there are still few comprehensive theoretical frameworks that clearly delimit which are the most important competencies that an entrepreneur should develop to be successful. In this regard, we recognize two sources of different entrepreneurship competency frameworks: (1) those proposed from the educational domain and (2) those from the study of actual entrepreneurs' behaviors (Table 2). It is important to analyze both perspectives, since they complement each other in the way that, to some extent, entrepreneurship education attempts to foster successful entrepreneurial activity. In the following subsections, we discuss both perspectives.

Insert Table 2 here

3.1. Frameworks within entrepreneurship education research

Within the education domain, competency-based approaches are applied as a way to train better prepared entrepreneurs as well as to measure the impact entrepreneurship education has on students. In this way, several models have been proposed (Morris et al. 2013; Onstenk 2003; Rasmussen et al. 2011; Sánchez 2011; van Dam et al. 2010), which include relevant competencies when preparing students for entrepreneurial activity in a classroom setting and foster entrepreneurial activity. To mention a few, for instance, Onstenk

(2003) proposes a competency framework in three layers: (1) enterprising key skills; (2) the entrepreneur as manager; and (3) the entrepreneur as entrepreneur. In the third layer, the author includes competencies that could be considered within the behavioral level of the Iceberg Model: ability to recognize and analyze business opportunities; ability to communicate, persuade and talk to customers; network; and key abilities of entrepreneurs. However, the research does not offer empirical evidence of such framework. This leads to a gap in the literature.

Later, Sánchez (2011), in his attempt to measure the impact of EE, proposes that entrepreneurship competencies include self-efficacy, a proactive personality as well as risk taking. All of them, according to the Iceberg Model, belong to the conscious and unconscious level of entrepreneurs' competencies. Additionally, the research does not offer nor proposes a framework of entrepreneurship competencies. Rather, it only measures the abovementioned competencies separately. On the other hand, Rasmussen et al. (2011, p.1315) establish a framework based on the fact that "a competency is an "ability to accomplish something by using a set of material and immaterial resources". The framework includes competencies such as opportunity refinement, leveraging competency and championing competency. The study is based on competencies identified to work in a workplace environment and then it has been translated into a university setting to study the emergence of spin-offs.

A more recent study emerged after conducting a Delphi study, in which Morris et al. (2013) enlist 13 competencies and test pre-post in an entrepreneurship course. Their findings categorize behavioral and attitudinal competencies that could define the content of EE programs. Nevertheless, as mentioned previously, they offer a list of competencies to be included in an EE program, but they do not offer an integrated framework as such.

Finally, a well-integrated framework called TrepCamp was analyzed. TrepCamp is a summer program for university students sponsored by Santander bank. Its objective is to

develop the competencies, mindsets and skills needed to become a high-impact entrepreneur. The program is mixed, this is, it consists of an online part as well as a face-to-face interaction stage. It is interesting since it offers participants an assessment that allows them to compare how they arrived to the program and how they go after attending it. The competencies included in the program comprise 20 skill sets and mindsets grouped in 7 categories.

After comparing and analyzing the different studies within the education domain, we realize that most of them are theoretical studies and those with empirical evidence do not propose an integrated framework, rather they enlist entrepreneurship competencies without providing a solid framework for further theory building.

3.2 Other related frameworks

When analyzing frameworks from contexts other than entrepreneurship education, previous studies usually consist of a set of limited competencies organized in few categories that are all related to specific purposes of the entrepreneurial process (Wu 2009). For instance, many scholars focus on entrepreneurship competencies exclusively (Man and Lau, 2005; Wu, 2009), which refer to the skills, knowledge and experiences solely related to the ability of the entrepreneur to seek, develop and evaluate high quality market opportunities (Ahmad et al. 2010a, 2010b; Chandler and Jansen 1992). Nevertheless, previous literature has discussed that, to be a successful entrepreneur, a person also needs to develop further competencies related to the correct running of the company (Mitchelmore and Rowley 2010; Rathna and Vijaya 2009) or the creation of a wide network of contacts to take better advantage of market opportunities (Bamiatzi et al. 2015; Mitchelmore and Rowley 2010; Rathna and Vijaya 2009; Tehseen and Ramayah 2015), among others.

Based on this idea, there are several scholars who have followed a more comprehensive approach to the study of entrepreneurship competencies, although they have frequently defined too many categories that complicate the operationalization of competencies in

measurement models. As an example, the theoretical model proposed by Ahmad et al. (2010a) identifies as many as seven typologies of competencies, including strategic, conceptual, opportunity, leadership, relational, technical and personal competencies. Nevertheless, the model is extended later by the scholars themselves when testing it empirically in Ahmad et al. (2010b) and Ahmad et al. (2011). Ahmad et al. (2011) extends the model to include up to twelve categories that refer to strategic, commitment, conceptual, opportunity, leadership, relational, learning, personal, technical, ethical, social responsibility and familiness competencies. Similarly, authors such as Chell (2013), Rathna and Vijaya (2009) or Tehseen and Ramayah (2015) propose complex models that include six or seven dimensions of competencies each, although in most of these proposals some of the categories identified by the scholars seem to overlap and content validity is not always guaranteed.

One of the most powerful attempts has been provided by the European Commission that, in 2016, launched the "EntreComp: The Entrepreneurship Competence Framework. In it, the European Commission established the relevance of including entrepreneurship competencies for their lifelong learning strategy for European citizens. The framework is divided into three large categories, each composed of 5 competencies within the three broader categories. Also, levels of development are included, going from the foundation to the expert level.

Albeit too complex, this second type of models still provide a useful guide to understand a full range of behaviours that lead to superior entrepreneurial performance (Draycott and Rae 2011). Based on these models, in the following section of the paper a comprehensive and yet easy to operationalize classification of entrepreneurship competencies at the behavioural level is proposed.

4. The Model of Teachable Entrepreneurship Competencies (M-TEC)

Table 3 summarises the components of the Model of Teachable Entrepreneurship Competencies (M-TEC) that include the four typologies of competencies that have been most consistently identified in previous literature: entrepreneurship, management and business, human resources and interpersonal competencies (Bamiatzi et al. 2015; Mitchelmore and Rowley 2010; Rathna andVijaya 2009; Tehseen and Ramayah 2015).

As it was previously shown in Table 2, the M-TEC is based on the model proposed at a theoretical level by Mitchelmore and Rowley (2010), which has been lately tested empirically by Bamiatzi et al. (2015) and Mitchelmore and Rowley (2013). Nonetheless, the M-TEC contributes to these previous proposals in three ways. First, the proposal extends these previous studies by providing a more detailed classification of competencies within each category of entrepreneurship competencies. The M-TEC identifies specific subtypes of competencies that are not considered nor classified accordingly by Bamiatzi et al. (2015) and Mitchelmore and Rowley (2010, 2013). Second, these previous frameworks include entrepreneurship competencies at the unconscious and conscious level of the Iceberg Model, which are not properly differentiated from behavioural competencies by the researchers. Therefore, the application of these previous classifications in the context of entrepreneurship education may not be appropriate nor effective. On the contrary, the M-TEC focuses on behavioural competencies exclusively. Thus, it is perfectly applicable by educational institutions related to entrepreneurship. Third, the empirical approaches of Bamiatzi et al. (2015) and Mitchelmore and Rowley (2013) are limited to the exploratory evaluation of the competencies model proposed by Mitchelmore and Rowley (2010). On the contrary, the M-TEC proposed in this paper is tested through a multi-stage procedure that includes more robust tests, including a confirmatory factor analysis (CFA) and a structural analysis through structural equation modelling (SEM). These further analyses allow us to corroborate the

psychometric properties of the scale (i.e., reliability and validity) and to confirm its adequacy for the application in causal research.

As for the content of each category in the M-TEC, first, entrepreneurship competencies refer to those underlying characteristics of an entrepreneur that result in the creation, survival, and growth of a new business (Bird 1995). Within this category, there is a distinction among the identification, evaluation, and exploitation of business opportunities (Man et al. 2002; Morris et al. 2013). Thus, examples of entrepreneurship competencies include the adequate exploration of the environment (Mitchelmore & Rowley 2010, 2013; Wu 2009), opportunity identification (Chell 2013; Man and Lau 2005; Morris et al. 2013; Wu 2009), risk assessment (Ahmad et al. 2010a; Chell 2013; Mitchelmore and Rowley, 2013), generation of successful business ideas (Ahmad et al. 2010a; Mitchelmore and Rowley 2010, 2013), vision of the venture (Morris et al. 2013), development of innovative products and services that are appropriate for the identified market segments (Chandler and Jansen 1992; Mitchelmore and Rowley 2010, 2013) and value creation (Morris et al. 2013).

In terms of business and management competencies, the theoretical framework includes those related to strategic management knowledge, experiences and skills that are needed to run a successful company (Bamiatzi et al. 20015). These competencies reflect the capacity of the company leader to develop a strategic vision for the business, which requires thinking beyond the day to day operations (Ahmad et al. 2010a). Examples of business and management competencies are the ability to develop effective management systems that are needed for the proper functioning of the company in the long term (Ahmad et al. 2010a; Mitchelmore and Rowley 2010, 2013), specific skills to acquire the required resources to operate the business (Chandler and Jansen 1992; Hayton and Kelley 2006; Rasmussen et al. 2011), operative, technical, financial, budgetary and marketing competencies (Mitchelmore and Rowley 2010, 2013; Onstenk 2003), previous entrepreneurial experience (Mitchelmore

and Rowley 2010) or familiarity with the industry and the market (Chandler and Jansen 1992; Mitchelmore and Rowley 2010; Oosterbeek et al. 2010; Wu 2009). Besides these competencies, this category also includes the ability to implement the proper strategy for the venture (Ahmad et al. 2010a; Man and Lau 2005; Mitchelmore and Rowley 2010), developing a good business plan (Mitchelmore and Rowley 2010, 2013) or setting the proper management objectives for the long run of the company (Onstenk 2003; Winterton 2001; Wu 2009).

Third, human resources competencies focus on leadership, motivation and human resources management. These competencies are based on the interactions person-person or person-group and refer to the entrepreneur's capacity to work with others, understand and motivate them, both individually and collectively (Chandler and Jansen 1992). Examples of these types of competencies include the development of an appropriate organizational culture to guide the company (Chandler and Jansen 1992; Hayton & Kelley 2006; Winterton 2001), recruitment competencies (Mitchelmore and Rowley 2010, 2013), leadership (Ahmad et al. 2010a; Mitchelmore and Rowley 2010, 2013; Onstenk 2003; Wu 2009), delegation abilities (Ahmad et al. 2010a; Chandler and Jansen 1992; Mitchelmore and Rowley 2010), motivation of others (Ahmad et al. 2010a; Chandler and Jansen 1992; Mitchelmore and Rowley 2010, 2013), skills to maintain and foment amiable and fruitful human relations (Mitchelmore and Rowley 2010, 2013; Winterton 2001), teamwork abilities (Man et al. 2002; Winterton 2001) or appropriate performance, management and development of employees (Man et al. 2002; Mitchelmore and Rowley 2013; Wu 2009).

Finally, interpersonal competencies refer to the entrepreneur's social skills and experiences related to the effective communication with other people. More precisely, interpersonal competencies include those that allow an efficient interaction among individuals and groups (Rathna and Vijaya 2009). Several competencies are included in this

category: interpersonal skills (Man and Lau 2005; Mitchelmore and Rowley 2010, 2013), ability to manage customer portfolios (Mitchelmore and Rowley 2010), decision making (Ahmad et al. 2010a; Chell 2013; Man et al. 2002), oral and written communication (Ahmad et al. 2010a; Mitchelmore and Rowley 2010, 2013; Wu 2009), negotiation skills (Onstenk 2003), social relationship management (Morris et al. 2013), conflict management (Ahmad et al. 2010a), persuasion skills (Hayton and Kelley 2006; Rasmussen et al. 2011; Wu 2009) and political competencies (Chandler and Jansen 1992; Mitchelmore and Rowley 2013).

Insert Table 3 here

The goal of this research is not only to propose the M-TEC at a theoretical level but also to validate it empirically through the construction of a measurement scale that can be included in research surveys applied to students and entrepreneurs indistinctively. Based on this research goal, in the following section we develop and test a multi-item scale to evaluate the multi-dimensional proposal of competencies described theoretically in the M-TEC.

5. Method and results

Taking as a basis the conceptual M-TEC, and in order to confirm this theoretical proposal, we developed a research combining qualitative and quantitative methods. In particular, qualitative methods were used for the development (enouncement and refinement) of the measurement instruments that evaluated the nine competencies included in the M-TEC, structured in four dimensions. Once the items of the corresponding scales were defined, we developed a quantitative research to test their psychometric properties and structure based on a personal survey to college students enrolled in an entrepreneurship course. This multi-method sequential approach has been defended by numerous scholars (Netemeyer et al., 2003; Rowan and Wulff, 2007; Turker, 2009; deVellis, 2016). In this regard, several benefits have been associated to the combination of qualitative and quantitative methods when

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developing scales, which justifies the application of a multi-method approach to the purposes of our study. First, applying qualitative methods prior to surveys serves to provide key information from participants in specific social/behavioural circumstances that can enrich the quality of the research (Rowan and Wulff, 2007). Second, data generated from qualitative methods inform the survey designed for larger samples (Turker, 2009). Third, in combining both methods, the analysis of data from surveys can be made from either or both a quantitative or qualitative approach, which provides better opportunities to develop richer and more profound knowledge concerning the specific topic that is being discussed in the research (Rowan and Wulff, 2007). Somehow, a mixed-method approach increases the comprehensiveness of overall findings, by showing how qualitative data provides explanations for statistical data (Netemeyer et al., 2003; deVellis, 2016). In the following sections, we explain both stages of the empirical research.

5.1. Scale development

The scale was developed following Turker's (2009) methodological proposal for scale developments. In this regard, the first stage of Turker's methodology consists of the production of a set of statements to define indicators of teachable entrepreneurship competencies. The aim of this step is to propose an initial scale with significant content validity. For this study, we combined four methodologies. First, we carried out a review of theoretical and empirical entrepreneurship literature to identify competency dimensions and reliable items previously formulated and tested by scholars. Second, we implemented a qualitative exploratory research based on in-depth interviews with a group of three entrepreneurs, who were also involved in education activities in their community. These practitioners revised the measurement instrument and assessed if the competencies studied were relevant and the items proposed made sense from a practical perspective. The entrepreneurs confirmed the general readability of the scale and its conceptual validity, only

proposing minimum modifications in the wording of specific items to make them clearer for a non-academic public. Third, four entrepreneurship lecturers and professors independently revised and discussed the items proposed for the scale. They validated the instrument and confirmed its applicability in the context of higher education, considering students' profile and previous knowledge of entrepreneurship. Finally, the fourth phase consisted in a pre-test that was implemented among 30 students, who had already studied a subject on entrepreneurship. The pre-test allowed us to have a final test of the scale for reliability and validity before the real research was launched. Table 4 summarizes the items retained after completion of this first stage along with the original papers that served as the basis for their proposal.

First, three dimensions were defined to measure entrepreneurship competencies: Identification of Opportunities (IDE), Evaluation of Opportunities (EVA) and Exploitation of Opportunities (EXP). Identification of Opportunities was measured with three items (IDE1 to IDE3) taken from Chandler & Jansen (1992) and Anna et al. (2000). Evaluation of Opportunities was measured with three items (EVA1 to EVA3) taken from Tang et al. (2012). Exploitation of Opportunities included three items (EXP1 to EXP3) originally proposed by Bamiatzi et al. (2015).

Second, three dimensions were also defined to measure management and business competencies: Strategic Competencies (STR), Management Competencies (MAN) and Previous Knowledge and Experience (KNE). Five items measured Strategic Competencies (STR1 to STR5) based on the scale originally proposed by Man (2001). Management Competencies were measured with 6 items (MAN1 to MAN6) taken from Bamiatzi et al. (2015). Previous Knowledge and Experience was measured with four items (KNE1 to KNE4) taken from Lerner and Almor (2002).

The third category of entrepreneurship competencies (i.e., human resources competencies) was divided in two dimensions: Leadership and Motivation (LMO) and Human Resource Management (HUM). On the one hand, three items (LMO1 to LMO3) were taken from Bamiatzi et al. (2015) to measure Leadership and Motivation. On the other hand, Human Resource Management was measured through 5 items (HUM1 to HUM5) originally developed by Mitchelmore & Rowley (2013).

Finally, interpersonal competencies were measured through eight items (SOC1 to SOC8) referred to the Social Competencies (SOC) of entrepreneurs. The items were taken from Man (2001).

Insert Table 4 here

5.2. Research design and sample

The information was collected through a questionnaire that was administered to students as part of a personal survey. The measures of each competency category were obtained through 7-point Likert-type and semantic differential scales (1 = total disagreement; 7 = total agreement with the proposed statement). Given that all the measurement scales were originally developed in English and the questionnaire was administered in Spanish, we used the back translation procedure following the recommendations made by Douglas and Craig (2007) to check the translation accuracy. First, we made a direct translation of the scales from English to Spanish, which was then revised and back translated to English by a native proof-editor, thus guaranteeing the conceptual equivalence of the two versions.

The survey was directed to students enrolled in a transversal entrepreneurship course offered in the several graduate degrees taught by the Monterrey Institute of Technology and Higher Education (México). This university was selected because it is a leading academic institution in training and support for entrepreneurship in Latin America. The sample was selected by combining two non-probabilistic methods: quotas and convenience. First, a

sampling by quotas was done according to the distribution of the students in the several degrees. Once we established the percentages of surveys needed for each degree, a convenience sampling was done with the voluntary participation of students that answered the questionnaire anonymously in the classroom. A total of 562 valid surveys were collected. The socio demographic profile of the sample is detailed in Table 5.

Insert Table 5 here

5.3. Preliminar statistical analyses

Before the results derived from the test of the scale can be explained, it is necessary to note that, in order to avoid potential problems related to Common Method Variance (CMV) bias, the anonymity of the participants was guaranteed and the introduction of the questionnaire clearly indicated that there were no right or wrong answers. By doing so, we tried to reduce students' fear to participate and make them less likely to edit their responses in a "socially desirable" way.

Besides, the Harman's single-factor test was also conducted in IBM-SPSS software to check whether the correlation among variables was significantly influenced by their common source. The results of the analysis indicate that the items are not concentrated in one general factor. On the contrary, they load into several different factors. Consequently, this method also supports the idea that CMV did not significantly influence the results of this quantitative research.

To explore sample representativeness and non-response bias, differences between early and late respondents were tested. Early respondents were defined as the first 75% of the students who returned their questionnaires. The last 25% were considered late respondents and representative of students who did not fulfil the survey. Early and late respondents were compared for demographic (gender and entrepreneur in the family) and academic

characteristics (degree and year), and no significant differences were found (p-value > 0.05), suggesting that non-response bias was not an issue of the research.

The descriptive statistics of the items proposed for the scale are summarised in the Appendix.

5.4. Estimation of the measurement model

To evaluate the reliability and validity of the measurement scale, first the empirical tests were implemented by taking into consideration the global sample of 562 valid surveys collected in the study.

A covariance-based Structural Equations Model (CB-SEM) approach was used to test the psychometric properties and factorial structure of the proposed Model of Teachable Entrepreneurship Competencies (M-TEC). First, the measurement model was estimated with confirmatory factor analysis (CFA) to test the psychometric properties of the measurement scale (reliability and validity). The model was estimated using a robust maximum-likelihood procedure, which avoids the problems related to non-normality of data by providing the outputs' 'robust chi-square statistic' and 'robust standard errors'. These indicators are corrected for non-normality and, consequently, guarantee the validity of the model estimation.

A first estimation of the CFA showed the need to eliminate two of the items included in the proposed measurement scale, due to problems of convergent validity. In particular, items MAN4 related to Managerial Competencies and SOC7 related to Social Competencies showed standardized lambda coefficients clearly below the minimum required value of 0.5 (Steenkamp and van Trijp 1991), which implies bad convergent validity. According to this result, and following the model development approach proposed by Hair et al. (2010), the items were eliminated from the scale and the measurement model was re-estimated.

The results obtained for the goodness-of-fit indexes show a correct specification of the revised measurement model for the proposed M-TEC. In particular, there are three main classes of fit criteria: measures of absolute fit, measures of incremental fit, and measures of parsimonious fit (Hair et al. 2010). The statistics adopted in this research are given by EQS 6.1, widely used in the CB-SEM literature (Hair et al., 2010). The measures used are: Bentler-Bonett Non-Normed Fit Index (BBNNFI) and Root Mean Square Error of Approximation (RMSEA) for the measurement of overall model fit; Incremental Fit Index (IFI) and Comparative Fit Index (CFI) as measures of incremental fit; and Normed $\chi 2$ for the measurement of the parsimony of the model. The results summarized in Table 6 confirm that the BBNFI, BBNNFI, IFI, and CFI statistics clearly exceeded the recommended minimum value of 0.9. RMSEA were located within the maximum limit of 0.08, and normed $\chi 2$ took a value clearly under the recommended value of 3.0 (Hair et al. 2010).

Insert Table 6 here

The reliability of the measurement scale was evaluated using Cronbach's alpha, compound reliability and AVE coefficients. For each dimension of entrepreneurship competencies, the values of these statistics were above the required minimum values of 0.7 and 0.5 respectively (Hair et al. 2010), which supports the inner reliability of the proposed factors (Table 6).

The convergent validity of the scales was also confirmed (Table 6) because all the items were significant to a confidence level of 95% and their standardized lambda coefficients are higher than 0.5 (Steenkamp and van Trijp 1991).

The discriminant validity of the dimensions of the scale was tested following the procedure proposed by Fornell and Larcker (1981), which is considered a more demanding test of discriminant validity (Grewal et al. 2004). This method bases on the comparison of the AVE estimates for each pair of factors with the squared correlation estimate between

these two dimensions. If the AVE estimates are greater than the squared correlation, this is evidence of discriminant validity. Only one pair of factors out of 36 possible combinations did not pass the test (Leadership and Motivation - Social Competencies) (Table 7). Given the results for this procedure, there is reasonable support for the discriminant validity of the scale developed in this research.

Insert Table 7 here

5.5. Estimation of the second-order structural model

Once the psychometric properties of the scale were adequately examined, a second-order model was estimated to test the factorial structure underlying the M-TEC, using the robust maximum-likelihood procedure. Thus, we intended to confirm not only the statistical validity of the measurement instrument developed in the study, but also the conceptual structure of teachable entrepreneurship competencies theoretically proposed in the M-TEC - classification of the nine competencies in four categories-.

Table 8 summarizes the results for the estimation of the structural model, including the standardized coefficients for the factorial loadings of each item on the corresponding second-order factor, the statistical significance of each effect and the variance of each item explained by the factor (R^2). The goodness-of-fit indices supported the correct definition of the structural model (normed $\chi^2 = 2.9$; BBNNFI = 0.89; CFI = 0.90; IFI = 0.90; RMSEA = 0.06), which shows the correct specification of the four conceptual categories of teachable entrepreneurship competencies defined in the M-TEC (i.e., Entrepreneurial Competencies, Management and Business Competencies, Human Resources Competencies, and Interpersonal Competencies), as well as the specific dimensions forming each of them.

Insert Table 8 here

5.6. Application of the scale to causal modelling: Analysis in men and women subsamples

Based on the methodological recommendations of Barbarossa et al. (2012), to provide a final test for the validity of the proposed scale, a structural model was estimated to analyse the effect of the four categories of entrepreneurial competencies on students' self-perceived feasibility. This variable was selected for the study because it has been consistently identified in previous literature as a key antecedent of entrepreneurial intentions (Krueger et al. 2000; Sánchez 2011; Giordano et al. 2018). In particular, we consider that the four categories of teachable entrepreneurship competencies have a direct influence on feasibility, so that students who perceived to have higher entrepreneurship competencies will consider more feasible to develop an entrepreneurial project.

To provide robust validation of the M-TEC, in this second phase of the analyses, we validated the measurement scale separately in two student groups, classified according to their gender (men vs. women). For the purposes of this research, it is important to notice the relevance of the gender variable to understand entrepreneurial behavior among university populations better (Díaz-García and Jiménez-Moreno 2010; Ventura and Quero 2013; Rueda et al., 2014). In this regard, previous research has noted that the psychological development of entrepreneurs is strongly conditioned by their gender. For instance, men have traditionally shown higher entrepreneurial intentions than women (Delmar and Davidsson 2000; Fuentes and Sánchez 2010; Martín et al. 2005). On the contrary, women seem to undergo a more complex psychological process when deciding to start a new business, and they frequently require further external support (Ventura and Quero 2013). Therefore, it is plausible that men and women also assess their entrepreneurship competencies differently, which could condition the robustness and validity of the M-TEC proposed in this paper.

The estimation of the measurement model confirms the psychometric properties of the scale of teachable entrepreneurship competencies and the instrument used to measure feasibility, for both men and women. Accordingly, the results summarized in Table 9 support

the the correct definition of the structural model (goodness-of-fit indices within the recommended values for both subsamples considered), as well as the reliability and convergent validity of the scales. Additionally, the discriminant validity of the scale proposed for the different factors analysed is confirmed according to the procedure proposed by Fornell and Larcker (1981) (Table 10).

Insert Table 9 here

Insert Table 10 here

Once the psychometric properties of the scales for the teachable entrepreneurship competencies and feasibility were tested for both subsamples considered, we estimated a structural model to test the effect of competencies on feasibility. The structural model was estimaed separately for both men and women in order to provide a more robust test of the explanatory power of the teachable entrepreneurship competencies defined in this research. The results summarized in Table 11 show that the second-order structure proposed is also confirmed for the two subsamples considered. Espefically, the factorial loadings of each dimension of entrepreneurial competencies on the corresponding second-order factor (competency typology) were significant and higher than 0.5.

Table 11 also summarizes the results for the influence on feasibility of each typology of teachable entrepreneurship competencies, for the subsamples of men and women. In this regard, the first result to highlight is that the empirical evidence obtained supports the explanatory power of the teachable entrepreneurship competencies. In particular, the goodness-of-fit indices are within the recommended values for both men (Normed χ^2 = 2.67; BBNNFI = 0.91; CFI = 0.93; IFI = 0.94; RMSEA = 0.07) and women (Normed χ^2 = 2.41; BBNNFI = 0.89; CFI = 0.90; IFI = 0.90; RMSEA = 0.08), and the percentage of the variance of the dependant variable (i.e. feasibility) explained by the model is close to 50% (R^2 = 0.45 both for men and women). The results obtained also provide an interesting insight on how

perceived entrepreneurial competencies influence feasibility in the case of men and women. Thus, according to our results feasibility is positively influenced by Management & business competencies for the subsample of men, and by Entrepreneurial competencies and Management & business competencies for the subsample of women. Therefore, men seem to base their perceptions about entrepreneurship feasibility on their managerial competencies, whereas women do also link feasibility to their competency on identifying, evaluating and exploting opportunities. Finally, the empirical evidence obtained does not support a significant effect of Human resources competencies nor Social competencies on feasibility.

Insert Table 11 here

6. Discussion and conclusions

In this paper, we propose and empirically test a comprehensive Model of Teachable Entrepreneurship Competencies (M-TEC) based on the integration of previous literature on entrepreneurship competencies and education research. In doing so, we cover a relevant gap in literature by providing a classification of competencies that is more integrative and comprehensive than previous proposals (Morris et al. 2013). We also contribute to previous research by proposing a measurement instrument focused on behavioural competencies, which are the only types of competencies that are susceptible to be learned through entrepreneurship education (Man and Lau 2005). In contrast to previous proposals, the empirical validation of the measurement instrument is made following a multi-stage method that allows us to rigurously evaluate the psychometrical properties of the scale (i.e., reliability and validity), as well as to confirm the classification of competencies proposed in the study. Additionally, to provide a more rigorous test of the validity and explanatory power of the scale, we analyse the effect of each set of teachable entrepreneurship competencies on entrepreneurship feasibiliy, a key variable on entrepreneurial intentions research. In the next

sections, we develop the theroretical and managerial implications of this work, along with its limations and possible lines for future research.

6.1. Theoretical implications

From a theoretical perspective, this paper has important implications with regard to previous literature on entrepreneurship and education. First, we develop a comprehensive classification of entrepreneurship competencies based on an extensive revision of previous research in this field. We also categorize them according to the Iceberg Model (Boyatzis 1982; Spencer and Spencer 1993) to identify the entrepreneurship competencies that correspond to the behavioural level exclusively (Man and Lau 2005). As a result of this process, we propose a theoretical Model of Teachable Entrepreneurship Competencies (M-TEC), which includes nine typologies of competencies, aggregated in four main categories: Entrepreneurial Competencies, Management and Business Competencies, Human Resources Competencies, and Interpersonal Competencies. In particular, Entrepreneurial Competencies are conformed by Identification of Opportunities, Evaluation of Opportunities, and Exploitation of Opportunities. Similarly, the Management and Business Competencies include three dimensions: Strategic Competencies, Management Competencies, Previous Knowledge and Experience of the business. Besides, Human Resources Competencies are formed by two dimensions: Leadership and Motivation and Human Resources Management. Finally, Interpersonal Competencies form a fourth category by themselves, with only one typology labelled as Social Competencies.

Therefore, and in contrast to other models that have mostly focused on specific and too limited dimensions of entrepreneurship competencies (Man and Lau 2005; Morris et al. 2013; Sánchez 2011; Wu 2009), the M-TEC is a very comprehensive and integrative framework. At the same time, the M-TEC focuses on behavioural competencies exclusively, whereas previous scholars have frequently considered unconscious, conscious and behavioural

entrepreneurship competencies indistinctively (Bamiatzi et al. 2015; Mitchelmore and Rowley 2013), even though many of them cannot be learned through formal teaching and training.

Second, we develop and test a measurement scale to asses the different typologies of behavioural entrepreneurship competencies, following a rigorous methodology based both on an extensive revision of previous research on this field, and on robust statistical analyses through Structural Equations Modelling. In doing so, we provide scholars and practitioners with a structured, solid, reliable and valid measurement tool to operationalize the inclusion of competencies in models of entrepreneurship intentions and behaviours. On the contrary, previous empirical studies have frequently tested their scales only in an exploratory way, through exploratory factor analyses or principal component analyses (Bamiatzi et al. 2015; Mitchelmore and Rowley 2013), which do not allow them to corroborate the reliability and validity of their proposals.

Third, the M-TEC can complement other international and quite practical models such as the EntreComp: The Entrepreneurship Competence Framework proposed by the European Comission to develop the entrepreneurial capacity within the EU citizens and organizations. Additionally to the competencies proposed by the EntreComp framework, the M-TEC integrates management competencies, such as sales and marketing, which are basic for the survival of any entrepreneurial initiative. M-TEC also includes the development of business systems that are the base for scaling an entrepreneurial initiative. Finally, the use of technology is also essential for an economy transitioning to a digital format. Another model that the M-TEC can complement is the TrepCamp Competency Program, the entrepreneurial initiative by Santander Bank. Unlike the EntreComp, the TrepCamp program is very specific itself and is comprised of 20 skill sets and mindsets grouped in 7 categories. This is a hybrid program, in the way that it has an online and on-site part. The M-TEC has the potential to

complement TrepCamp since it offers a wider perspective on competencies that enhance entrepreneurial activity, which is aslo the TrepCamp's main objetive.

6.2. Managerial implications

Our research also has relevant implications for practitioners, especially in the scope of entrepreneuship education. In this sense, the M-TEC specifically focuses on entrepreneurial competencies belonging to the behavioural level, which are the ones susceptible to be learned through formal education. Accordingly, this framework is idoneous to identify and define the set of competencies to be included in the design of academic courses focused on entrepreneurship, either at universities or in other levels of formal educacion. Addionally, it can also be used in other types of learning processes, such us executive/entrepreneurs trainings or moocs, among others.

Besides, the measurement instrument developed in this paper has been designed for self-evaluation in the nine typologies of entrepreneurial competencies proposed in the M-TEC. Therefore, it is a valuable instrument to assess students' degree of self-perceived competency in the different areas covered by the model, either before or after taking a course or training programme, or even to assess the perceived progress in these competencies.

6.3. Limitations and future research lines

To conclude the paper, it is necessary to mention that in spite of the systematic methodology followed throughout the development of this study, the research that was carried out does present some limitations. First, the comprehensiveness of the M-TEC can be considered a limitation in itself, specifically regarding the length of the measurement instrument developed, which may difficult its application in some contexts. However, we consider that the robustness of the scale counterbalance this eventual weakness. Second, our empirical analyses focused on Mexico and specifically on the Monterrey Institute of Technology and Higher Education, which could limit the generalization of the results.

Therefore, it would be interesting to test the instrument in other geographical areas in order to examine potential cross-cultural differences. Nonetheless, Mexico is highly representative of the Latin American countries regarding entrepreneurship -according to the GEM Report 2014 (Singer et al. 2015)-. Additionally, we chose the Monterrey Institute of Technology and Higher Education as a reference because it is a leading academic institution in Latin America in training and support for entrepreneurship.

Future application of the M-TEC and the measurement scale proposed in this paper must also take into consideration the scope of competencies developed in specific academic or training programmes. In this regard, the framework may not be completely applicable to a course if this does not develop some of the competencies included in the measurement instrument. Thus, those courses focusing on specific entrepreneurship competencies would require and adaptation of the instrument to use only parts of it.

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8. Appendix – Descriptive statistics

Insert Appendix here

Table 1.

Levels of competencies and their component factors

Level	Factor	Definition
Behavioural	Knowledge	Understanding of principles, facts and processes
	Skills	Ability to perform some physical or mental task
	Experience	Multifaceted construct that reflects an opportunity to learn and transfer knowledge from the general to a specific job
Conscious	Values	Part of the self-images and social role of the person, through which he/she evaluates his/her image and social function
	Attitudes	Feelings or assertions for or against a particular topic
	Abilities	Permanent features that are useful for performing a range of tasks
	Self-images	The person's perception and evaluation of him/herself
	Social role	The person's perception of how he/she "fits" with respect to the expectations of others
Unconscious	Personality	Physical characteristics and responses consistent with situations or information
	Beliefs	Attributes reflected in perceived desirability and feasibility
	Motives	Things that a person consistently thinks or wants that lead him/her to action

Notes: The table synthesizes the tipologies of competencies and its classification in each of the three levels defined in the Iceberg Model (Boyatzis 1982; Spencer and Spencer 1993).

Table 2.

Previous models of entrepreneurship competencies

Authors	Approach	Domain	Categories of entrepreneurship competencies
Chandler & Jansen (1992)	Empirical	Managerial or other	Conceptual competencies; Opportunity competencies; Exploitation competencies; Technical competencies; Political competencies
Winterton (2001)	Theoretical	Managerial or other	Cognitive competencies; Functional competencies; Personal competencies; Meta-competencies
Onstenk (2003)	Theoretical	Education	Entrepreneurship competencies; Management competencies; Entrepreneurship competencies
Man & Lau (2005)	Empirical	Managerial or other	Entrepreneurship competencies
Hayton & Kelley (2006)	Theoretical	Managerial or other	Innovating competencies; Brokering competencies; Championing competencies; Sponsoring competencies
Wu (2009)	Empirical	Managerial or other	Entrepreneurship competencies
Rathna & Vijaya (2009)	Empirical	Managerial or other	Management competencies; Interpersonal competencies; Decision competencies; Ethical competencies; Venturing competencies; Managerial competencies; Learning competencies
Ahmad et al. (2010a)	Theoretical	Managerial or other	Strategic competencies; Conceptual competencies; Opportunity competencies; Leadership competencies; Relational competencies; Technical competencies; Personal competencies
Ahmad et al. (2010b)	Empirical	Managerial or other	Strategic competencies; Conceptual competencies; Opportunity competencies; Relational competencies; Learning competencies; Personal competencies; Ethical competencies; Familiarity competencies
Mitchelmore & Rowley (2010)	Theoretical	Managerial or other	Entrepreneurship competencies; Business and Management competencies; Relational and human competencies; Interpersonal competencies
van Dam et al. (2010)	Empirical	Education	Entrepreneurial knowledge; Career adaptability; Occupational self-efficacy; Creative thinking; Networking skill; Teamwork skill; Entrepreneurial climate; Education; Entrepreneurial behaviour
Ahmad et al. (2011)	Empirical	Managerial or other	Strategic competencies; Commitment competencies; Conceptual competencies; Opportunity competencies; Leadership competencies; Relational competencies; Learning competencies; Personal competencies; Technical competencies; Ethical competencies; Social responsibility competencies; Familiness competencies
Sánchez (2011)	Empirical	Education	Entrepreneurship competencies

Rasmussen et al. (2011)	Empirical	Education	Opportunity competencies; Exploitation competencies; Defensive competencies
Chell (2013)	Theoretical	Managerial or other	Cognitive competencies; Personality competencies; Social and interpersonal competencies; Specific business competencies; Motivational competencies; Learning competencies
Morris et al. (2013)	Theoretical	Education	Entrepreneurship competencies
Alcaráz et al. (2014)	Empirical	Education	Entrepreneurship competencies
Dimitratos et al. (2014)	Empirical	Managerial or other	Innovation competencies; Proactive competencies; Risk taking competencies; Entrepreneurship competencies; Networking competencies; Autonomy competencies
Bamiatzi et al. (2015)	Empirical	Managerial or other	Entrepreneurship competencies; Management competencies; Human relations competencies; Personal competencies
Tehseen & Ramayah (2015)	Theoretical	Managerial or other	Strategic competencies; Conceptual competencies; Opportunity competencies; Learning competencies; Personal competencies; Ethical competencies; Familiness competencies

Notes: The table summarises the most relevant theoretical models and classifications of entrepreneurship competencies identified in previous literature.

Table 3

Model of Teachable Entrepreneurship Competencies (M-TEC)

Categories	Detailed competencies	Authors
Entrepreneurship competencies	Identification of opportunities (exploring the environment; identifying opportunities) Evaluation of opportunities (risk assessment; vision of the business) Explotation of opportunities (idea generation; product innovation; value creation)	Chandler & Jansen, 1992; Man et al., 2002; Onstenk, 2003; Hayton & Kelley, 2006; Man & Lau, 2005; Wu, 2009; Ahmad et al., 2010a, 2010b; Mitchelmore & Rowley, 2010, 2013; Rasmussen et al., 2011; Chell, 2013; Morris et al., 2013; Alcaráz et al., 2014
Management and business competencies	Strategic competencies (acquisition and development of resources; preparation of business plans; implementation of strategies; setting of objectives; management style) Management competencies (planning skills, business operational skills, financial and budgetary skills; marketing skills; technical skills; monitoring and control skills; development of management systems) Previous knowledge and experience of the business (business experience; familiarity with industry; familiarity with the market)	Chandler & Jansen, 1992; Winterton, 2001; Man et al., 2002; Onstenk, 2003; Man & Lau, 2005; Le Deist & Winterton, 2005; Hayton & Kelley, 2006; Wu, 2009; Oosterbeek et al., 2010; Ahmad et al., 2010a, 2010b; Mitchelmore & Rowley, 2010, 2013; Rasmussen et al., 2011; Chell, 2013; Morris et al., 2013
Human resources competencies	Leadership and motivation (leadership skills; delegation skills; teamwork; motivation skills) Human resources management (organizational culture management; recruitment skills; human resources; employee development; employee performance management; creation of a culture of cooperation and mutual trust)	Chandler & Jansen, 1992; Winterton, 2001; Man et al., 2002; Onstenk, 2003; Hayton & Kelley, 2006; Wu, 2009; Ahmad et al., 2010a, 2010b; Mitchelmore & Rowley, 2010, 2013; Chell, 2013; Alcaráz et al., 2014
Interpersonal competencies	Social competencies (interpersonal skills; customer portfolio management; decision making; written communication; verbal communication; negotiation skills; relationship management; conflict resolution; persuasion; political competences)	Winterton, 2001; Man et al., 2002; Onstenk, 2003; Man & Lau, 2005; Hayton & Kelley, 2006; Wu, 2009; Mitchelmore & Rowley, 2010; Ahmad et al., 2010a, 2010b; Rasmussen et al., 2011; Mitchelmore & Rowley, 2013; Chell, 2013; Morris et al., 2013; Alcaráz et al., 2014; Dimitratos et al., 2014

Notes: The table summarises the components of the Model of Teachable Entrepreneurship Competencies (M-TEC) that include the four typologies of competencies that have been most consistently identified in previous literature: entrepreneurship, management and business, human resources and interpersonal competencies.

Table 4.

Pool of initial items

Categories	Dimensions	Items	Authors
Entrepreneurship competencies	Identification of opportunities (IDE)	IDE1. I accurately perceive unmet consumer needs	Chandler & Jansen (1992); Chandler & Hanks (1994); Anna et al. (2000); Man (2001); Baum et al. (2001); Man et al. (2008); Ahmad et al. (2010a, 2010b)
		IDE2. I spend considerable time and energy looking for products or services that will provide real benefits for my customers	
		IDE3. One of my greatest strengths is identifying goods and services people want	
	Evaluation of opportunities (EVA)	EVA1. I can distinguish between profitable opportunities and not-so-profitable opportunities	Tang et al. (2012); Morris et al. (2013)
		EVA2. I have a knack for telling high-value opportunities apart from low-value opportunities	
		EVA3. When facing multiple opportunities, I am able to select the good ones	
	Exploitation of opportunities (EVA)	EXP1. I am capable of generating creative business ideas	Bamiatzi et al. (2015)
		EXP2. I envision taking advantage of opportunities	
		EXP3. I am capable of formulating and implementing strategies	
Management and business competencies	Strategic competencies (STR)	STR1. I am able to develop and establish longer term directions for the firm, e.g. on the business scale, objetctives, goals or projects	Man (2001); Man et al. (2002); Man et al. (2008); Ahmad et al. (2010a, 2010b); Tehseen & Ramayah (2015)
		STR2. I am able to determine long-term issues, problems, or opportunities	
		STR3. I am capable of monitoring progress toward strategic goals	
		STR4. I am capable of evaluating results against strategic goals	
		STR5. I am able to determine strategic actions by weighing costs and benefits	
	Management competencies (MAN)	MAN1. Manage marketing and sales	Bamiatzi et al. (2015)
		MAN2. Manage the financials	
		MAN3. Develop operational systems	
		MAN4. Ability to use technology	
		MAN5. Manage the business	
		MAN6. Acquire of appropiate resources	
Human resources competencies	Previous knowledge and experience (KNE)	KNE1. I have some sort of previous entrepreneurial experiences	Lerner & Almor (2002)
		KNE2. I am familiar with a certain industry	
		KNE3. I am familiar with the market	
		KNE4. I have previous experience managing a business am familiar with the market	
	Leadership and motivation (LMO)	LIMO1. Leadership skills	Bamiatzi et al. (2015)
		LIMO2. Motivate others	
		LIMO3. Delegate effectively	
	Human resources management (HUM)	HUM1. Employee development	Mitchelmore & Rowley (2013)
		HUM2. Managing employee performance	
		HUM3. Human relation management skills	
		HUM4. Employee relations	
		HUM5. Hiring skills	
Interpersonal competences	Social competencies (SOC)	SOC1. I'm really good at negotiating with others	Man (2001); Ahmad et al. (2010a, 2010b); Man et al. (2008)
		SOC2. I'm really good interacting with others	
		SOC3. I'm really good at resolving disputes among others	
		SOC4. I'm really good at maintain a personal network of contacts	
		SOC5. I'm really good at understand what others mean by their words and actions	
		SOC6. I'm really good at verbally communicate with others effectively	
		SOC7. I'm really good at communicating in a written form with others effectively	
		SOC8. I'm really good at developing long-term trusting relationships with others	

Notes: The table summarises the initial items forming the measurement scales for each of the typologies of competencies identified en the Model of Teachable Entrepreneurship Competencies (M-TEC), along with the original papers that served as the basis for their proposal.

Table 5.

Description of the sample

Variable	%	Variable	%
Gender		Area of studies	
Male	56.8	Business	28.2
Female	43.2	Engineering	30.9
Year		Health	6.7
1st year	13.1	Architecture and Design	19.9
2nd year	38.7	Humanities	14.3
3rd year	26.7	Entrepreneur in the family	
4^{rh} year	21.5	Yes	48.3
		No	51.7

Notes: The table summarises the socio-demographic description of the sample used in the empirical research, in terms of gender, area of studies, year of studies, and the existence of entrepreneurs in their family.

Table 6.

Measurement model (Confirmatory Factor Analysis)

Factor	Item	Stand. Coeff.	R²	Cronbach's alpha	Composite Reliability	AVE
Identification of opportunities (IDE)	IDE1	0.77	0.59	0.88	0.88	0.70
	IDE2	0.84	0.71			
	IDE3	0.90	0.81			
Evaluation of opportunities (EVA)	EVA1	0.83	0.69	0.89	0.89	0.72
	EVA2	0.89	0.80			
	EVA3	0.83	0.69			
Exploitation of opportunities (EXP)	EXP1	0.63	0.40	0.84	0.86	0.67
	EXP2	0.88	0.77			
	EXP3	0.92	0.84			
Strategic competencies (STR)	STR1	0.79	0.62	0.92	0.92	0.70
	STR2	0.76	0.58			
	STR3	0.90	0.81			
	STR4	0.87	0.76			
	STR5	0.84	0.71			
Management competencies (MAN)	MAN1	0.70	0.49	0.87	0.87	0.58
	MAN2	0.77	0.60			
	MAN3	0.68	0.46			
	MAN5	0.87	0.75			
	MAN6	0.76	0.58			
Previous knowledge and experience (KNE)	KNE1	0.71	0.51	0.89	0.90	0.69
	KNE2	0.75	0.56			
	KNE3	0.93	0.87			
	KNE4	0.90	0.81			
Leadership and motivation (LMO)	LMO1	0.79	0.62	0.77	0.77	0.53
	LMO2	0.77	0.60			
	LMO3	0.62	0.39			
Human resource management (HUM)	HUM1	0.81	0.65	0.89	0.89	0.62
	HUM2	0.86	0.74			
	HUM3	0.81	0.66			
	HUM4	0.72	0.52			
	HUM5	0.71	0.51			
Social competencies (SOC)	SOC1	0.71	0.51	0.87	0.87	0.50
	SOC2	0.78	0.60			
	SOC3	0.74	0.55			
	SOC4	0.73	0.54			
	SOC5	0.66	0.44			
	SOC6	0.66	0.44			
	SOC8	0.63	0.40			

Goodness of fit índices: Normed χ^2 = 2.59; BBNNFI = 0.91; CFI = 0.92; IFI = 0.92 ;RMSEA = 0.05

Notes: The table summarises the results of the Confirmatory Factor Analysis developed to test the psicometric properties of the measurement scales, including reliability (Cronbach's alpha, Composite Reliability and AVE) and convergent vality (standardized coefficients), as well as the goodness-of-fit indices for the measurement model.

Table 7.

Results for Fornell and Larker's criterion for discriminant validity

	Identification of opportunities (IDE)	Evaluation of opportunities (EVA)	Exploitation of opportunities (EXP)	Strategic competencies (STR)	Management competencies (MAN)	Previous knowledge and experien (KNE)	Leadership and motivation (LMO)	Human resource management (HUM)	Social competencies (SOC)
Identification of opportunities (IDE)	**0.70[a]**								
Evaluation of opportunities (EVA)	0.40	**0.72[a]**							
Exploitation of opportunities (EXP)	0.49	0.58	**0.67[a]**						
Strategic competencies (STR)	0.23	0.50	0.58	**0.70[a]**					
Management competencies (MAN)	0.11	0.34	0.31	0.38	**0.58[a]**				
Previous knowledge and experience (KNE)	0.15	0.30	0.26	0.24	0.52	**0.69[a]**			
Leadership and motivation (LMO)	0.24	0.28	0.34	0.34	0.31	0.24	**0.53[a]**		
Human resource management (HUM)	0.10	0.19	0.18	0.29	0.52	0.19	0.41	**0.62[a]**	
Social competencies (SOC)	0.26	0.35	0.35	0.37	0.25	0.18	0.69	0.34	**0.50[a]**

a= AVE Coefficient for the factor. Off diagonal elements are the squared correlations among factors.

Notes: The table summarises the results of the analysis of discriminant validity following the procedure proposed by Fornell and Larcker (1981), which requires comparison of the AVE estimates for each pair of factors with the squared correlation estimate between these two dimensions. If the AVE estimates are greater than the squared correlation, this is evidence of discriminant validity.

Table 8.

Structural model (second-order model)

Path	Stand. Coeff.	R^2
Entrepreneurship competencies		
→ Identification of opportunities	0.74**	0.55
→ Evaluation of opportunities	0.85**	0.72
→ Exploitation of opportunities	0.91**	0.83
Management and business competencies		
→ Strategic competencies	0.80**	0.64
→ Management competencies	0.83**	0.69
→ Previous knowledge & experience	0.71**	0.51
Human resources competencies		
→ Leadership and motivation	0.87**	0.76
→ Human resource management	0.74**	0.54
Teachable competencies of entrepreneurship		
→ Entrepreneurship competencies	0.82**	0.67
→ Management & business competencies	0.83**	0.69
→ Human resources competencies	0.92**	0.84
→ Social (Interpersonal) competencies	0.97**	0.93

** p-value < 0.05

Notes: The table summarizes the results for the estimation of the structural model, including the standardized coefficients for the factorial loadings of each item on the corresponding second-order factor, the statistical significance of each effect and the variance of each item explained by the factor (R^2).

Table 9.

Measurement model (Confirmatory Factor Analysis): MEN vs WOMEN

Factor	Item	Stand. Coeff. (Man vs Woman)	R² (Man vs Woman)	Cronbach's alpha (Man vs Woman)	Composite Reliability (Man vs Woman)	AVE (Man vs Woman)
Identification of opportunities (IDE)	IDE1	0.76 / 0.79	0.57 / 0.62	0.87 / 0.90	0.86 / 0.90	0.67 / 0.75
	IDE2	0.83 / 0.86	0.69 / 0.74			
	IDE3	0.87 / 0.94	0.76 / 0.88			
Evaluation of opportunities (EVA)	EVA1	0.82 / 0.85	0.67 / 0.72	0.88 / 0.89	0.88 / 0.90	0.71 / 0.74
	EVA2	0.88 / 0.90	0.78 / 0.81			
	EVA3	0.83 / 0.83	0.69 / 0.69			
Exploitation of opportunities (EXP)	EXP1	0.63 / 0.64	0.39 / 0.41	0.85 / 0.83	0.86 / 0.85	0.68 / 0.66
	EXP2	0.90 / 0.85	0.82 / 0.73			
	EXP3	0.91 / 0.92	0.83 / 0.85			
Strategic competencies (STR)	STR1	0.73 / 0.85	0.54 / 0.73	0.90 / 0.93	0.91 / 0.94	0.66 / 0.74
	STR2	0.74 / 0.78	0.55 / 0.60			
	STR3	0.88 / 0.92	0.78 / 0.84			
	STR4	0.87 / 0.88	0.76 / 0.77			
	STR5	0.83 / 0.87	0.68 / 0.75			
Management competencies (MAN)	MAN 1	0.71 / 0.70	0.51 / 0.49	0.87 / 0.86	0.87 / 0.87	0.58 / 0.57
	MAN 2	0.80 / 0.73	0.64 / 0.53			
	MAN 3	0.70 / 0.64	0.49 / 0.41			
	MAN 5	0.84 / 0.90	0.71 / 0.81			
	MAN 6	0.74 / 0.77	0.55 / 0.60			
Previous knowledge and experience (KNE)	KNE1	0.72 / 0.70	0.52 / 0.50	0.90 / 0.88	0.90 / 0.89	0.70 / 0.67
	KNE2	0.74 / 0.76	0.54 / 0.58			
	KNE3	0.94 / 0.91	0.89 / 0.82			
	KNE4	0.92 / 0.88	0.85 / 0.77			
Leadership and motivation (LMO)	LMO1	0.79 / 0.79	0.63 / 0.62	0.80 / 0.74	0.79 / 0.75	0.57 / 0.51
	LMO2	0.83 / 0.72	0.69 / 0.51			
	LMO3	0.62 / 0.61	0.39 / 0.37			
Human resource management (HUM)	HUM 1	0.82 / 0.80	0.67 / 0.63	0.89 / 0.88	0.89 / 0.89	0.63 / 0.62
	HUM 2	0.84 / 0.90	0.70 / 0.80			
	HUM 3	0.80 / 0.84	0.63 / 0.70			
	HUM 4	0.77 / 0.66	0.59 / 0.44			
	HUM 5	0.72 / 0.70	0.52 / 0.49			
Social competencies (SOC)	SOC1	0.77 / 0.66	0.59 / 0.43	0.88 / 0.86	0.88 / 0.87	0.51 / 0.49
	SOC2	0.78 / 0.79	0.61 / 0.62			
	SOC3	0.75 / 0.73	0.56 / 0.53			
	SOC4	0.76 / 0.72	0.58 / 0.52			
	SOC5	0.66 / 0.66	0.44 / 0.44			
	SOC6	0.68 / 0.63	0.46 / 0.40			
	SOC8	0.59 / 0.68	0.35 / 0.47			
Feasibility (FEA)	FEA1	0.83 / 0.85	0.69 / 0.73	0.90 / 0.92	0.90 / 0.93	0.70 / 0.76
	FEA2	0.86 / 0.92	0.74 / 0.85			

	FEA3	0.88 / 0.92	0.77 / 0.85			
	FEA4	0.76 / 0.80	0.58 / 0.64			

Goodness of fit índices:
  Men: Normed χ^2 = 1.78; BBNNFI = 0.91; CFI = 0.92; IFI = 0.92; RMSEA = 0.05
  Women: Normed χ^2 = 1.71; BBNNFI = 0.90; CFI = 0.91; IFI = 0.92; RMSEA = 0.06

Notes: The table summarises the results of the Confirmatory Factor Analysis developed to test the psicometric properties of the measurement scales, including reliability (Cronbach's alpha, Composite Reliability and AVE) and convergent vality (standardized coefficients), as well as the goodness-of-fit indices for the measurement model.

Table 10.

Results for Fornell and Larker's criterion for discriminant validity: MEN vs WOMEN

	Identification of opportunities (IDE)	Evaluation of opportunities (EVA)	Exploitation of opportunities (EXP)	Strategic competencies (STR)	Management competencies (MAN)	Previous knowledge and experien (KNE)	Leadership and motivation (LMO)	Human resource management (HUM)	Social competencies (SOC)	Feasibility (FEA)
Identification of opportunities (IDE)	**0.67[a] / 0.75[a]**									
Evaluation of opportunities (EVA)	0.45 / 0.35	**0.71[a] / 0.74[a]**								
Exploitation of opportunities (EXP)	0.52 / 0.46	0.59 / 0.56	**0.68[a] / 0.66[a]**							
Strategic competencies (STR)	0.25 / 0.21	0.42 / 0.58	0.52 / 0.64	**0.66[a] / 0.74[a]**						
Management competencies (MAN)	0.21 / 0.12	0.34 / 0.25	0.28 / 0.24	0.22 / 0.28	**0.58[a] / 0.57[a]**					
Previous knowledge and experience (KNE)	0.34 / 0.19	0.38 / 0.30	0.30 / 0.38	0.36 / 0.36	0.16 / 0.22	**0.70[a] / 0.67[a]**				
Leadership and motivation (LMO)	0.18 / 0.05	0.40 / 0.26	0.35 / 0.27	0.36 / 0.41	0.53 / 0.49	0.23 / 0.28	**0.57[a] / 0.51[a]**			
Human resource management (HUM)	0.29 / 0.19	0.27 / 0.27	0.27 / 0.40	0.28 / 0.40	0.20 / 0.28	0.64 / 0.76	0.26 / 0.36	**0.63[a] / 0.62[a]**		
Social competencies (SOC)	0.15 / 0.05	0.20 / 0.18	0.21 / 0.14	0.27 / 0.32	0.23 / 0.16	0.36 / 0.28	0.48 / 0.49	0.42 / 0.37	**0.51[a] / 0.49[a]**	
Feasibility (FEA)	0.24 / 0.25	0.31 / 0.34	0.36 / 0.44	0.26 / 0.30	0.34 / 0.30	0.20 / 0.23	0.28 / 0.28	0.14 / 0.26	0.10 / 0.11	**0.70[a] / 0.76[a]**

a= AVE Coefficient for the factor. Off diagonal elements are the squared correlations among factors. Values on the left and below the diagonal correspond to the sample of men, and values to the right and above the diagonal correspoond to the sample of women.

Notes: The table summarises the results of the analysis of discriminant validity following the procedure proposed by Fornell and Larcker (1981), which requires comparison of the AVE estimates for each pair of factors with the squared correlation estimate between these two dimensions. If the AVE estimates are greater than the squared correlation, this is evidence of discriminant validity.

Table 11.

Structural model: MEN vs WOMEN

	MEN		WOMEN	
Path	**Stand. Coeff.**	**R²**	**Stand. Coeff.**	**R²**
Entrepreneurship competencies (2ⁿᵈ order)				
→ Identification of opportunities	0.77**	0.59	0.75**	0.56
→ Evaluation of opportunities	0.87**	0.75	0.80**	0.64
→ Exploitation of opportunities	0.90**	0.81	0.94**	0.87
Management and business competencies (2ⁿᵈ order)				
→ Strategic competencies	0.75**	0.57	0.70**	0.50
→ Management competencies	0.84**	0.71	0.95**	0.90
→ Previous knowledge & experience	0.75**	0.56	0.71**	0.51
Human resources competencies (2ⁿᵈ order)				
→ Leadership and motivation	0.78**	0.60	0.74**	0.54
→ Human resource management	0.85**	0.72	0.83**	0.68
Feasibility		0.45		0.45
← Entrepreneurship competencies	n.s.		0.56**	
← Management & business competencies	0.67**		0.38**	
← Human resources competencies	n.s.		n.s.	
← Social (Interpersonal) competencies	n.s.		n.s.	

** p-value < 0.05

Notes: The table summarizes the results for the estimation of the structural model, including the standardized coefficients for the factorial loadings of each item on the corresponding second-order factor, the statistical significance of each effect and the variance of each item explained by the factor (R^2).

Appendix.

Descriptive statistics

Items	Mean	s.d.	Asymmetry	Kurtosis
IDE1. I accurately perceive unmet consumer needs	5.03	1.34	-0.36	-0.31
IDE2. I spend considerable time and energy looking for products or services that will provide real benefits for my customers	5.13	1.36	-0.53	-0.15
IDE3. One of my greatest strengths is identifying goods and services people want	5.17	1.32	-0.44	-0.25
EVA1. I can distinguish between profitable opportunities and not-so-profitable opportunities	5.04	1.46	-0.55	-0.19
EVA2. I have a knack for telling high-value opportunities apart from low-value opportunities	4.93	1.39	-0.54	-0.04
EVA3. When facing multiple opportunities, I am able to select the good ones	4.92	1.37	-0.37	-0.27
EXP1. I am capable of generating creative business ideas	5.14	1.46	-0.66	-0.04
EXP2. I envision taking advantage of opportunities	4.91	1.51	-0.51	-0.28
EXP3. I am capable of formulating and implementing strategies	4.96	1.52	-0.50	-0.34
STR1. I am able to develop and establish longer term directions for the firm, e.g. on the business scale, objetctives, goals or projects	5.27	1.41	-0.57	-0.39
STR2. I am able to determine long-term issues, problems, or opportunities	5.62	1.21	-0.70	-0.18
STR3. I am capable of monitoring progress toward strategic goals	5.45	1.37	-0.74	-0.04
STR4. I am capable of evaluating results against strategic goals	5.42	1.34	-0.77	0.25
STR5. I am able to determine strategic actions by weighing costs and benefits	5.19	1.53	-0.73	-0.04
MAN1. Manage marketing and sales	3.95	1.73	-0.21	-0.82
MAN2. Manage the financials	3.83	1.94	-0.01	-1.14
MAN3. Develop operational systems	4.06	1.88	-0.21	-1.01
MAN4. Ability to use technology *(eliminated)*	5.49	1.51	-1.12	0.97
MAN5. Manage the business	4.68	1.73	-0.52	-0.56
MAN6. Acquire of appropiate resources	4.64	1.73	-0.48	-0.61
KNE1. I have some sort of previous entrepreneurial experiences	4.05	2.00	0.02	-1.19
KNE2. I am familiar with a certain industry	4.16	1.92	-0.15	-1.07
KNE3. I am familiar with the market	3.51	1.93	0.19	-1.17
KNE4. I have previous experience managing a business am familiar with the market	3.61	2.04	0.21	-1.25
LIMO1. Leadership skills	5.49	1.30	-0.86	0.56
LIMO2. Motivate others	5.70	1.17	-0.76	0.34
LIMO3. Delegate effectively	5.50	1.25	-0.71	0.25
HUM1. Employee development	4.87	1.61	-0.65	-0.15
HUM2. Managing employee performance	4.98	1.54	-0.57	-0.22
HUM3. Human relation management skills	4.66	1.64	-0.46	-0.46
HUM4. Employee relations	5.61	1.37	-1.09	1.05
HUM5. Hiring skills	4.91	1.59	-0.59	-0.24
SOC1. I'm really good at negotiating with others	5.01	1.56	-0.54	-0.43
SOC2. I'm really good interacting with others	5.61	1.41	-1.04	0.69
SOC3. I'm really good at resolving disputes among others	5.64	1.28	-0.98	0.79
SOC4. I'm really good at maintain a personal network of contacts	5.14	1.49	-0.66	-0.01
SOC5. I'm really good at understand what others mean by their words and actions	5.90	1.16	-1.27	1.78
SOC6. I'm really good at verbally communicate with others effectively	5.39	1.39	-0.81	0.28
SOC7. I'm really good at communicating in a written form with others effectively *(eliminated)*	5.73	1.29	-0.91	0.20
SOC8. I'm really good at developing long-term trusting relationships with others	6.04	1.18	-1.56	2.87
FEA1. Creating a company when I finish my studies or even before would be easy for me	3.82	1.60	-0.00	-0.56
FEA2. I see it very feasible to create my own company when I finish my studies or even before	4.24	1.72	-0.23	-0.76
FEA3. It would be easy for me to create my own company when I finish my studies or even before	3.85	1.62	0.00	-0.73

FEA4. I am in good position to create my own company when I finish my studies or even before	4.89	1.86	-0.56	-0.74

Notes: The Appendix summarises the descriptive statistics of the items proposed for the scale of entrepreneurship competencias.