



European Research on Management and Business Economics

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Academic entrepreneurship in Spanish universities: An analysis of the determinants of entrepreneurial intention

Emprendimiento académico en las universidades españolas: Un análisis de los determinantes de la intención emprendedora

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ARTICLE INFO

Article history:

Received 2 May 2016

Accepted 13 January 2017

Available online xxx

JEL classification:

M13

M31

M10

Keywords:

Academic entrepreneurship

Entrepreneur intention

Theory of Planned Behaviour (TPB)

Spin-off

ABSTRACT

Academic entrepreneurship is the process by which an individual or group of individuals linked through their work to a university or research centre use knowledge created in their research to set up business ventures or spin-offs. With the Theory of Planned Behaviour as basis, the influence of attitudes, subjective norms, and perceived control on academics' entrepreneurial intentions was studied. The instrument was a survey conducted of 1178 Spanish university academics in various fields of knowledge, professional categories, and levels of seniority in their institution. A structural equation model identified as the main antecedent of entrepreneurial intention the attitude towards entrepreneurship. This was in turn influenced by creativity, perceived utility, and entrepreneurial experience.

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1. Introduction

In the last three decades there has been a significant increase in the generation of spin-offs at a global level, probably due to the generalization of interest in the most efficient and effective use of scientific knowledge, especially that generated through research financed with public funds. Currently, academic spin-offs are considered as an important instrument due to their contribution to the generation of businesses, the creation of jobs, their contribution to maintaining the balance of the economic system, as well as their positive influence on innovative processes.

In parallel to the increase in university financed spin-offs, academics have also been interested in studying these academically to learn more about aspects such as the most effective university policies for promoting them, the business process followed for their creation and the personal characteristics of the academics who

have taken the step of creating a company of this type (Abreu & Grinevich, 2013; Guerrero & Urbano, 2014).

According to the theories of planned behaviour (TPB), entrepreneurial intentions (EI) would be the key to understanding the entrepreneurial process and the first step in the long and complex process of entrepreneurship (Krueger & Carsrud, 1993; Krueger, Reilly, & Carsrud, 2000; Kolvereid, 2016). Intentions have been proved to be the best predictors of individual behaviours particularly when the behaviour is rare, hard to observe or involves unpredictable time lags (Krueger & Brazeal, 1994). As indicated by Bird (1988), the most proximal predictor of the decision to become an entrepreneur is seen in EI, signalling how intensely one is prepared and how much effort one is planning to commit in order to carry out entrepreneurial behaviour. Even if people may have significant potential, they will refrain from making the transition into entrepreneurship when they lack the intentions (Krueger et al., 2000).

In short, the aim of this study is to test the influence that certain variables, identified as relevant in other studies on entrepreneurship and academic entrepreneurship, have on the intention of academics in Spanish universities to create a spin-off.

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<http://dx.doi.org/10.1016/j.iedeen.2017.01.001>

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Please cite this article in press as: Miranda, F. J., et al. Academic entrepreneurship in Spanish universities: An analysis of the determinants of entrepreneurial intention. *European Research on Management and Business Economics* (2017), <http://dx.doi.org/10.1016/j.iedeen.2017.01.001>

The United States has almost 40 years of experience in the development of entrepreneurial universities, with MIT and Stanford University being referents. In Spain, however, it was only at the beginning of the 1990s when governments and universities started to take interest in technology transfer activities, and subsequently in the creation of academic spin-offs (Guerrero & Urbano, 2014). Indeed, according with RedOTRI (2012) by 2000 there had only been founded 17 such companies in Spain, but in recent years there has been a significant increase in the phenomenon, to the extent that an estimated total of 1110 spin-offs had been created by 2012. On average, the rate of growth has been more than 100 spin-offs/year for the past 5 years (RedOTRI, 2012).

Unlike the majority of previous studies, this research was aimed at the entirety of the universities in Spain and at academics from all branches of knowledge. Also, following the recommendations of previous studies (Gartner, 2007; Goethner, Obschonka, Silbereisen, & Cantner, 2012), we considered a model which integrates both psychological factors based on the individual characteristics of the academic entrepreneur and factors related to the socioeconomic environment. Few studies have dealt with analysing the inter-relationships between the two types of factor (Goethner et al., 2012), and even fewer those whose analysis was based on a sample of all the universities in a given country (Abreu & Grinevich, 2013).

In the next section, we shall review the relevant literature on academic entrepreneurship from the perspective of EI. We then describe the structural model used to relate the academics' entrepreneurial intention with certain explanatory variables. Finally, we present the results of the study, the main conclusions to be drawn, and the implications of the study for university management.

2. Literature review and theoretical framework

In recent years, research on academic entrepreneurship has grown in parallel with the burgeoning of entrepreneurship in the university context. Several literature review studies can also be found within the literature on the subject: Mustar et al. (2006), Rothaermel et al. (2007), Djokovic and Souitaris (2008), Mars and Rios-Aguilar (2010) and Yusof and Jain (2010).

While the early work in this area focussed on measuring the knowledge transfer activity of universities (parents, licences, spin-off) and analysing the initiatives that could influence the effectiveness of this activity (Siegel & Wright, 2015), in recent years there has been an increase in attempts to analyze the factors that lead academics to exhibit entrepreneurial behaviour.

Entrepreneurial behaviour is a type of planned behaviour (Bird, 1988). Models of intentions are therefore appropriate for explanations and predictions of that behaviour. Various models have been developed with the purpose of analysing factors affecting the decision to start an entrepreneurial career. Examples are the Entrepreneurial Event Model (Shapiro, 1982), the Theory of Planned Behaviour (TPB) (Ajzen, 1991, 2001), Entrepreneurial Attitude Orientation (Robinson, Stimpson, Huefner, & Hunt, 1991), and the Entrepreneurial Potential Model (Krueger & Brazeal, 1994). EI are the key to understanding the entrepreneurial process, and can be regarded as the first step in the long and complex process of entrepreneurship. If EI are the single strongest predictor of entrepreneurial behaviour, the study of their antecedents and determinants takes on particular relevance for understanding the entrepreneurship process.

In one of the latest reviews, Yusof and Jain (2010) analyze 72 articles on entrepreneurship in the university context, grouping them into three categories: entrepreneurial university, technology transfer in the university and academic entrepreneurship. In this final category they identify 16 works published in the period 1989–2006,

and here what stands out are the works that try to analyze the main factors determining the entrepreneurial intention of academics.

In recent years, a number of papers have been published in this line of research which identify different antecedents of the academics EI, both individual factors and contextual factors (see Annex 1). Along with these predecessor variables, different moderating factors of entrepreneurial intention have also been identified such as academic promotion focus (Foo, Knockaert, Chan, & Erikson, 2016), entrepreneurship self-identity (Obschonka, Silbereisen, Cantner, & Goethner, 2015), scientific productivity (Erikson, Knockaert, & Der Foo, 2015) and social identity (Obschonka, Goethner, Silbereisen, & Cantner, 2012).

We have chosen the TPB model as the theoretical framework for our study due to the advantages it has been shown to have when applied in the academic environment (Goethner et al., 2012; Obschonka et al., 2012, 2015). Briefly, in the TPB model the behaviour of a person is immediately determined by the intention of the person to perform (or not perform) that behaviour. In turn, this intention (EI) to perform a behaviour depends on three fundamental elements: firstly, entrepreneurial attitude (EA); secondly, the subjective norm (SN), which is the model's most social component and in turn implies a person's belief about the presence of social pressure on them to perform or not perform the action in question, and the motivation to satisfy these pressures; and thirdly, the perceived behavioural control (PC) that they have in the situation in which they must make a decision and act. Prior applications of the TPB in the entrepreneurship literature suggest that EA, SN, and PC typically explain 30–45% of the variance in intentions (Saeed, Yousafzai, Yani de Soriano, & Muffatto, 2015).

Unlike the above studies, the present work considers that it is especially important to look more deeply into the motivations and psychological characteristics of academic entrepreneurs. Specifically, the aim is to analyze how the EI of academics is formed, bearing in mind that the general literature on entrepreneurship usually identifies individual domains (e.g., personality, motivation, and prior experience) and contextual variables (e.g., social context, markets, and economics) as the two dimensions responsible for the formation of EI (Krueger et al., 2000; Fayolle & Gailly, 2015). We consider it opportune to remark on the results obtained by Clarysse, Tartari, and Salter (2011) who, using a large-scale panel of academics from a variety of UK universities from 2001 to 2009, showed that individual-level attributes and experience are the most important predictors of academic entrepreneurship. The social environment surrounding the academic also plays an influential role, but much less pronounced than individual-level factors. These results are important since, although we have outlined that this study does not analyze the EI but rather real entrepreneurial behaviour, there is a direct relationship between EI and entrepreneurial behaviour.

Therefore, this paper falls within a line of research in which we can observe the need to continue analysing entrepreneurial intention in the university context using a combination of the individual factors of academics and the contextual factors of their working environment (Foo et al., 2016; Miranda, Chamorro, & Rubio, 2017).

3. Hypotheses and conceptual model

In view of the main theoretical and empirical relationships discussed in the previous section and taking into account the literature review work on entrepreneurial intention by Liñán and Fayolle (2015), we propose a model to explain the EI of Spanish academics on the basis of their EA, their PC, and the SN that affect the process of entrepreneurship. As antecedents of the EA construct, we consider three of the individual's psychological variables – creativity (CREA), perceived utility (PU), and self-confidence (SELF) – as well as their previous business experience (BE). Our model

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