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# Entrepreneurial Intentions: a bibliometric analysis

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(Authors' version)

## Abstract

**Purpose** – The purpose of this research is to identify the main authors, the main influential universities doing research on EI, the main subject areas and the main productive academic journals on this topic. This paper also aims to shed light on the current knowledge and contributions to the field, in particular: co-authorships, co-words, research topics and cluster of themes.

**Methodology** – The methodology is based on bibliometric techniques using mapping and clustering. The study has been conducted on 377 articles published in journals indexed in the Scopus database for a period of time of almost 24 years, from 01/01/1993 to 08/07/2016. VOSviewer software was used to conduct the analysis.

**Findings** – Findings highlight the top authors, the ranking of the main journals and universities doing research in the field of EI. Another relevant contribution is the identification and classification of main research streams and gaps that have been highlighted.

**Originality/value** – This paper is an attempt to clarify the state of the research and to analyse the progress of the studies on EI and to elaborate bibliometric studies that help to give some order to the variety of sources. This is helpful for new researchers approaching EI for the first time and also for those that are familiar with the field.

**Keywords** Entrepreneurial intentions, bibliometric analysis, citation analysis, literature review

**Paper type** Literature review

## Introduction

The field of Entrepreneurial Intentions (EI) has experienced a rapid expansion in the last decades. Many academics, institutions and scientific journals from different disciplines have been attracted by this area for various reasons, but mainly because intentions are regarded as antecedents of actions, as proved by Ajzen (1991). Based on the Theory of Planned Behaviour (TPB), the relationship between intention and action is confirmed, as long as attitudes, subjective norms and behavioural control influence such intention (Ajzen, 1991). Therefore, EI has been considered as the key element in understanding the new-firm creation process and entrepreneurship-related parameters such as survival or growth (Bird, 1988).

In fact, it has been proven that EI has a direct influence on certain entrepreneurial behaviours, such as the search and discovery of new enterprise opportunities (Krueger, 1993). In addition, there is a consensus that intentions play a very relevant role in the decision to start a new firm regardless the cultural differences amongst individuals (Liñán and Chen, 2009).

EI can be conceptualised as the effort that the person will make to carry out entrepreneurial behaviours (Liñán and Chen, 2009). Following the TPB, these authors developed the Entrepreneurial Intentions Questionnaire (EIQ) which includes three dimensions: a) personal attitude towards start-up; b) subjective norm (perception of the social pressure to carry out entrepreneurial behaviours); and c) perceived behaviour control (perception of the ease or difficulty of becoming an entrepreneur).

The decision to become an entrepreneur is considered as voluntary and conscious (Krueger *et al.*, 2000). Therefore, it is important to primarily understand the role of intentions in the decision-making process and, in particular, in the start-up of a business project. In that sense, EI would be the first step in the creation of a new venture (Lee and Wong, 2004) as intention is regarded as the single best predictor of behaviour (Ajzen, 1991). Although this is widely accepted, other authors have challenged this, and claim that intentions do not always result in behaviours (Rauch and Hulsink, 2015). In that sense, Katz (1990) sustained that in entrepreneurship only a weak relationship can be found between intentions and behaviour in a complex relationship wherein many other factors are involved.

Another reason why EI is increasingly attracting interest from researchers is because it is highly related to entrepreneurial education and, according to Martin *et al.* (2013), who carried out a meta-analysis of 16,657 articles, entrepreneurship education has been proven to be effective in promoting entrepreneurship. This is gaining momentum in higher education institutions (Aparicio, Iturralde and Maseda, 2019).

Regardless what the relationships between EI and behaviours are, the fact is that the interest on EI has grown in the literature since the publication of Shapero's (1984) seminal article on the subject. Since then, many authors have contributed to the area from different streams of research. Indeed, many authors have worked on reviewing and synthesising venture creation literature. For instance, Shook et al. (2003), in their review about entrepreneurship and the enterprising individual, concluded that EI is mostly considered the first step in the venture creation process.

However, it is only recently that the first specific systematic revision of the literature about the topic of EI was published by Liñán and Fayolle (2015). In their study, these authors conducted a systematic literature review on EI with the purpose of establishing a categorisation of the main fields and subfields related to EI, analysing articles related to EI for a period of 10 years (2004-2013). One of the main gaps that they tried to address with their study was the lack of systematisation and categorisation of the field of EI. This study opened avenues for more systematic analysis about the studies regarding EI in order to contribute to a better understanding of the different approaches and new trends on EI. They identified five categories that have been further investigated by several recent studies: 1) core entrepreneurial intention model (Yukongdi and Lopa, 2017; Munir *et al.*, 2019); 2) personal level variables (Isaga, 2018; Şahin, Karadağ and Tuncer, 2019); 3) entrepreneurship education (Barnard *et al.*, 2019; Gieure et al., 2019); 4) context and institutions (Monllor and Murphy, 2017; Urban and Kujinga, 2017; Raza *et al.*, 2019) and 5) entrepreneurial process (Adel Rastkhiz *et al.*, 2019; Sá et al., 2019). They also suggested a sixth category that includes new areas of research that basically comprised some novel contributions. These new areas or studies also open avenues for future research and are mainly focused on two areas: a) sustainable entrepreneurship and b) social entrepreneurship.

Another appealing contribution to researchers with interest in EI is that Liñán and Fayolle (2015) have identified two main streams of research, first of which comes from social psychology and mainly applies the TPB (Ajzen, 1991; 2012), while the second derives from the specific field of entrepreneurship (Shapero, 1984; Bird, 1988). This has implications for the positioning of new studies on EI and about the main theories and conceptual frameworks to be applied.

Despite the interest in the EI field, no one has previously tried to study and identify the most prolific authors, universities or journals investigating on EI. To date, only Liñán and Fayolle (2015) have tried to systematically analyse the literature about EI, although with a different

purpose than ours. There are other interesting studies about EI that are not properly systematic reviews of the literature or bibliometric studies. It is noteworthy to mention the investigation by Schlaege and Koenig (2014) who conducted a meta-analysis and, using structural equation models, empirically tested the samples from 98 empirical studies on EI.

Consequently, the aim of this research is to analyse the main studies on EI in order to identify who are the main influential authors, which universities or research centres are the most involved in the research of EI, which are the most productive journals on this topic, and also to shed some light on the current knowledge and contributions to the field in order to facilitate that the main subject areas of EI can be identified by researchers. This study analyses co-authorships, co-word analysis, research topics and cluster of themes.

In order to address these research challenges, this paper conducts a bibliometric analysis with techniques based on mapping and clustering. The study has been conducted on 377 articles that were published in journals indexed in Scopus database for a period of almost 24 years, from 01/01/1993 to 08/07/2016. VOSviewer software has been used.

This paper is organised as follows: in the methodology section the bibliometric methods are outlined. In the following section the results and findings are discussed and, finally, in the conclusions section, the main contributions of this study are presented.

## **Methodology**

### *Unit of analysis*

In the current study, Scopus was selected to accomplish the objectives. With more than 22,000 titles from over 5,000 international publishers ([www.scopus.com](http://www.scopus.com)), Scopus is a complete and comprehensive database that shows the world's research output in the most important fields of science, such as technology, social science, arts and humanities and medicine (Veer and Khiste, 2017). Scopus has a higher degree of singularity than other databases, since it covers a larger number of unique documents, which are of interest when making a proper selection of information sources for future studies (Sánchez, Del Río and García, 2017)

A sample from the Scopus database was compiled by searching the words “entrepreneurial” and “intentions” in the title or in the group of keywords. In order to best reflect the

production of original research and peer reviewed studies, the searching was limited to those documents classified as “Articles”, therefore, books, chapters of books and proceedings were excluded.

For the purpose of this study, articles but no other types of documents have been selected (e.g., letters, editorials, reviews, etc.). This is because articles are the documents that best reflect the production of the original research (Benavides-Velasco, Guzmán-Parra and Quintana-García, 2011).

In a second step, all the selected articles were systematically revised by the researchers in order to confirm whether the content of the articles was related to EI. Finally, a database of 377 articles was compiled.

### *Process*

A systematic revision of the relevant literature on EI has been conducted in order to collect the information regarding authorship, affiliation and journal title.

Bibliometric indicators have been calculated from the sample of articles and, using VOSviewer software (Van Eck and Waltman, 2010; 2014), co-authorship network and co-words networks have been constructed. VOSviewer software (Van Eck and Waltman, 2010; see <http://www.vosviewer.com>) works with algorithms that implement a unified approach to mapping and clustering: these algorithms are available at [http://www.ludowaltman.nl/unified approach/](http://www.ludowaltman.nl/unified-approach/).

Additionally, during the revision process, the main subtopics of EI were pointed out from every article so that the principal areas of research and the main gaps could be identified.

## **Results and Discussion**

### *Publication activity on entrepreneurial intentions: evolution, contributors and main productive journals*

Publication activity is expressed by the number of papers published by a selected unit (journals, institutions, countries, etc.) in a specific time period (Callon *et al.*, 1986). The following indicators of publication activity have been used in the present study related to EI: number of articles per year, main subject areas, most productive journals, most productive institutions and most prolific authors.

One of the results regarding the evolution of total contributions about EI is shown in Figure

1. As it can be observed, the field did not attract significant interest until 2005 when the number of contributions per year started to gain momentum, growing from just two publications in 2005 to 30 in 2011. That number of publications has kept growing in the last years, and, in 2015 had reached 89. This figure could be easily surpassed in 2016 based on the number of articles published until July 2016.

**Figure 1. Evolution of the number of total contributions on EI.  
(INSERT HERE FIGURE 1)**

\* 2016 includes from January to July only.

In relation to the main subject areas, “Business, Management and Accounting” stood out among every other with 286 articles classified as such. “Economics, Econometrics and Finance”, with 139 articles, and “Social Sciences” with 105 articles were also prominent compared with the others. It is noteworthy that up to 14 different subject areas were used to classify EI articles. This suggests a relevant finding: the field of EI has been widely investigated from a different discipline. Table 1 shows those with more than five contributions.

**Table 1. Subject areas in order of number of contributions  
(INSERT HERE TABLE 1)**

The growing interest of EI as a research field was also reflected by the number of journals publishing on it. A total of 154 journals were published during the period of analysis, of which, amongst them, 25 were specialised in entrepreneurship or small business research. This notes a remarkable interest from generalist journals on the topic, as 129 journals from other fields also published actively about EI. Table 2 shows the main productive journals (with more than five publications in the period).

**Table 2. Main productive journals (five or more contributions)  
(INSERT HERE TABLE 2)**

Regarding the centre of affiliation, there is not a high concentration of research production, as 157 institutions were involved in research about EI. However, the University of Seville from

Spain proved to be the most productive amongst them in terms of number of contributions with a total of 13 in the period of study (see Table 3).

**Table 3. Main productive institutions (five or more contributions)**

**(INSERT HERE TABLE 3)**

The 157 institutions are based in 47 different countries, from which the US ranks first by number of contributions, nevertheless Europe is the most productive region with Spain, Germany, the United Kingdom, France, Netherlands, Norway and Finland positioned in the top ten countries (see Table 4).

**Table 4. Main productive countries five or more contributions)**

**(INSERT HERE TABLE 4)**

Numerous authors were involved in researching related to EI during the period of analysis; however, only 42 authors from the total of 158 took part in three or more studies. The following table (see Table 5) shows the top authors with five or more contributions.

**Table 5. Authors with five or more publications on EI**

**(INSERT HERE TABLE 5)**

*Research topics: co-authorship and co-word analysis.*

Figure 2 presents the visualisation of the co-authorship networks constructed. Results shows four clusters represented with four different colours. Each circle represents an author and the size of a circle is according to the weight of co-occurrence. The distance between two circles approximately indicates the strength of the association.

As Dolhey ([2019](#)) and other works highlight, Liñán is the most influential author (see Figure 2), followed by Fayolle, Urbano Guerrero, Santos and Nabi. Interestingly, it can be noted that, to some extent, these main authors have collaborated in a few projects that have been published; this shows that the leading authors somehow form a cohesive and well-interconnected research community.



**Figure 2. Co-author analysis map**

**(INSERT HERE FIGURE 2)**

In order to identify research themes and the direction of the EI field of research, a keyword co-occurrence analysis was conducted. By means of this analysis, the keywords of each study are represented by circle. The minimum occurrence of a word to be considered was two, so of the 978 keywords of the database only 219 meet the threshold. The type of analysis selected in VOSviewer was co-occurrence, the unit of analysis keywords and the counting method full counting.

Figure 3 presents the co-word analysis containing the 219 which were eligible for inclusion. The analysis resulted in six clusters, which indicated that the literature is relatively fragmented and diverse in its topics.

The research results show that the circle related to “Entrepreneurial intentions” is the biggest in Figure 3 as it is the most commonly used keyword. “Entrepreneurial intentions” is followed by “Theory of planned behaviour”, “entrepreneurship education”, “entrepreneurialism” and “gender”.

The fact that TPB is the second most commonly used keyword reaffirms the finding presented by Liñán and Fayolle (2015) that the TPB is the “reference” theory in EI research, in particular the seminal article published by Krueger and Carsrud (1993) is probably responsible for making this to happen.

**Figure 3. Map of keywords links.**

**(INSERT HERE FIGURE 3)**

The six clusters in the scientific landscape of EI are presented in different colours in Figure 3 as resulted from the VOS-Viewer analysis. Table 6 also presents the clusters and the main keywords associated.

**Table 6. Clusters and themes.**

**(INSERT HERE TABLE 6)**

Despite the fragmentation of the EI field amongst authors, institutions, regions and themes ranked by number of contributions, there is a significant concentration of the number of citations for single articles. Based on the information provided by Scopus, at the date of this study (08/07/2016), the most cited article was that of Krueger *et al.* (2000), the only one from the list with over 1,000 citations, followed by those of Chen *et al.* (1998). However, if the year of publication is taken into consideration and average number of citations per year since published is compared, the studies from Zhao *et al.* (2005), Souitaris *et al.* (2007) and Liñán and Chen (2009) would be the following. The full list of the top ten articles by total number of citations is shown in Table 7. An interesting aspect is that no articles amongst the most-cited ones were written by a single author and only three of them were written by two authors. This proves the level of interconnection and collaboration in the field, as was previously shown in Figure 2. It is also noteworthy that three out of the five most cited papers have been published in the Journal of Business Venturing. Another interesting aspect of this table is the number of authors.

**Table 7. Top ten articles in Scopus based on the number of citations.**

**(INSERT HERE TABLE 7)**

### **Conclusions and Contributions**

As Liñán and Fayolle (2015) demonstrated in their recent study, EI is a consolidated area of research within the broad field of entrepreneurship, not only because of the number of articles published in the last decades, as proved by them, but also because of the number of journals, institutions and authors that have been engaged in this research area, as shown in this article.

Despite EI being a specific topic within the broader discipline of entrepreneurship, it was able to find space in both specialised and generalist journals. More than 80% of the journals publishing about EI were from the latter group. This information should be of interest to editors when selecting candidate articles to be published in their journals.

In brief, the four main productive journals in terms of number of publications on EI during the period of analysis were: International Journal of Entrepreneurship and Small Business (34 articles); International Entrepreneurship and Management Journal (20 articles); Education and Training (19 articles) and Mediterranean Journal of Social Sciences (12 articles) (see

Table 2). However, if we take the number of citations into account as an indicator of the quality, the Journal of Business Venturing has published three out of the five most cited studies, while the most productive universities investigating on EI were the University of Seville (13 articles) and University Putra Malaysia (8 articles) and the most productive authors were Liñán (12 articles), Kautonen (8 articles) and Fayolle (7 articles) (see Tables 3 and 5).

Indeed, the high level of engagement shown by journals, institutions and authors impacted on a notable increase in the number of contributions per year occurred since 2005 (see Figure 1). Due to this trend, it would be reasonable to believe that EI as a research field will continue to grow in the future. It is of high importance to understand how the research in this field is usually inspired and conducted in order to guide future researchers. The present study identified a limited number of studies as the most influential based on the number of citations (see Table 7) and also showed that these studies mostly arose from the collaboration of teams from different institutions and countries (see Table 4, Table 5 and Figure 2). However, certain polarisation between the US and Europe was observed too.

In relation to the main subject areas, EI was proved to be a very transversal topic across areas. Business, Management and Accounting is the most common with 286 studies followed by Economics, Econometrics and Finance (139 papers); Social Sciences (105 studies) and Psychology (33 papers) (see Table 2). Results show a concentration of the number of citations and authors, following a power-law distribution.

The analysis of co-author networks shows that main authors form a cohesive and well-interconnected community. The network mapping highlights Liñán as the most influential author followed by others such as Fayolle, Urbano Guerrero, Santos and Nabi.

Finally, this study looked at the main themes covered by the research about EI through the analysis of keywords and also identified six clusters of themes (see Table 7). Amongst them, gender-related, TPB, and background factors like age or culture and entrepreneurship education prevailed as keywords. This conclusion contributes to support a different perspective to that of Liñán and Fayolle (2015). This is important as several new articles on these topics have been published since the presentation of their article, for instance, Ruiz-Alba *et al.* (2015), Mehtap *et al.* (2017), and Farooq *et al.* (2019) on gender and EI, Lortie and Castogiovanni (2015), and Zhang and Cain (2017) on TPB applied to EI, or Rauch and Hulsink (2015), Fietze and Boyd (2017), and Pepin and Etienne (2019) on entrepreneurial

education and EI, and recently Ruiz-Alba *et al.* (2019) investigated the influence of gamification on EI, to name but a few.

### **Limitations and Future Research**

The present research has some limitations. First of all, the co-word analysis provides a small number of significant clusters taking into account the number of keywords considered. This result can be explained by the fact that the literature on EI is dispersed across disciplines and quite fragmented.

The second limitation is related to the time span. Due to the growing interest of the topic and the increasing number of contributions, conclusions of this study should be updated frequently. This opens opportunity to new research in the coming years using a similar methodology so that data will be comparable.

The last limitation is related to the use of only one database (Scopus). Although this is quite relevant, it could be offset by using several databases in the future, which should also imply the work of eliminating duplicates from the results.

There are very interesting research avenues about EI. One of the findings of our paper is that the topic has been addressed from different disciplines (see Table 1) mainly from Business Management and Accounting; Economics, Econometrics and Finance; Social Sciences. It would be interesting to see more interdisciplinary studies.

Another potential future research would be to explore the correlation (if any) between the most productive universities and the incorporation of entrepreneurship courses into their curricula.

Overall, this paper demonstrates a strong increase in the number of studies on EI and this is promising as it is expected that a better understanding of the main factors facilitating EI will have a potential positive impact on entrepreneurial behaviours and, ultimately, in the creation of new business ventures.

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