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Intrapreneurship research: A comprehensive literature review

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ABSTRACT

Organizations face continuous problems of survival and sustainability in the market, so innovation is vital for their growth. Entrepreneurship in the organization has been defined in various ways over the years, which has led to terminological confusion. Due to the innovation required by organizations for a proactive adaptation to the change and sustainability, intrapreneurship acquires special relevance for business development. Therefore, a literature review that considers intrapreneurship and the issues related to this concept is much needed. The search term 'intrapreneur' resulted in 312 articles published in WoS (Web of Science) between 1985 and 2021. These articles were analyzed using the VOSviewer software for the bibliometric analysis. The main authors and contributions in the area have been identified, in relation to the research objectives, enabling the generation of guidelines and proposals for future research.

1. Introduction

In recent decades, entrepreneurship has gone from an emerging to an established area of research with many publications (Valencia et al., 2016). The interest of academia in entrepreneurship has several roots. One is that researchers try to analyze how entrepreneurship positively influences the development of the economy by generating jobs (Contin et al., 2007), either in new firms or the renewal of existing ones (Burgelman, 1983; Honig, 2001; Yang et al., 2009; Parker, 2011; Gawke et al., 2019). Researchers have also been interested in innovation that companies must achieve as a source of competitiveness in an increasingly globalized economy (Kuratko and Audretsch, 2013; Bierwerth et al., 2015). Organizational efficiency and innovation have become top priorities (Naveed et al., 2022).

Entrepreneurship includes both new venture creation and intrapreneurship (Antoncic and Hisrich, 2003). Douglas and Fitzsimmons (2013) speak of entrepreneurship and intrapreneurship. The former activity is taking risks in creating and managing an independent company. The latter refers to company employees who identify and exploit ideas for their company (Bosma et al., 2013).

This paper will focus on intrapreneurship, i.e., entrepreneurship within the firm. Corporate actions have gained particular importance in recent years. Authors such as Lee and Suh (2022), in particular, have considered the link between variables such as environment, social, and governance, exploring their impact on different aspects of the organization and the environment. Intrapreneurship, then, emerges as a subfield of entrepreneurship, with a growing interest in its study in the literature (Hornsby et al., 2013). It has been linked to its relationship with business success, economic growth, and competitiveness (Nicholson et al., 2016), business growth and innovation (Sinha and Srivastava, 2013), with business performance improvement (Antoncic and Hisrich, 2001), with the success and survival of companies (Ireland et al., 2003; Morris et al., 2011; De Pablo, 2015), and with increasing organizational effectiveness and value creation (Kearney and Meynhardt, 2016).

The development of intrapreneurship as a research area has been hampered by terminological confusion and the variety of theoretical approaches used (Valsania et al., 2016). Several authors have highlighted the lack of a coherent definition of intrapreneurship (i.e., Åmo and Kolvereid, 2005; Christensen, 2005; Menzel et al., 2007; Turro et al., 2013). Pinchot and Pellman (1999) and Drucker (1986) were the first authors to use the term intrapreneurship. Subsequently, many synonyms for intrapreneurship have appeared throughout history. However, although these concepts have been interchanged along the years to refer to organizational entrepreneurship, various authors have denoted different connotations of each term in this regard. From a general perspective, the following terms were found:

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- *Corporate entrepreneurship* (Collins and Moore, 1970; Burgelman, 1983;Vesper, 1984; Guth and Ginsberg, 1990; Covin and Slevin, 1991; Zahra, 1991; Hornsby et al., 1993; Stopford and Baden-Fuller, 1994; Dess et al., 1997; Antoncic and Hisrich, 2004; Kuratko and Audretsch, 2013).
- *Internal corporate entrepreneurship* (Schollhammer, 1982; Ellis and Taylor, 1987; Jones and Butler, 1992; Jones and Butler, 1992).
- *Entrepreneurial adventure* (MacMillan, 1986; Vesper, 1990).
- *Strategic entrepreneurship* (Ketchen et al., 2007).
- *Organizational entrepreneurship* (Kearney et al., 2013).
- *Venture ventures* (Hornsby et al., 1993; Altman and Zacharakis, 2003; Parker, 2011).
- *Entrepreneurial intensity* (De Villiers-Scheepers, 2012).

The above listed terms have been used to refer to entrepreneurial activity in the organization, with corporate entrepreneurship as the most coined term. In this line, there are different literature reviews that compare several of the aforementioned terms (Glinyanova et al., 2021) or focus on corporate entrepreneurship (Wahyudi et al., 2021a, 2021b; Urbano et al., 2022). On the contrary, there is a major gap in the literature in relation to the whole concept of "intrapreneurship", so a comprehensive analysis is particularly relevant as it enables the comparison about which main themes or fields are linked to intrapreneurship. Besides, it allows to evaluate the nuances of intrapreneurship.

However, various theoretical approaches and analytical perspectives can be observed in the analysis of intrapreneurship, which have given rise to a large number of contributions (Turro et al., 2016). Thus, we find that intrapreneurship used to be analyzed from the following perspectives:

- Corporate entrepreneurship (Burgers and Covin, 2016).
- Entrepreneurial orientation (Miller, 1983; Covin and Slevin, 1989; Lumpkin and Dess, 1996; Morris and Kuratko, 2002; Davidsson, 2006; Covin and Wales, 2012; Covin and Miller, 2014; Hernández-Perlines et al., 2021; Santos-Vijande et al., 2022).
- Organizational intrapreneurship (Menzel et al., 2007; Camelo-Ordaz et al., 2012; Baruah and Ward, 2015), as team-level intrapreneurship (Gapp and Fisher, 2007),
- Individual intrapreneurship (Martiarena, 2013; Gawke et al., 2019).
- Intrapreneurship improves firms' performance in general, regardless of size (Kuratko et al., 1990; Covin and Slevin, 1991; Antoncic and Hisrich, 2004). In the literature, we find papers analyzing such a relationship in large firms (e.g., Schollhammer, 1982; Kanter, 1984; Burgelman, 1985; Pinchot, 1985; Rule and Irwin, 1988; McKinney and McKinney, 1989; Guth and Ginsberg, 1990; Zahra, 1991) and in smaller firms (Covin, 1991; Carrier, 1994).

The situation outlined above demonstrates the need to clarify the field of study on intrapreneurship and justifies the current research study. Due to that, it becomes relevant to analyze which terms have been linked throughout history with this concept, in order to identify the special significance it acquires. In this regard, some reviews of the fields of entrepreneurship and corporate entrepreneurship can be found in the literature. Nevertheless, there are fewer which considers the concept of intrapreneurship and the most representative ones should be consequently updated with new contributions. In this line, the systematic review of the literature on intrapreneurship at the individual level by Antoncic and Hisrich (2003) stands out. Tranfield et al. (2003), Creswell (2009), and Jesson et al. (2011) established the basic guidelines to be followed when conducting a literature review on intrapreneurship. Åmo (2010) conducted probably the most thorough and rigorous systematic literature review to date. His review differentiated between corporate entrepreneurship, entrepreneurial orientation, and intrapreneurship, the latter from an individual perspective. Wahyudi et al. (2021a, 2021b) focused on entrepreneurial orientation as one of the aspects of entrepreneurship. Finally, literature reviews by Blanka (2019) and Gawke et al. (2019) highlighted a growing interest in intrapreneurship as a field of research. Both papers focused on the perspective of individual intrapreneurship and are limited reviews of the intrapreneurship literature because of the small number of papers analyzed: 32 in the first case and 22 in the second.

This research responds to the call of Gawke et al. (2019) for further progress in the analysis of intrapreneurship. We conducted a comprehensive review of intrapreneurship using a bibliometric analysis of 312 articles published in WoS (Web of Science) between 1985 and 2021. We aim to offer a more complete view of intrapreneurship as a field of research, overcoming the fragmentation of previous studies (Turro et al., 2016) and extending the time horizon.

This bibliometric study on intrapreneurship offers a complete vision and a broader time horizon, including the last few years in which the number of publications focused on intrapreneurship has grown rapidly. We intend to shed light on intrapreneurship as a field of research. This research work aims at evaluating the current situation and identifying future perspectives of intrapreneurship, highlighting the main studies by answering the following research questions:

RQ1 - In which countries and institutions do the most influential researchers in the field of intrapreneurship work?

RQ2 - In which research network(s) are the main authors on intrapreneurship integrated?

RQ3 - Which scientific journals generate the most knowledge on intrapreneurship?

RQ4 - What are the most relevant research topics in the field of intrapreneurship?

We first performed an initial analysis with Microsoft Excel (Araya-Castillo et al., 2021; Ribeiro-Navarrete et al., 2021) and then carried out a bibliometric analysis. Bibliometric analysis uses mathematical and statistical methods to analyze scientific activities in a given field of research (Callon et al., 1991; Aparicio et al., 2019). There are different programs to perform this bibliometric analysis. In this study, we have opted for VOSviewer 1.6.16 (Van Eck and Waltman, 2010) because of the possibility of constructing and visualizing bibliometric networks from scientific publications and researchers using citations, bibliographic linkage, co-citations, or authorship relationships.

The paper is organized as follows. Section 2 reviews the research considered for the study and the background of the concept of intrapreneurship. Section 3 describes the methodology used. Section 4 contains the results. Section 5 presents the conclusions, discusses future lines of research and the limitations of the study.

2. Theoretical framework

The first authors to discuss intrapreneurship were Pinchot (1985) and Drucker (1986). For Pinchot (1985), intrapreneurship consists of taking advantage of a new opportunity and creating economic value within the company itself. For Drucker (1986), intrapreneurship is linked to the generation of new possibilities for business growth and improvement.

In recent years, there has been growing interest in the study of entrepreneurship in general and intra-entrepreneurship in particular, with the aim of analyzing its influence. Thus, some authors claim that entrepreneurship generates jobs as a consequence of the renewal of existing companies or the creation of new companies (Burgelman, 1983; Honig, 2001; Yang et al., 2009; Parker, 2011; Gawke et al., 2019), which would lead to an improvement in the general economic situation (Contin et al., 2007). On the other hand, Hornsby et al. (2013) sustained the growing interest in the relationship between intrapreneurship and the improvement of business performance, an interest initiated by Antoncic and Hisrich (2001). Other variables that have interested scholars in terms of their relationship with intrapreneurship have included innovation (Sinha and Srivastava, 2013), the success and survival of companies (Ireland et al., 2003; Morris et al., 2011; De Pablo, 2015), value creation (Kearney and Meynhardt, 2016), and business success

(Nicholson et al., 2016).

Antoncic and Hisrich (2003) state that entrepreneurship includes both the creation of new companies and entrepreneurship within the company itself. Douglas and Fitzsimmons (2013) differentiate between entrepreneurship and intrapreneurship. The former occurs when one or more entrepreneurs take the risk of creating and managing an independent company. Intrapreneurship happens when the members of a company identify and exploit ideas for their company (Bosma et al., 2013). Therefore, intrapreneurship is conceived as entrepreneurial activity carried out within organizations that are already in operation (Antoncic and Hisrich, 2000) through a process by which individuals within organizations seek opportunities (Stevenson and Jarillo, 2007) by doing new things (Vesper, 1990).

Intrapreneurship as a field of research is largely characterized by terminological confusion, with fragmented contributions and multiple definitions (Turro et al., 2016). The lack of a coherent concept of intrapreneurship is a consequence of the use of several theoretical perspectives or approaches (Åmo and Kolvereid, 2005; Christensen, 2005; Menzel et al., 2007). Consequently, different concepts and synonyms have emerged that have added further confusion in this field (Valsania et al., 2016). Antoncic and Hisrich (2003) tried to provide a general description of the relevant concepts and identified two streams, both at the firm level. These are entrepreneurial orientation —which has been followed by authors such as Bouchard and Basso (2011); Covin and Wales (2012); Wales et al. (2015)— and corporate entrepreneurship, which has been developed by authors such as Ireland et al. (2009) and Rigtering and Weitzel (2013). Aligned with the existing literature, corporate entrepreneurship is usually approached at the general company level and intrapreneurship sometimes has connotations that bring it closer to the entrepreneur/owner level.

Åmo (2010) classifies the different contributions in this field by mapping the literature to identify the most prominent currents in intrapreneurship. In this work, three streams are distinguished for the conceptualization of intrapreneurship: corporate entrepreneurship, entrepreneurial orientation, and intrapreneurship. These contributions arise from different perspectives from which to approach entrepreneurship in the firm: corporate, team, and individual. All this adds further confusion (Urbano and Turró, 2013). The first two are circumscribed at the organizational level, while the second is developed from an individual perspective (Wakkee et al., 2010; Moriano et al., 2014). These are linked concepts, but they are not the same (Åmo, 2010). The first two are 'top down', and intrapreneurship goes from the bottom up (Åmo and Kolvereid, 2005; Rigtering and Weitzel, 2013; Sinha and Srivastava, 2013). In this sense, the intrapreneur is the employee who recognizes opportunities and develops innovations (Camelo-Ordaz et al., 2012). Some authors have highlighted the relationship between the above concepts (Åmo and Kolvereid, 2005).

Blanka (2018) while also considering corporate entrepreneurship and entrepreneurial orientation, focused primarily on reviewing intrapreneurship at the individual level. He reviewed the intrapreneurship literature establishing five perspectives of intrapreneurship research: individual, organizational, context-oriented, outcome-focused, and oriented to factors that promote intrapreneurship.

In a literature review of the research works from 2007 to 2018, Gawke et al. (2019) highlighted three approaches to the conceptualization of intrapreneurship. For Gawke, three types of definition of intrapreneurship can be distinguished. The first way refers to entrepreneurial orientation. From this approach, intrapreneurship is a higher-order factor in which employees show initiative, develop innovations and take certain risks for the company (Felício et al., 2012; Rigtering and Weitzel, 2013; De Jong et al., 2013; Valsania et al., 2016). The second type focuses on the results of intrapreneurship, analyzing the participation of employees in the intrapreneurial activities of the organization. These would be the intra-entrepreneurial contributions of employees to their company (Hornsby et al., 2009; Matthews et al., 2009; Bager et al., 2010; Camelo-Ordaz et al., 2011; Urbano and Turró, 2013; Belousova and Gailly, 2013). Finally, the third type of definition focuses on employee behaviors that contribute to intrapreneurship at the firm level. This type fits both employee entrepreneurial behaviors (Edquist et al., 2001; Park et al., 2014) and strategic renewal behavior aimed at improving the firm's ability to react to external and internal changes in the firm (Zampetakis et al., 2009; Mustafa et al., 2016; Gawke et al., 2017; Woo, 2018).

For these authors, the last-mentioned type of definition of intrapreneurship—based on behavior—has the most potential for advancing the theoretical literature on intrapreneurship. It encourages researchers to continue along this path by undertaking new work at the individual level.

It is important to analyze both the antecedents and the consequences of intrapreneurship. Antoncic and Hisrich (2000) highlight two related sets of antecedents of intrapreneurship: the environment and the firm itself (environment and organization). Authors such as Zahra (1993), Badguerahanian and Abetti (1995), and Antoncic and Hisrich (2004) state that characteristics of the environment such as dynamism, technological opportunities, industry growth, and demand for new products affect intrapreneurship. De Villiers-Scheepers (2012) and Galván-Vela and Sánchez-Limón (2017) observed that autonomy and rewards positively influence intrapreneurship. Ajzen (1991) and Neessen et al. (2019) note that both social norms and employee characteristics decisively affect intrapreneurship. Bakker and Demerouti (2014) specify that job design impacts intrapreneurship. Parker et al. (2010) point out that proactive work behavior is important for developing intrapreneurship.

One of the main consequences of intrapreneurship is improving company performance (Covin and Slevin, 1991). It allows the growth of smaller companies (Covin, 1991) and even improves the performance of companies in hostile environments (Covin and Slevin, 1989). Authors such as Peters and Waterman (1982), Kanter (1984), and Pinchot (1985) have even stated that it is a characteristic of successful companies.

A further recurrent problem in the literature is how to measure intra-entrepreneurship. From the literature review, we highlight three ways of measuring intra-entrepreneurship (Gawke et al., 2019). The first is by reference to entrepreneurial orientation. That is, on the basis of three variables (Rigtering and Weitzel, 2013): proactivity, risk-taking, and innovativeness. The second is to use a single indicator such as intrapreneurial production (Stam, 2013). The third is employee behaviors that involve creating new businesses and/or effecting the strategic renewal of the company.

3. Methodology

This section highlights the importance of bibliometric analysis as a technique for analyzing the most relevant aspects of intrapreneurship as an area of research.

The significant growth in scientific production in recent decades has enhanced the value of bibliometrics for analyzing the field. In recent years, we have witnessed the indexing of publications in automated bibliographic databases that have allowed the generation of indicators to measure the results of scientific and technological activities (Sanz-Valero and Wanden-Berghe, 2017). Most bibliographic databases contain titles, journals, authors, institutions, citations, keywords, abstracts, etc. With such information, it is possible to evaluate the science using bibliometric techniques (Gutiérrez-Salcedo et al., 2018) in a systematic literature review (Toro-Jaramillo, 2017; Kraus et al., 2020). With bibliometric analysis it is possible to evaluate scientific activity, the impact of publications, and the sources available to guide new research (Moreno and Rosselli, 2012; Montero-Díaz et al., 2018). Researchers use it as a reference (Morales et al., 2017) as it provides a source of detailed and systematized information on scientific production in a particular discipline (Merigó et al., 2015). All of this has made bibliometric analysis an emerging and cutting-edge field of research (Aström, 2007, Miguel and Dimitri, 2013; Araya-Castillo et al., 2021). It

offers many possibilities (Glänzel, 2012) as an essential method for evaluating and analyzing the production of researchers (Ellegaard and Wallin, 2015), collaboration between institutions (Skute et al., 2019), the impact of state scientific investment on national R&D productivity (Fabregat-Aibar et al., 2019), and academic quality (van Raan, 1999).

This paper uses a bibliometric analysis to detect the most important research trends in intrapreneurship. It will allow us to summarize and classify bibliographic documents. It will provide representative results (Rovelli et al., 2021) by using mathematical and statistical methods (Pritchard, 1969) to identify structural and dynamic characteristics. With this bibliometric analysis, we will be able to detect publication patterns and the use of different documents (Diodato & Gellatly, 2013) in the field of intrapreneurship.

We have adopted Velt et al.'s (2020) systematization proposal to perform the bibliometric analysis; it has been used in works such as Araya-Castillo et al. (2021). This mode of systematization follows these phases:

1. Formulation: the objectives of the study are described and the research questions are posed.
2. Identification: the search patterns are established (Wang and Chugh, 2014) based on identifying keywords and the search period. Conducting bibliometric studies to classify research on a topic requires careful selection of database records (Hasper-Tabares et al., 2017). The Web of Science (WoS) database was used because it contains a large number of high-quality publications with high-quality content (Ball and Tunger, 2006; Scaringella and Radziwon, 2018). It is also one of the most influential sources for searching scientific information, has high search accessibility, and provides knowledge about authors, articles, and journals dealing with the development of this subject (Granda-Orive et al., 2013). Of the different WoS indexes, we focused on the Social Citation Index and the Social Science Citation Index, following the recommendations of Vega-Muñoz et al. (2020). Only peer-reviewed articles were considered (Keupp et al., 2012; Dada, 2018; Kauppi et al., 2018; Velt et al., 2020). Intrapreneur was used as the keyword for the WoS search vector. The first analysis of this keyword, 'intrapreneur', dates from the time when Pinchot initiated the concept. He is regarded by many researchers as the father of intrapreneurship, with the publication in 1985 of his work 'Intrapreneuring: Why you don't have to leave the corporation to become an entrepreneur'.
3. The third stage is selection. Good bibliometric analysis requires the careful selection of records from a given database (Hasper-Tabares et al., 2017). At this stage, data cleaning was performed according to the recommendations of Zupic and Čater (2015). After this cleaning and using the term 'intrapreneur', 312 articles with 6,992 citations were identified.
4. The fourth step is the verification of the dataset. This process was carried out by authors who are experts in intrapreneurship and have published in high-impact journals in the JCR.
5. The fifth stage is the analysis of the data using tools appropriate to the objectives and the proposed research questions. The bibliometric indicators used for the analysis were: articles, citations, journals, institutions, authors, and countries. An analysis of the intrapreneurship bibliometric map was also performed. In addition, following the recommendations of Araya-Castillo et al. (2021), a detailed map of the key concepts was drawn from the frequency data and their respective clusters. A collaboration map was also included in order to identify the main members of scientific collaboration networks and to see how the different authors are grouped in different areas within a network (Araya-Castillo et al., 2021). The impact factor of each scientific journal in JCR and the H index were also analyzed, following Gálvez Toro et al. (2006). These two indicators— two of the most widely used indicators in bibliometrics (Bosch et al., 2001)—are justified because they allow us to measure the quality of the publications in terms of the citations received.

Before the bibliometric analysis, an initial analysis was carried out with Microsoft Excel (Ribeiro-Navarrete et al., 2021; Araya-Castillo et al., 2021). The VOSviewer software, version 1.6.16 (Van Eck and Waltman, 2010), was used for the bibliometric analysis. The advantage of this software is that it allows us to complement the visual interpretation with tables and provide a map based on co-occurrence (Ribeiro-Navarrete et al., 2021).

4. Results

This section presents the main results obtained from the scientific production on intrapreneurship. From this analysis we will be able to lay the foundations for the future evolution of this field of research (Jiménez-Bucarey et al., 2020; Vicencio-Ríos et al., 2020; Araya-Castillo et al., 2021).

4.1. Documents and citations

First, we analyzed the growth of scientific production. Fig. 1 shows no clear trend line in publication interest in the period considered. The period is divided into two sections:

1. From 1985 to 2007, there is little interest in intrapreneurship (2–3 publications per year, with some blank years).
2. From 2008 onwards, interest grows, with a peak in 2020 (44 papers) that will possibly be exceeded in 2021 (40 as of October 5, 2021). In this second section, especially from 2008 onwards, there is an exponential growth that conforms to Price's Law. Fig. 1 shows a linear growth of ART(YEAR) = 0.7418(YEAR) − 1476.9 with an R^2 = 54.6 %.

From the WOS search with the word 'intrapreneurship', we obtained 312 articles that received 6,992 citations, an average value of 22.41 citations per article. The citations in this field fit a function y = 2E-174e0.2013x, with an R2 = 0.9661 (see Fig. 2).

The Hirsch Impact Index or h-Index is 40 (40 articles had more than 40 citations).

The general citation structure shows that only four papers have more than 200 citations (1.3 % of the total) (see Table 1). At the other end of the scale, 40 papers have no citations (12.8 % of the total), and 237 papers have less than 50 citations (76 % of the total).

4.2. Authors

Table 2 shows the 20 most cited authors. Zahra is the most cited author, with the paper entitled 'Predictors and financial outcomes of corporate entrepreneurship: an exploratory study', published in Elsevier's Journal of Business Venturing in 1991. This article has 625 citations. He is followed by Antoncic and Hisrich, with a paper entitled 'Intrapreneurship: Construct refinement and cross-cultural validation', also published in 2001 in the Journal of Business Venturing, which has 520 citations.

Regarding authors per article, among the 20 most cited papers, four papers have only one author: Hisrich (1990), Zahra (1991), Antoncic (2007) and Parker (2011). On the other hand, the paper which occupies the fifth position in the ranking by the number of citations has the highest number of signatories, five. It is entitled 'Organizational support for intrapreneurship and its interaction with human capital to enhance innovative performance', published in 2010 in Management Decision.

703 authors have investigated this topic in the 312 selected articles on intrapreneurship, either as single authors or as co-authors, giving an average of 2.25 authors per article. Applying Lotka's Law (1926) (square root of 703 = 26.5), the top 26–27 authors by the number of publications should be the most productive (and in some cases, most influential). We can round up to 31 since this is the number of authors who publish three or more articles on the subject (see Table 3). It is these that we will

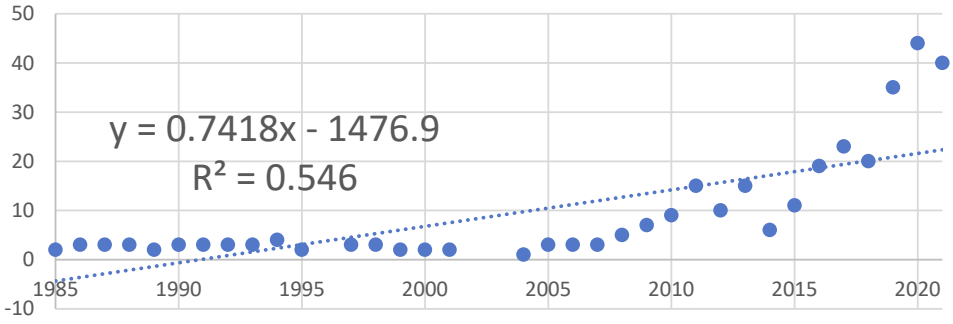

Fig. 1. Growth in scientific production.

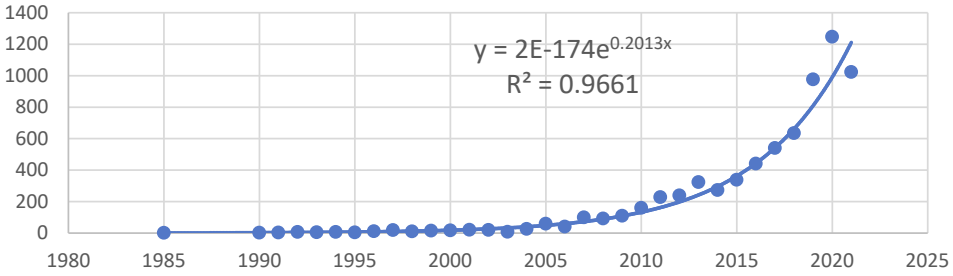

Fig. 2. Total number of citations per year.

Table 1
General citation structure.

Numbers of citations	Number of papers	% of papers
Over 200	4	1.3
Between 100 and 200 citations	6	1.9
Between 50 and 100 citations	25	8.0
Less than 50 citations	237	76.0
0 citations	40	12.8
Total	312	100

consider the most influential (by the number of citations they receive) and the most productive (by the number of articles they have published).

Table 3 shows that Professor Urbano of the University of Barcelona (Spain) is the most productive by the number of publications (a total of 13), followed by Di Fabio (9 articles) of the University of Florence (Italy) and Antončič (6 articles) of the University of Ljubljana (Slovenia). Professor Urbano is the most prolific author but not the most influential: he is the fourth most influential author, surpassed in the number of citations by Antončič (759 citations), Hisrich (709), and Kuratko (619). As can be seen in Table 3, these three authors concentrate 29.9 % of the total citations. Urbano has the highest h-index, 32, and Di Fabio has the highest number of papers, 131.

4.3. Journals

The relevance of the journals and authors linked to the concept of intrapreneurship can be approached in different ways depending on the evaluated measure. Thus, the h-index is used to estimate the scientific productivity of a researcher based on the number of research articles published and their citations, and the impact factor quantifies the total number of articles cited in the journal during the previous two years.

In this way, the 312 articles under study were published in 167 journals indexed in WoS. The degree of concentration is medium, since 11 journals published 93 articles, representing 29.8 % of the publications, with an average of 36.47 citations per article, 3,392 citations, and an h-index of 28. The breakdown of the 11 journals that have published at least five articles is shown in Table 4. The journal with the highest number of papers published is the International Entrepreneurship and Management Journal, with 22 papers published, 7.1 % of the total. The journal with the highest journal impact index in the last five years is the Journal of Business Venturing, with an index of 15.732 in 2020. Among the ten journals with the highest number of publications on intrapreneurship, 3 are Q1, 6 Q2, 1 Q3, and 1 Q4. The journal with the highest number of citations is the Journal of Business Venturing, which has a 15,732 average impact factor over the last 5 years, and the one with the highest h-index is the International Entrepreneurship and Management Journal.

The 312 articles analyzed were published in journals belonging to 60 different WoS categories, either exclusively or in several of them. Table 5 presents the top 11 categories in which more than ten articles have been published. These 11 categories have an h-index of 39, with 6,250 citations, 24.61 citations per article, and have been referenced 4,296 times by other articles. As Table 5 shows, the largest category is Management (153 articles out of 312 are indexed in this category, although it should be noted that the same article can be indexed in several categories, up to 573 records). The category with the highest h-index, however, is Business, since 33 of the 120 articles in this category have more than 33 citations. This category also has the highest number of citations (4,399), the most references to other articles (2,977), and the highest average number of citations, with 36.66 citations per article.

4.4. Institutions

The 703 authors identified are affiliated with 467 organizations (3 records do not provide information in this respect, 0.962 % of the total), and 11 of them contribute five or more papers. Table 6 shows that these 11 organizations account for 21.2 % of the total number of papers published (66 papers out of 312). In total, their h-index is 19, with an average number of citations of 25.02 and a total of 1,651 citations. Another peculiarity is that papers involving more than one institution are cited in more than 1,258 papers.

The two most productive institutions are the Autonomous University of Barcelona in Spain (14 papers and an h-index of 8) and the University of Florence, in Italy, with nine papers and an h-index of 5. However, the most influential institution is arguably the eleventh ranked, the

Table 2
Most cited papers within scientific production/output.

Ranking	Authors	Year	Title	Journal	Total citation
1	Zahra, SA	1991	Predictors and financial outcomes of corporate entrepreneurship - an exploratory-study	Journal of Business Venturing	625
2	Antoncic, B; Hisrich, RD	2001	Intrapreneurship: Construct refinement and cross-cultural validation	Journal of Business Venturing	520
3	Kuratko, DF; Montagno, RV; Hornsby, JS	1990	Developing an intrapreneurial assessment instrument for an effective corporate entrepreneurial environment	Strategic Management Journal	304
4	Kuratko, Df; Ireland, RD; Covin, JG; Hornsby, JS	2005	A model of middle-level managers' entrepreneurial behavior	Entrepreneurship Theory and Practice	286
5	Alpkan, L; Bulut, C; Gunday, G; Ulusoy, G; Kilic, K	2010	Organizational support for intrapreneurship and its interaction with human capital to enhance innovative performance	Management Decision	190
6	Hisrich, RD	1990	Entrepreneurship intrapreneurship	American Psychologist	179
7	Halme, M; Lindeman, S; Linna, P	2012	Innovation for Inclusive Business: Intrapreneurial Bricolage in Multinational Corporations	Journal Of Management Studies	170
8	Del Giudice, M; Della Peruta, Mr	2016	The impact of IT-based knowledge management systems on internal venturing and innovation: a structural equation modeling approach to corporate performance	Journal of Knowledge Management	143
9	Parker, SC	2011	Intrapreneurship or entrepreneurship?	Journal of Business Venturing	139
10	Brinkhurst, M; Rose, P; Maurice, G; Ackerman, JD	2011	Achieving campus sustainability: top-down, bottom-up, or neither?	International Journal of Sustainability In Higher Education	120
11	Menzel, HC; Aaltio, I; Ulijn, JM	2007	On the way to creativity: Engineers as intrapreneurs in organizations	Technovation	99
12	Douglas, EJ; Fitzsimmons, JR	2013	Intrapreneurial intentions versus entrepreneurial intentions: distinct constructs with different antecedents	Small Business Economics	85
13	Di Fabio, A; Kenny, ME	2016	From Decent Work to Decent Lives: Positive Self and Relational Management (PS&RM) in the Twenty-First Century	Frontiers in Psychology	83
14	Turro, A; Urbano, D; Peris-Ortiz, M	2014	Culture and innovation: The moderating effect of cultural values on corporate entrepreneurship	Technological Forecasting and Social Change	82
15	Moriano, Ja; Molero, F; Topa, G; Mangin, JPL	2014	The influence of transformational leadership and organizational identification on intrapreneurship	International Entrepreneurship and Management Journal	82
16	Antoncic, JA; Antoncic, B	2011	Employee satisfaction, intrapreneurship, and firm growth: a model	Industrial Management & Data Systems	76
17	Nasution, HN; Mavondo, FT	2008	Organizational capabilities: antecedents and implications for customer value	European Journal of Marketing	73
18	Antoncic, B	2007	Intrapreneurship: a comparative structural equation modeling study	Industrial Management & Data Systems	71
19	Omerzel, DG; Antoncic, B	2008	Critical entrepreneur knowledge dimensions for the SME performance	Industrial Management & Data Systems	70
20	Wakkee, I; Elfring, T; Monaghan, S	2010	Creating entrepreneurial employees in traditional service sectors, the role of coaching, and self-efficacy	International Entrepreneurship and Management Journal	68

University of Ljubljana, in Slovenia, as it has the highest number of citations on the subject (609), the highest average number of citations (121.8), and the highest number of papers citing it (587).

4.5. Country

The scientific production on intrapreneurship is spread over 55 countries in which some authors have produced at least one article on this topic. However, 92.3 % of the articles are concentrated in only 11 countries, those that have published ten or more articles. Table 7 lists the 11 countries that have produced and published ten or more articles related to intrapreneurship. These 11 countries have a combined h-index of 38, with an average of 25.49 citations per article, 6,041 citations, and 4,178 articles. Table 7 shows that the United States is the most productive and influential country, generating 81 articles. It also has the highest number of citations (2,960), the highest h-index (22), and 2,216 papers with citations. Also noteworthy are Spain and England with 39 and 30 papers, respectively. Slovenia stands out for the highest average of 77.6 citations per paper.

4.6. Bibliometric maps

This section analyzes a range of maps or graphs, beginning with a co-authorship analysis. The author who occupies a central place is Urbano, with a major node that extends towards other nodes (see Fig. 3). From the analysis of co-authorships, we can highlight the existence of 6 clusters (see Table 8). In the cluster led by Urbano, we also find authors with large scientific productions in the field of intrapreneurship, such as Riberio-Soriano and Toledano. Turro is another important author in cluster 6, as is Guerrero in cluster 3.

Urbano, who occupies a central place in Fig. 3, stands out in relation to the joint bibliography of the most cited scientific publications. Other authors who stand out for appearing in this joint bibliography are Gorgieski, Antoncic, Di Fabio, and Caniels (see Fig. 4).

Fig. 5 shows the relationships between the institutions. Table 9 shows a bibliometric analysis of citations related to these institutions, with 8 clusters, each comprising two or more papers per organization. The eight clusters contain 73 institutions. In addition, the graph in Fig. 5 shows the connections between the different institutions included in eight clusters (see Table 9). The Autonomous University of Barcelona, the University of Valencia, the Erasmus University, and the University of Beira Interior are the institutions that are most related to the other institutions.

The largest number of related institutions is grouped in cluster 1 (18) and the lowest number in cluster 8 (only two).

Regarding co-authorship between countries, of the 55 countries, 44 have a co-authored paper. The United States has the highest number of co-authored papers (see Fig. 6). The UK and the Netherlands also occupy a central position. Although Spain has many publications, it does not present many co-authored papers with authors from other countries.

The country co-authorships can be grouped into seven clusters. The largest is cluster 1 (led by the United States), the second-largest is cluster 2, led by the Netherlands. Cluster 7, with four countries, is led by Spain (see Table 10).

The keyword analysis indicates that of the 680 keywords included in the articles published in the Web of Science, 75 appear more than five

Table 3
Most influential and productive authors of Intrapreneurship.

Author's ranking	Author's name	Institution	Total papers by the author in the search vector	% (over total papers in search vector, 312 papers)	Total citations of the author's papers in the search vector	% (over total citations-in search vector, 6,992 citations)	H-Index of the author	Total papers of the author	Total citations of the author
1	Urbano D	Universitat Autònoma de Barcelona, Spain	13	4,2%	250	3,6%	32	102	3,888
2	Di Fabio A	University of Florence, Italy	9	2,9%	199	2,8%	27	131	2,559
3	Antončič B	University of Ljubljana, Slovenia	6	1,9%	759	10,9%	15	32	2,715
4	Gorgievski MJ	Erasmus University Rotterdam, Netherlands	5	1,6%	101	1,4%	18	38	1,165
5	Turro A	Autonomous University of Barcelona, Spain	5	1,6%	152	2,2%	6	8	180
6	Bakker AB	Erasmus University, Rotterdam, Netherlands	4	1,3%	101	1,4%	11	51	411
7	Duradoni M	University of Florence, Italy	4	1,3%	31	0,4%	5	20	86
8	Guerrero M	Northumbria University, UK	4	1,3%	68	1,0%	19	56	2,001
9	Marques CS	University of Trás-os-Montes & Alto Douro, Portugal	4	1,3%	42	0,6%	16	36	871
10	Moriano JA	UNED (Universidad Nacional de Educacion a Distancia), Spain	4	1,3%	162	2,3%	18	55	1,332
11	Topa G	UNED (Universidad Nacional de Educacion a Distancia), Spain	4	1,3%	118	1,7%	14	72	859
12	Altinay L	Oxford Brookes Business School, UK	3	1,0%	83	1,2%	31	87	2,580
13	Alvarez C	Universidad EAFIT, Colombia	3	1,0%	64	0,9%	11	18	551
14	Caniels MCJ	Open University, Netherlands	3	1,0%	31	0,4%	27	73	1,829
15	De Jong JP	Radboud University Nijmegen, Netherlands	3	1,0%	31	0,4%	25	75	3,811
16	Deprez J	KU Leuven, Belgium	3	1,0%	13	0,2%	4	11	70
17	Ferreira FAF	Instituto Universitario de Lisboa, Portugal	3	1,0%	32	0,5%	23	102	1,442
18	Ferreira JJM	Universidade da Beira Interior, Portugal	3	1,0%	32	0,5%	27	224	2,720
19	Franco M	Universidade da Beira Interior, Porugal	3	1,0%	19	0,3%	16	66	844
20	Frank H	Vienna University of Economics & Business, Austria	3	1,0%	65	0,9%	13	25	751
21	Gawke JC	Utrecht University, Netherlands	3	1,0%	101	1,4%	5	8	137
22	Hisrich RD	Kent State University, USA	3	1,0%	709	10,1%	22	82	3,116
23	Kuratko DF	Indiana University, USA	3	1,0%	619	8,9%	36	113	5,725
24	Miao JT	University of Melbourne, Australia	3	1,0%	43	0,6%	7	17	99
25	Molero F	UNED (Universidad Nacional de Educacion a Distancia), Spain	3	1,0%	142	2,0%	15	54	670
26	Neessen PCM	Open University, Netherlands	3	1,0%	31	0,4%	2	3	31
27	Omerzel DG	University of Primorska, Slovenia	3	1,0%	96	1,4%	8	17	346
28	Peris-ortiz M	Universitat Politecnica de Valencia, Spain	3	1,0%	103	1,5%	12	87	571
29	Phelps NA	University of Melbourne, Australia	3	1,0%	43	0,6%	31	149	2,588
30	Sarkar S	University of Evora, Portugal	3	1,0%	12	0,2%	11	31	566

Table 4
Web of Science journals that generate scientific publications.

Ranking	Sources (Journals)	Total number of papers considering the search vector	% of papers out of the total number of papers on the search vector	Total number of citations with search vector only	Average number of citations per paper in search vector	H-Index with search vector only	Impact factor of the journal in the last 5 years	Quartile in the Category
1	International Entrepreneurship and Management Journal	22	7,1%	581	26,41	15	6.458	Q2
2	Small Business Economics	11	3,5%	263	23,91	8	8.139	Q1
3	Sustainability	10	3,2%	63	6,30	4	3.473	Q2
4	Technovation	9	2,9%	126	14,00	4	9.761	Q1
5	Journal Of Business Venturing	7	2,2%	1362	194,57	6	15.732	Q1
6	Management Decision	7	2,2%	365	52,14	5	4.816	Q2
7	International Journal of Entrepreneurial Behavior Research	6	1,9%	59	9,83	4	4.996	Q2
8	Journal Of Organizational Change Management	6	1,9%	116	19,33	5	2.42	Q4
9	Frontiers In Psychology	5	1,6%	122	24,40	4	3.62	Q2
10	Industrial Management Data Systems	5	1,6%	64	12,80	5	6.668	Q2
11	International Journal of Technology Management	5	1,6%	15	3,00	3	2.157	Q3

Table 5
Web of Science categories associated with scientific production.

	Web of Science Categories	Total number of papers only considering the search vector	Percentage of papers out of the total number of papers on the search vector	H-Index with search vector only	Average number of citations per paper in search vectors	Total number of citations with search vector only	Number of papers cited
1	Management	153	26,7%	31	21.15	3236	2398
2	Business	120	20,9%	33	36.66	4399	2977
3	Economics	24	4,2%	10	14.17	340	305
4	Engineering Industrial	24	4,2%	10	24.13	579	507
5	Environmental Sciences	18	3,1%	6	8	144	141
6	Environmental Studies	18	3,1%	8	7	126	120
7	Psychology Applied	18	3,1%	8	15.22	274	236
8	Green Sustainable Science Technology	16	2,8%	6	15.75	252	248
9	Operations Research Management Science	16	2,8%	5	10	160	158
10	Education Educational Research	15	2,6%	6	14.27	214	213
11	Information Science Library Science	12	2,1%	5	15.33	184	183
	Summary	434	75,7%	39	24.61	6250	4296

times and are used together in the same document (see Fig. 7). In this figure we can see the strong interrelationship between the keywords.

The most frequent keyword is ‘corporate entrepreneurship’ with 74 occurrences. It belongs to cluster 3 (in blue), followed by ‘performance’ with 62 occurrences corresponding to cluster 2 (in green), and then ‘innovation’ with 61 occurrences corresponding to cluster 1 (in red). These three terms are interconnected with most of the other keywords. Table 11 shows the words with the highest level of occurrence, and Table 12 shows the co-occurrence clusters in the use of keywords.

‘Corporate entrepreneurship’ appears most frequently due to the great confusion over the concept of intrapreneurship, which has been linked, to a large extent, with corporate entrepreneurship. It is also logical that ‘Innovation’ appears because it is a factor that influences intrapreneurship.’Performance’ appears many times as it is one of the consequences of intrapreneurship. The most frequent keyword (corporate entrepreneurship) appears 48 times more than the tenth most frequent.

Table 12 shows the co-occurrence clusters in the use of keywords. Intrapreneurship is a growing area, which requires organizational innovativeness. Little is known about the particular entrepreneurial qualities and skills needed to design innovative business strategies for dealing effectively with challenging business environments (Hensel et al., 2021). Thus, it is critical to consider the keywords that have been linked to this concept over the years analyzed. The ability to innovate, particularly to do so quickly and frequently, are essential success factors for small and medium-sized enterprises (SMEs) as they operate in changing business environments (Hilmersson and Hilmersson, 2021). Therefore, managers interested in developing the entrepreneurial orientation of the organization should consider elements such as openness to new ideas, creativity, tolerance to failure within the organization’s culture, and innovativeness as a starting point (Santos-Vijande et al., 2022).

Skills such as creativity, communication, and leadership are reflected in databases such as those of the World Economic Forum (WEF) and the Global Entrepreneurship and Development Institute (GEDI). Moreover, information flows are important in organizations, and the quality and quantity of communication are essential for the initiation and implementation of intrapreneurship (Waterman and Peters, 1982). This area has not, however, been widely considered throughout scientific production. One exception is in cluster 2, where the link with skills such as creativity and leadership is highlighted. In this case, they are related to motivations and influential elements in the entrepreneurial motivation

Table 6
Web of Science institutions associated with scientific production.

Ranking	Institutions	Country	Total number of papers only considering the search vector	Percentage of papers out of the total number of papers in the search vector	H-Index with search vector only	Average number of citations per paper in search vectors	Total number of citations with search vector only	Number of papers cited
1	Autonomous University of Barcelona	Spain	14	0,04	8	20.5	287	248
2	University of Florence	Italy	9	0,03	5	22.0	198	137
3	Erasmus University Rotterdam	Netherlands	7	0,02	5	16.71	117	100
4	Universidade da Beira Interior	Portugal	7	0,02	4	7.43	52	46
5	Ku Leuven	Belgium	6	0,02	3	4.67	28	27
6	University of Valencia	Spain	6	0,02	5	17.33	104	104
7	Maastricht University	Netherlands	5	0,02	2	2.4	12	12
8	Northumbria University	UK	5	0,02	4	10.6	53	47
9	Radboud University Nijmegen	Netherlands	5	0,02	4	23.8	119	116
10	Universidad Nacional de Educacion a Distancia Uned	Spain	5	0,02	4	33	165	148
11	University of Ljubljana	Slovenia	5	0,02	3	121.8	609	587
	Summary		74	0 %	19	25.02	1651	1258

Table 7
Countries/regions associated with scientific productions according to the authors' affiliation.

Ranking	Country	Total number of papers only considering the search vector	Percentage of papers out of the total number of papers in the search vector	H-Index with search vector only	Average number of citations per paper in search vectors	Total number of citations with search vector only	Number of papers cited
1	United States	81	26,0%	22	36.54	2960	2216
2	Spain	39	12,5%	15	20.51	800	646
3	UK	30	9,6%	15	16.53	496	458
4	Netherlands	27	8,7%	12	21.48	580	465
5	Australia	21	6,7%	8	16.33	343	341
6	Germany	21	6,7%	8	8.52	179	175
7	Italy	17	5,4%	8	25.76	438	376
8	Canada	15	4,8%	10	32.2	483	463
9	People's R China	14	4,5%	6	9.07	127	126
10	Portugal	13	4,2%	7	11.08	144	119
11	Slovenia	10	3,2%	7	77.6	776	706
	Total Data	288	92,3%	38	25.49	6041	4178

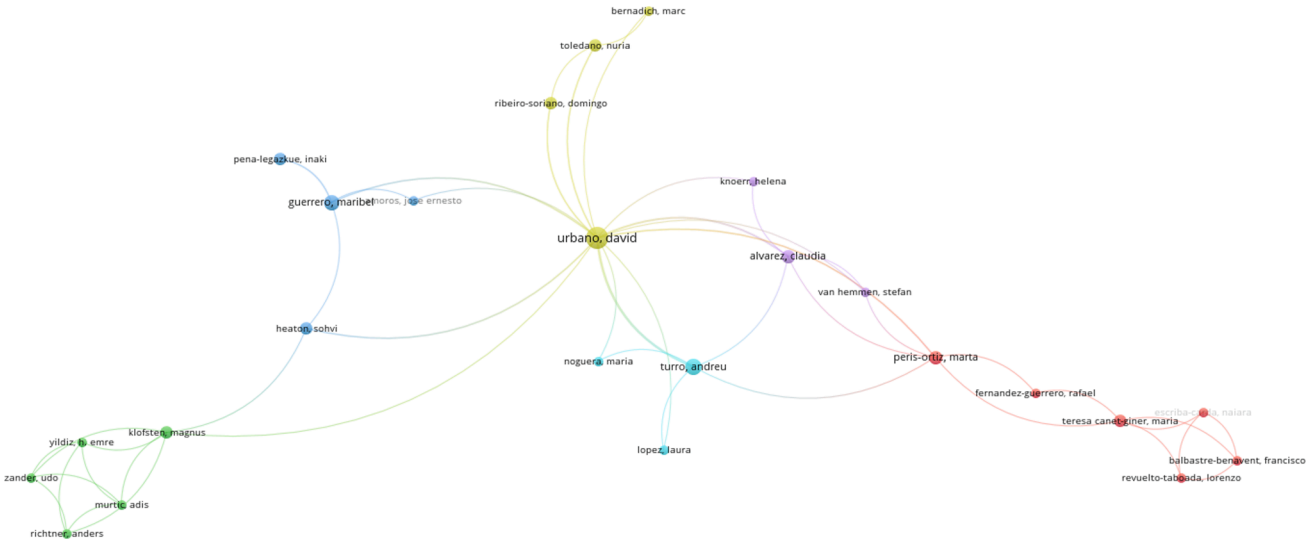

Fig. 3. Graph on joint co-authorship for scientific production.

Table 8
Clusters on co-authorship for scientific production.

Cluster 1	Cluster 2	Cluster 3
Balbastre-Benavente, F.	Klofsten, M.	Amoros, J.E.
Escriba-Carda, N.	Murtic, A.	Guerrero, M.
Fernadez-Guerrero, R.	Richner, A.	Heaton, S.
Peris-Ortiz, M.	Yildiz, H.E.	Pena-Legazkue, I.
Revuelto-Taboada, L.	Zander, U.	
Canet-Giner, T.M.		
Cluster 4	Cluster 5	Cluster 6
Bernadich, M.	Alvarez, C.	Lopez, L.
Ribeiro-Soriano, D.	Knoerr, H.	Noguera, M.
Toledano, N.	Van Hemmen, S.	Turro, A.
Urbano, D.		

of the employee within the organization.

Six co-occurrence clusters were found. In the first of these, one of the most frequently occurring keywords, innovation, usually appears with 19 other keywords. Innovation usually appears with capabilities, competitive advantage, creation, entrepreneurship, or resources. In the second cluster, the keyword performance appears, related to 17 other keywords such as antecedents, behavior, burnout, creativity, efficacy, job satisfaction, leadership. The meaning of performance in this second cluster seems to be more closely related to behavior, leadership, creativity, and job satisfaction. The third cluster is the one in which the most repeated keyword appears: corporate entrepreneurship. This keyword is associated with 14 others, such as construct, environment, financial performance, firm performance, and strategic management. In this case, it seems that the authors have associated the word corporate entrepreneurship with how it is measured (construct), its relationship with external aspects (environment, industry), and with the company itself (financial performance; firm performance, strategic management). In the fourth cluster, the keyword entrepreneurial orientation appears, associated with ten other words, including business performance, human resources management, opportunities, and risk-taking. Another aspect of the co-occurrence of words is that the authors identify different ways of measuring performance. In some clusters it appears alone (cluster 2) and in others it is linked to meanings of the firm (cluster 3), or business (cluster 4), or financial aspects (cluster 3).

5. Conclusiosns

This paper undertook a bibliometric analysis applied to intrapreneurship in order to determine the state of the art of this field by identifying its characteristics as a field of research in business management (Ribeiro-Navarrete et al., 2021).

Intrapreneurship is an area of research framed within entrepreneurship (Antoncic and Hisrich, 2003; Douglas and Fitzsimmons, 2013). The first authors to talk recognizably about intrapreneurship were Pinchot (1985); Drucker (1986) and Pinchot and Pellman (1999). It is, therefore, a relatively young research area with two distinct periods. The first, 1985–2007, is characterized by case studies by researchers, and the second, from 2008, saw fast-growing interest by academics researching more widely. This growing interest, pointed out by authors such as Nicholson et al. (2016), conforms to Price's Law (1976), being exponential, and reached its maximum in 2020, with 44 papers. In this sense, special relevance should be given to the year 2008, since it became a turning point for the concept of intrapreneurship. This could be potentially explained through the global crisis experienced at international level that had an impact on the economy and jobs, generated the need for change in business models, becoming entrepreneurship in the organization one of the alternatives for business development and sustainability. This is related to what was already anticipated by Peterson and Berger (1971), who conceived entrepreneurship as a strategic attitude of large companies in order to respond to market fluctuations. Therefore, this is one of the reasons why researchers are also increasingly interested in analyzing the impact and influence of this concept.

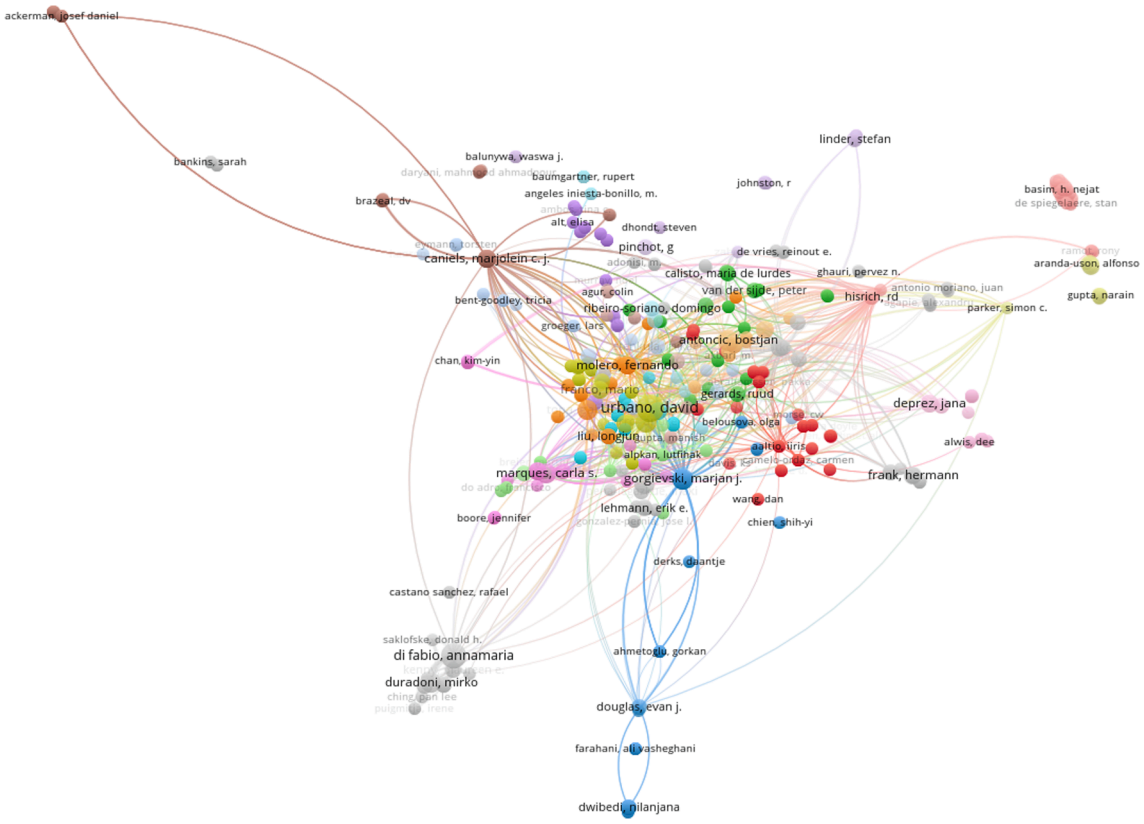

Fig. 4. Graph of joint bibliography for the most cited scientific publications.

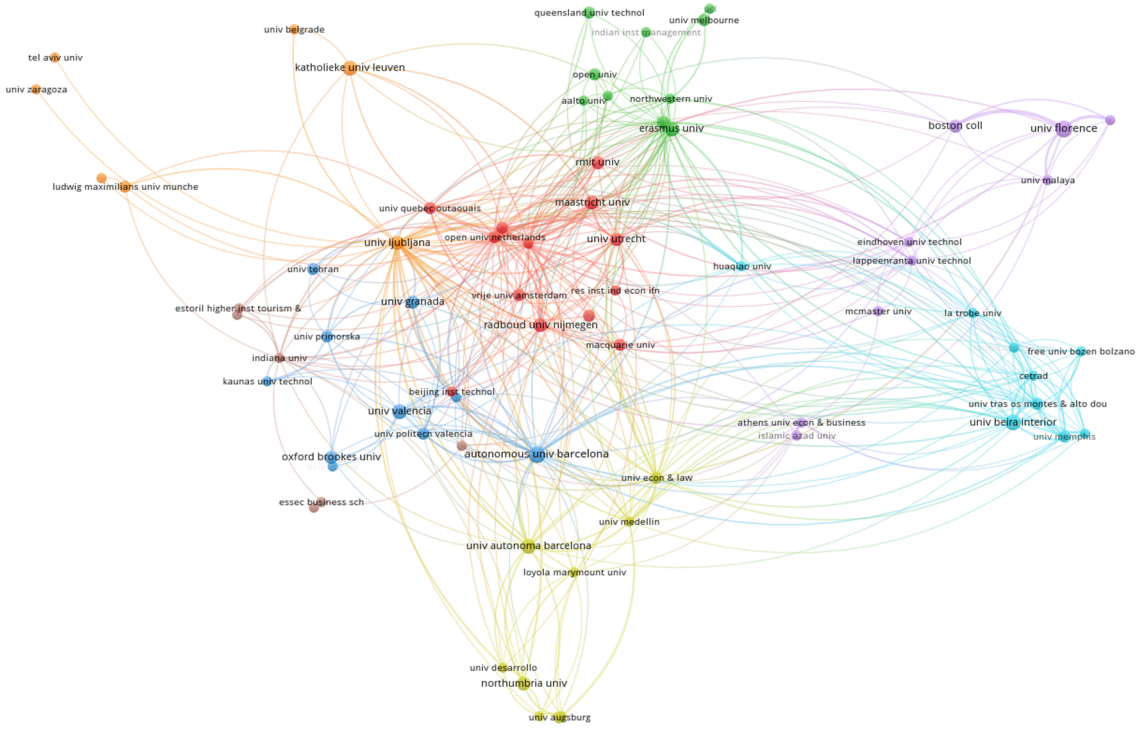

Fig. 5. Related citations between institutions.

Table 9
Related citations between institutions.

Cluster 1	Cluster 2	Cluster 3	Cluster 4	Cluster 5	Cluster 6	Cluster 7	Cluster 8
Arizona State Univ	Bocconi Univ	Ball State Univ	Natl Taiwan Univ	Amer Univ Sharjah	Univ Adolfo Ibañez	Univ Ottawa	Univ Alabama
Concordia Univ	Hasselt Univ	Copenhagen Business Sch	Towson Univ	Ipag Business Sch	Univ Málaga	Univ Pablo De Olavide	Univ Ghent
Emlyon Business Sch	Hec Montreal	Free Univ Bozen Bolzano	Univ Bem	Northeastern Univ	Univ Murcia	Waseda Univ	
Erasmus Univ	Iulm Univ	Mississippi Univ Sci and Technol	Univ Católica Santisima Concepción	Univ Durham			
Univ Augsburg	Jonkoping Int Business Sch	Politec Milan	Univ N Carolina	Univ Innsbruck			
Univ Carlos III Madrid	Jonkoping Univ	Univ Alberta	Univ North Carolina Charlotte	Univ Liechtenstein			
Univ Granada	Maastricht Univ	Univ Bergamo	Univ St Gallen	Univ Salerno			
Univ Insubria	Texas Aandm Univ	Univ Calgary	Univ Tennessee	Univ Witten Herdecke			
Univ Jaén	Univ Antwerp	Univ Lancaster	Whu Otto Beisheim Sch Management				
Univ Navarra	Univ Basque Country	Univ Manitoba					
Univ Notre Dame	Univ Extremadura	Zhejiang Univ					
Univ Pavia	Univ Foggia						
Univ Pisa	Univ Mons						
Univ Publ Navarra	Univ Naples Federico II						
Univ Salamanca	Univ Udine						
Unic Trier							

Terminological confusion and the application of different approaches to the analysis of intrapreneurship are among the causes that explain the low interest in intrapreneurship in the first stage (Valsania et al., 2016). This terminological confusion has led to pairs of terms being treated as synonyms when they are not synonymous (Åmo, 2010).

Intrapreneurship has been analyzed from different perspectives, principally corporate entrepreneurship (Burgers and Covin, 2016) and entrepreneurial orientation (Morris and Kuratko, 2002; Covin and Wales, 2012; Covin and Miller, 2014; Hernández-Perlines et al., 2021). Intrapreneurship has also been analyzed from an organizational perspective (Camelo-Ordaz et al., 2012), at the team level (Gapp and Fisher, 2007), and at the individual level (Gawke et al., 2019).

Several previous authors have conducted systematic reviews of research on intrapreneurship. Those that stand out are by Antoncic and Hisrich (2003), Tranfield et al. (2003), Creswell (2009), Åmo (2010), Jesson et al. (2011), Blanka (2019), Gawke et al (2019), and Wahyudi et al. (2021a, 2021b). They all offer a comprehensive and non-fragmented view of intrapreneurship research and broaden the research horizon.

This study covers 1985 to October 2021, applying a bibliometric

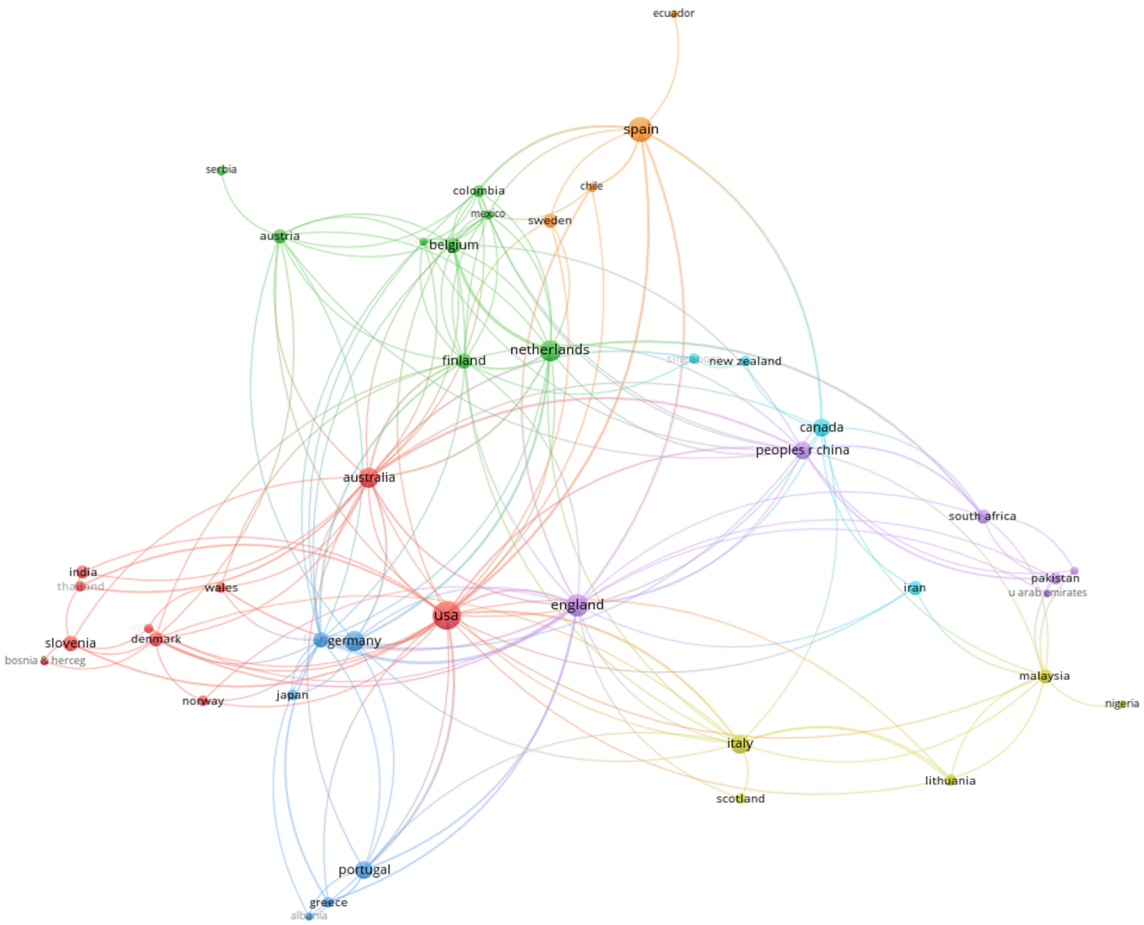

Fig. 6. Co-authorships between countries.

Table 10
Co-authorships between countries.

Cluster 1	Cluster 2	Cluster 3	Cluster 4
Australia	Austria	Albania	Indonesia
Bosnia	Belgium	France	Italy
Denmark	Colombia	Germany	Lithuania
India	Finland	Greece	Malaysia
Ireland	Iceland	Japan	Nigeria
Norway	Mexico	Portugal	Scotland
Slovenia	Netherlands		
Thailand	Serbia		
USA			
Wales			
Cluster5	Cluster 6	Cluster 7	
England	Canada	Chile	
Pakistan	Iran	Ecuador	
China	New Zealand	Spain	
Poland	Singapore	Sweden	
South Africa			
Arabic Emirates			

analysis using 'intrapreneurship' as a keyword. The search was carried out in the WOS, in the categories of Social Citation Index and Social Science Citation Index. WOS has been chosen because it is a database that contains high-quality papers with high-quality content (Ball and Tunger, 2006; Scaringella and Radziwon, 2018). For this purpose, the software WOSviewer v. 1.6.16 8 (Van Eck and Waltman, 2010) was used, which allowed us to evaluate the scientific activity (Sanz-Valero and Wanden-Berghe, 2017) through a systematic review of the literature (Kraus et al., 2020).

In the period considered, 312 articles generated 6,992 citations, an average citation value of 22.41 citations per article. The h-index is 40.

Intrapreneurship as an area of research has a long way to go since it has a relatively low impact and influence in business management, with 76 % of publications having fewer than 50 citations.

The most influential authors were Zahra, Antončič and Hisrich, Kuratko, Montagno and Hornsby. These authors' papers accumulated 1,449 citations. The most cited author is Zahra, with a paper published in 1991 in the Journal of Business Venturing entitled 'Predictors and financial outcomes of corporate entrepreneurship - an exploratory study', with 625 citations. He is, therefore, the most influential author. The topic of intrapreneurship has been investigated by 703 authors, either alone or as co-authors, with an average of 2.25 authors per article. 31 authors published three or more papers on intrapreneurship (above Lotka's Law).

The most productive author is Urbano, University of Barcelona (Spain), with 13 publications, followed by Di Fabio, University of Florence (Italy), with nine articles, and Antončič, University of Ljubljana (Slovenia), with six articles.

The above shows that the most influential author is not the most productive. Urbano has an h-index of 32, Di Fabio has published a total of 131 papers, and Antončič, Hisrich, and Huratko accumulate 29.9 % of the total citations.

A total of 167 journals have published papers on intrapreneurship. The degree of concentration is medium, as 11 journals have published 93 papers, accounting for 29.8 % of the total number of publications on the subject, with an average of 36.47 citations and an h-index of 28. These 11 journals have published five or more articles on intrapreneurship. The International Entrepreneurship and Management Journal is the journal with the highest number of published articles (22), accounting for 7.1 % of the total. The journal with the highest impact

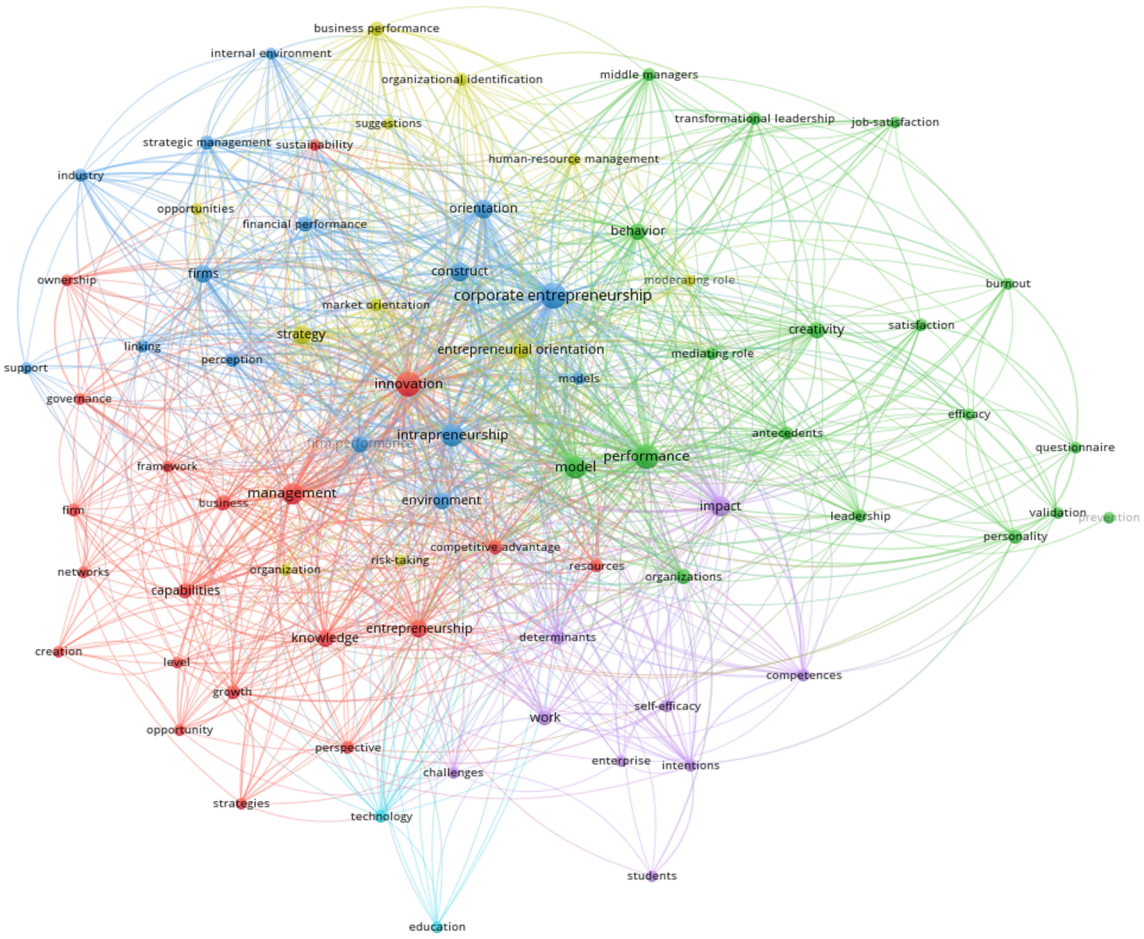

Fig. 7. Bibliometric map of the research on intrapreneurship.

Table 11
Co-occurrence clusters in the use of keywords plus.

N°	Keyword	Occurrence
1	Corporate entrepreneurship	74
2	Performance	62
3	Innovation	61
4	Model	46
5	Entrepreneurship	43
6	Management	38
7	Impact	31
8	Orientation	28
9	Construct	28
10	Strategy	26

index is the Journal of Business Venturing, with an impact index for the last five years in 2020 of 15.732. Among the journals, three are Q1, and 6 are Q2. This indicates the high quality of the journals in which papers on intrapreneurship are published.

Papers on intrapreneurship have been published in 60 different WoS categories. Of these, 11 categories accumulate ten or more published articles, with Management (153) and Business (120) being the categories with the highest number of papers, which together account for 47.6 % of the papers published in the total of the 11 categories that publish ten or more papers on intrapreneurship. Although Business is not the category with the highest number of papers, it is the one with the highest h-index (33), the one with the highest number of citations (4,399), the one with the highest number of references to other articles (2,977) and the one with the highest average number of citations (36.66).

Table 12
Co-occurrence clusters in the use of keywords plus.

Cluster 1 (20 items)	Business, Capabilities, Competitive Advantage, Creation, Entrepreneurship, Firm, Framework, Governance, Growth, Innovation, Knowledge, Level, Management, Networks, Opportunity, Ownership, Perspective, Resources, Strategies, Sustainability
Cluster 2 (18 items)	Antecedents, Behavior, Burnout, Creativity, Efficacy, Job Satisfaction, Leadership, Mediating Role, Middle Managers, Model, Organizations, Performance, Personality, Prevention, Questionnaire, Satisfaction, Transformational Leaders, Validation
Cluster 3 (15 items)	Construct, Corporate Entrepreneurs, Environment, Financial Performance, Firm Performance, Firms, Industry, Internal Environment, Intrapreneurship, Linking, Models, Orientation, Perception, Strategic Management, Support
Cluster 4 (11 items)	Business Performance, Entrepreneurial Orientation, Human Resources Management, Market Orientation, Moderating Role, Opportunities, Organization, Organizational Identification, Risk Taking, Strategy, Suggestions
Cluster 5 (9 items)	Challenges, Competences, Determinants, Enterprise, Impact, Intentions, Self Efficacy, Students, Work
Cluster 6 (2 items)	Education, Technology

The different authors belong to 467 different institutions. Only 11 of them have published five or more papers in intrapreneurship, representing 21.2 % of the total number of papers, achieving an h-index of 19 and an average number of citations of 25.02. In addition, papers involving more than one institution are cited in more than 1258 papers. The most productive institutions are the Autonomous University of Barcelona (Spain), with 14 papers and an h-index of 8. However, the University of Ljubljana (Slovenia) is the most influential, with 609

citations, an average of 121.8, and the highest number of papers in which it is cited, 587.

The scientific production on intrapreneurship extends to 55 countries in which the authors who have participated in one or more papers are located. However, 92.3 % of the papers are concentrated in 1 country where ten or more articles are published. These 11 countries have an h-index of 38 and an average of 25.49 citations per article. The United States is the most productive and influential country, with 81 articles that have received the highest number of citations (2,960), the highest h-index (22), and 2,216 papers with citations.

In addition to the above, we can perform an analysis of the collaborative relationships in the previous points in order to delimit the core of the research field. In that sense, in relation to co-authorships, it should be noted that these can be grouped into 6 clusters, the one led by Urbano being one of the most relevant. Moreover, the institutions are related to each other, generating eight clusters that include 74 institutions. The Autonomous University of Barcelona, the University of Valencia, and the University of Beira Interior have the most relationships with other institutions. There are co-authored papers in 44 countries. The United States is the country with the highest number of co-authored papers. Although Spain has many publications, it does not have many co-authored papers with authors from other countries. Co-authorships by country can be grouped into 7 clusters; cluster 1, led by the United States, has the largest number of countries.

The keyword analysis reveals that the articles published in WoS have used 680 keywords. Of these, 75 appear more than five times and are used simultaneously. The keyword that appears most often is 'corporate entrepreneurship', followed by 'performance' (as one of the main consequences) and 'innovation' (as an antecedent of intrapreneurship). Corporate entrepreneurship is the keyword that appears most often because it has been used in many papers as a synonym for intrapreneurship.

The keywords have been grouped into six co-occurrence clusters. The first cluster comprises the keyword innovation with 19 other words, the second cluster contains performance with 17 other words, and the third cluster has corporate entrepreneurship with 14 other words. Innovation, the third most frequently occurring keyword, is associated with the highest number of words (19). Innovation tends to appear with keywords such as capabilities, competitive advantage, creation, entrepreneurship, and resources. It is worth noting that innovation is positioned as a key factor when dealing with entrepreneurship. Thus, authors such as Ortigueira-Sánchez et al. (2022) have highlighted that it provides a key competitive advantage. These results are consistent with the stream oriented to factors that promote intrapreneurship (Blanka, 2018). The second keyword that appears is performance, which co-occurs with antecedents, behavior, creativity, job satisfaction, and leadership. These results relate to the stream noted by Blanka (2018) and that of Antončič and Hisrich (2000).

Finally, corporate entrepreneurship is the most frequently occurring word, is associated with 14 other keywords, such as construct, environment, financial performance, firm performance, strategic performance. These results are related to the external and internal antecedents of intrapreneurship noted by Antončič and Hisrich (2000). In this sense, intrapreneurship should be understood as a dynamic concept, linked to corporate entrepreneurship, and as an internal activity of the organization, it supports business performance. Thus, despite being a less used term, intrapreneurship should be considered in the same way as corporate entrepreneurship, that is, as an element that offers an opportunity for development and sustainability to the organization.

Limitations

The limitations of this study derive mainly from the application of bibliometric techniques. The first is that the number of citations is not always an indicator of the importance of the work itself, since self-citations may arise and disturb the results. However, it should be noted that all citations have been processed without removing own citations since the present authors have not considered their influence relevant to the objective of providing an analysis of the state of the art of the concept of intrapreneurship. The second limitation relates to co-citations, which do not always imply conceptual or methodological proximity between two papers. This limitation could be resolved through an in-depth analysis of the papers. The third limitation is related to the method itself and the choice of database. For example, other terms could have been used in the search and other databases, such as Scopus and Google Scholar. For future work, it is recommended that the search vector words be broadened and more databases used. A fourth limitation relates to the authors' affiliations at the time of publication, which can change over time. Fifth, an inevitable subjectivity enters the decisions on the thresholds for the inclusion of institutions, journals, etc.

Finally, although this is an exhaustive review of the literature that provides a valid analysis with a structural and dynamic view of intrapreneurship, it could be improved by using other analytical tools such as scientometrics.

6. Future research lines

New research could consider a range of elements linked to intrapreneurship, aiming to offer a clearer understanding of the influence of innovation on business strategy and the motivations of the entrepreneurial employee. Future research may also consider the peculiarities of the entrepreneurial development of the organization in different sectors -business, private, public or non-governmental organizations- thus allowing us to understand the various differences and hitherto unknown linking factors.

Moreover, in view of the fact that many of the authors who begin by exploring one of the concepts continue with it throughout the following studies, it is recommended to continue with the research on the different connotations of the terms. Thus, it will be possible to analyze why the concept of corporate entrepreneurship is the most widely used and the implications and peculiarities of topics such as entrepreneurial adventure or intrapreneurship, in order to continue with contributions in this field of research.

CRediT authorship contribution statement

Felipe Hernández-Perlines: Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Antonio Ariza-Montes:** Software, Resources, Project administration, Methodology, Investigation, Funding acquisition, Formal analysis, Data curation, Conceptualization. **Cristina Blanco González-Tejero:** Methodology, Investigation, Formal analysis, Conceptualization.

Declaration of Competing Interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

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