

International opportunity recognition: A comprehensive bibliometric review

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Abstract

International opportunity recognition (IOR) has been identified as being a critical process within international entrepreneurship (IE), as evidenced by the increase in the scholarly literature on the topic in the last 15 years. Despite the importance of a more rigorous approach to IOR studies, current knowledge concerning progress on this subject is scarce. The main objective of this study is to provide researchers with a better understanding of how research on IOR has evolved over the years. Thus, this study analyzes IOR evolutionary development by examining the conceptual evolution and mapping the structure of IOR research relating to IE, in order to provide insights into scholarly research as well as to detect current and future trends. Two complementary tools, SciMAT and VOSviewer, are used for this analysis. In addition, a bibliometric performance analysis focused on indicators such as productivity, citations, and the h-Index was carried out. The results show that IOR research has undergone a significant increase in recent years (2014–2018) evolving from an emerging issue between 1987 and 2012 to become a key topic which, however, must continue to be developed. The most productive journal is the *Journal of International Entrepreneurship*. The leading three publishing countries are Australia, the USA, and the UK. Moreover, it could be argued that in the emerging years, the IOR phenomenon was treated at both company level and individual level, but the most recent studies are investigating this phenomenon mainly at an individual level. As our main conclusion, it could be said that despite the growth in IOR research, study in this field is still very scarce, which allows us to suggest some future research directions.

Resumen

La Identificación de Oportunidades Internacionales (IOI) ha sido identificado como un proceso crítico dentro del Emprendimiento Internacional (EI), como lo demuestra el aumento de la literatura académica sobre este tema en los últimos 15 años. A pesar de la importancia de este tema, el estado actual sobre su literatura es escaso. El objetivo de este estudio es proporcionar a los investigadores una mejor comprensión de cómo ha evolucionado la investigación sobre el fenómeno de la IOI. Para ello, este estudio analiza el desarrollo evolutivo de la IOI a través de un análisis conceptual y del mapeo científico del mismo dentro del EI, con el fin de proporcionar una visión amplia de la investigación académica, así como detectar las tendencias actuales y futuras. Dos herramientas complementarias, SciMAT y VOSviewer, se utilizan para este análisis. Además, se llevó a cabo un análisis bibliométrico del rendimiento centrado en indicadores como la productividad, las citas y el Índice-h. Los resultados muestran que la investigación de la IOI ha experimentado un aumento significativo en los últimos años (2014-2018), pasando de ser un tema emergente entre 1987-2012 a convertirse en un tema clave que, sin embargo, debe seguir desarrollándose. La revista más productiva es la *Journal of International Entrepreneurship*. Los tres países más productivos son Australia, los Estados Unidos y el Reino Unido. Además, se podría argumentar que en los años emergentes el fenómeno de la IOI fue tratado tanto a nivel de empresa como a nivel individual, pero los estudios más recientes están investigando este fenómeno sólo a nivel individual. Como conclusión principal, podría decirse que a pesar del crecimiento de la investigación de la IOI, el estudio en este campo es todavía muy escaso, lo que nos permite sugerir algunas direcciones de investigación futuras.

Keywords International opportunity recognition · Bibliometrics · International entrepreneurship

Palabras clave Identificación de Oportunidades Internacionales · Bibliometría · Empredimiento Internacional

JEL classification M19

Summary highlights

Contributions: This research presents a well-established and comprehensive analysis that will help novel and senior researchers to broaden their knowledge regarding the conceptual basis and scope of international opportunity recognition (IOR) research. Its main contribution is to establish IOR as an emerging field through a strategic diagram analysis. Furthermore, this study detects new research trends which allow us to suggest some future research directions.

Research questions/purpose: The main purpose of this study is to conduct an exhaustive bibliometric analysis, involving a mix between bibliometric performance analysis and graphic mapping about the research evolution on IOR field. In addition, the main research trends during the period 2005–2018 are identified.

Results/findings: We conduct a comprehensive analysis of IOR articles published in international journals from 2005 to 2018 within the international entrepreneurship (IE)

field. Using two bibliometric tools, we present the main institutions and academic agents that are constantly developing this field. Furthermore, we explore the intellectual core of the IE field, by presenting a content analysis which allows us to establish IOR as an emerging field of research.

Theoretical implications and recommendations: The results of this study provide new empirical evidence on the conceptual evolution of the IOR phenomenon. They also help researchers to achieve a complete conception of the global research on IOR and how it is distributed between subject areas, journals, countries, institutions, and authors. Moreover, the study helps researchers to have a complete overview of the origin, evolution, and current status of IOR research. Finally, it helps researchers to identify the most relevant trend topics and to detect future research directions.

Practical implications and recommendations: The main recommendation for the active agents of this field is to continue strengthening and increasing the number of collaborative ties with researchers from other disciplines as this field needs to be nurtured by a more multidisciplinary approach. Also, we suggest that the active institutions should try to create more academic events that could contribute to the exchange of ideas and debates between practitioners and academics.

Introduction

An increasing number of research on opportunity recognition (OR) have emerged in the international entrepreneurship (IE) literature in recent years (Angelsberger et al. 2017). Since 2006, IOR has become an emerging research stream in IE (Angelsberger et al. 2017; Peiris et al. 2012). The growing dynamism on this phenomenon was most likely triggered by academics asking for more research (Styles and Seymour 2006; Zahra et al. 2005) or by researchers who established that this theme had been analyzed infrequently in previous studies (Johanson and Vahlne 2009).

Furthermore, OR has been discussed and examined as a key element in the field of IE since its identification as a dimension of IE (Angelsberger et al. 2017; Butler et al. 2010; Chandra et al. 2009; Ferreira et al. 2017; Freeman and Cavusgil 2007; Johanson and Vahlne 2009). In this regard, the process of IE begins through OR as, without recognition, opportunities cannot be exploited (Ellis 2011; Oviatt and McDougall 2005a). The research growth of this topic is also due to the complexity and relevance of IOR in the success rate of family firms (Kontinen and Ojala 2011b; Zaefarian et al. 2016) and SMEs (Hilmersson and Papaioannou 2015; Piantoni et al. 2012).

In spite of the constant development in research on IOR, the existing literature on IE implicitly assumes that internationalization is preceded by the recognition of opportunities (Angelsberger et al. 2017; Chandra et al. 2009), providing little explanation of this process or the capabilities that individuals or multinational corporations (MNCs) need to identify these opportunities (Acedo and Jones 2007; Mainela et al. 2014a; Peiris et al. 2012). Kraus et al. (2017a) support this idea, arguing that until now, research on IE has largely ignored the study of the process of recognizing international opportunities (IOs), this being one of the reasons behind several recent calls for further research (Angelsberger et al. 2017; Costa et al. 2018; Kraus et al. 2017a; Petuškiėnė and Gliniskiėnė 2017; Terán-Yépez 2018).

Additionally, the current knowledge of bibliometric analyses regarding this topic is scarce; therefore, Angelsberger et al. (2017) call for quantitative researches to test the qualitative and quantitative studies already carried out in this field. Recent bibliometric studies (Baier-Fuentes et al. 2018; Ferreira et al. 2017; Servantie et al. 2016) provide an overview of the academic research on IE, but they do not study in depth the phenomenon of IOR, its scholarly evolution, or the research trends. Bibliometric analyses are relevant to identify, organize, and analyze the main components of a specific research area (Zhang et al. 2017). Thanks to bibliometric analyses, the development and research trends of a topic can be analyzed to establish the main driving forces of a study field (Cobo et al. 2011) which may help to sort out and summarize previous literature and to discover future research directions.

Therefore, the aim of this study is to close this gap by analyzing the evolution of the quality and quantity of studies related to the IOR phenomenon within the literature of IE over time, given the development seen in this area in the last 15 years. To this end, this paper presents a bibliometric analysis using two complementary tools (SciMat and VOSviewer), which allows the bibliographic material to be graphically mapped, showing the linking networks between countries, authors, institutions, and keywords (Waltman and van-Eck 2012), and also the evolution of research topics to be mapped within a field (Cobo et al. 2011). In addition, a descriptive analysis of research using the Scopus database is performed to carry out a bibliometric performance analysis using indicators such as the h-Index, productivity, and citations (Baier-Fuentes et al. 2018).

The study is structured as follows. First, a brief overview and conceptual analysis of the IOR phenomenon in the IE field are discussed. Second, the methodology used to conduct this research is presented. Third, the results, using a mix between performance, bibliometric analysis, and science mapping, are discussed in terms of descriptive data and content data. Finally, the last section establishes the main conclusions of this study highlighting how this research has contributed to the advancement of this topic and also provides some future research directions.

International opportunity recognition in the international entrepreneurship field

The IE field was born as a response to the dynamic nature of early internationalization firms, which is perceived as anomalous to traditional patterns of corporate internationalization (Oviatt and McDougall 1994; Peiris et al. 2012; McDougall et al. 1994). Research on IE has been interpreted primarily as the intersection of international business (IB) theory and entrepreneurship theory (Keupp and Gassmann 2009; Kraus 2011; Zahra and George 2002). In this regard, in the almost two and a half decades since Oviatt and McDougall et al. (1994) published a seminal article on the topic, the phenomenon has been examined through several theoretical lenses such as international management (Audretsch et al. 2005), strategic management (Paek and Lee 2018), international marketing (Styles and Seymour 2006; Evers et al. 2012), and network theory (Peiris et al. 2012).

In recent years, IE is becoming a consolidated field of research since more journals, authors, institutions, and countries are involved in gaining insight into the phenomenon (Baier-Fuentes et al. 2018) and also because of the rise of citations that IE articles

receive (Ferreira et al. 2017). Moreover, academic interest in this field can also be seen to be on the increase in academic events, such as special thematic areas in international business conferences or McGill IE conferences (Servantie et al. 2016).

Literature establishes that IE is an international opportunity focused activity (Mainela et al. 2018). According to Shane and Venkataraman's (2000: 218) study, it could be established that IOs research is concerned with "how, by whom, and with what effects opportunities to create future goods and services are discovered, evaluated, and exploited" across national borders. International opportunity research has gained increasing relevance with researchers from IB and IE in the last decade (Oyson III and Whittaker 2015). Going even further, Mainela et al. (2014b) argue that "international opportunity has the potential to be a unifying concept of international business and entrepreneurship in IE as a field of scholarly research". Therefore, the entrepreneurial behavior motivated by IOs has been found to be critical in IE (Zucchella and Magnani 2016), as IOs are the trigger for entrepreneurship at the international level and subsequent international new venture (INV) formation (Karra et al. 2008; Keen and Etemad 2012). That means that the recognition (or creation), evaluation, and exploitation of IOs are the cornerstone for the emergence of INVs or for the international expansion of the firm (Evers et al. 2012; Hilmersson and Papaioannou 2015). In other words, IE could be seen as the practice of establishing INVs through the actions and decisions taken by individuals' and/or teams' in response to identifying IOs (Hannibal et al. 2016). Therefore, IOR is a key element in this field, since without recognition, opportunities cannot be exploited and consequently there would be no INV creation (Ellis 2011).

Literature argues that IOs can be recognized or created (Mainela et al. 2014a; Mainela et al. 2018). Although the emphasis of this research lies on the recognition approach, it is relevant to present the distinction between these two concepts. As stated by Etemad (2015), the scholarly dichotomy on whether opportunities are created or recognized goes back to the Kirznerian (recognition theory) and Schumpeterian (creation theory) schools of thought. On the one hand, recognition theory argues that opportunities are generated through a discovery process, where opportunities are identified from exogenous shocks, for example by technological inventions beyond the effect of entrepreneurial action or changes in market or industries (Alvarez and Barney 2010; Shane 2000). On the other hand, the creation theory establishes that opportunities are endogenously created by the interactions between various actors in the daily entrepreneurial practice (Sarasvathy et al. 2003).

Although these theories have some similarities, distinctions are clear (Angelsberger et al. 2017). On the one side, in opportunity recognition, opportunities exist even if entrepreneurs or MNCs are not conscious of them (Alvarez and Barney 2007) and opportunities could be exploited only if entrepreneurs or MNCs are capable of recognizing them (Ellis 2011). Moreover, as entrepreneurs and non-entrepreneurs differ in their capabilities, only entrepreneurs due to their level of alertness and propensity for search are able to perceive opportunities (Mainela et al. 2014a). On the other side, in opportunity creation, opportunities only occur because of the actions executed by the entrepreneurs or MNCs (Sarasvathy et al. 2003). Furthermore, this theory argues that entrepreneurs may or may not differ from non-entrepreneurs and that even minor differences can determine whether an individual can create an opportunity or not (Davidsson 2015). Finally, in recognition theory, opportunities

are discovered in a passive or active way, where entrepreneurs and MNCs take decisions under risky conditions (Angelsberger et al. 2017). In creation theory, opportunities are formed only through active action, observation, and interaction with the environment, where entrepreneurs and MNCs have to take decisions under uncertainty (Mainela et al. 2014a).

According to Oyson III and Whittaker (2015), the recognition view is the dominant theory (over the creation theory). Nevertheless, there is another approach that claims that not all IOs are recognized just as not all opportunities are created, but that there is a middle ground, it is postulated that some opportunities are actually discovered but others are created (Sarasvathy et al. 2003; Oviatt and McDougall 2005a; Short et al. 2010). In addition, Zahra (2008) argues that both theories, recognition and creation, coexist because one enriches the other, what leads to new IOs. However, in a more contemporaneous and pioneering approach for the creation/recognition dichotomy, Oyson III and Whittaker (2015) through an empirical analysis suggested that there is a clear difference between IOR and international opportunity creation. In Oyson III and Whittaker (2015: 329) point of view “recognized opportunities are typically broad, vague, or incomplete and not ready for exploitation, so they are solely potential opportunities. For recognized opportunities to be exploited and internationalization to take place, they need to be transformed into concrete, entrepreneurial opportunities—in other words, “created”, where entrepreneurial international opportunity is a concrete opportunity”.

This means that these two phenomena do not occur at the same time. First, IOs should be recognized as potential opportunities and then, in order to become concrete opportunities, they must be evaluated and created (see Oyson III and Whittaker 2015). Under this approach, it can be argued that IOR is the trigger that sparks the IE process, so if IOs are not recognized these cannot be created. In summary, it could be said that some of these IOs variants are more likely to lead to IE; however each step has its importance. For instance, as a created opportunity is already a concrete opportunity one might think that a created opportunity is more likely to lead to IE than a recognized opportunity. However if the opportunity were not recognized it would not be created, and vice versa, if an opportunity is recognized but individuals or MNCs are not able to evaluate and create it, the IE process will stagnate.

As can be seen, IOR is a central element within IE, so the scientific production of this phenomenon has also evolved in parallel with IE literature (Angelsberger et al. 2017). One way to explore the development of IOR research is to look at the various definitions that have been offered in the literature (Kraus 2011; Peiris et al. 2012) (see Appendix Table 12, which presents the most commonly cited definitions), since IE has undergone continuous updates in its conceptual delineation (Keupp and Gassmann 2009). In that sense, the first definition of IE (Oviatt and McDougall 1994) largely restricted this field to the study of the internationalization of newly founded companies that were necessarily small and young (Mudambi and Zahra 2007; Peiris et al. 2012). The subsequent definitions (McDougall and Oviatt 1997, 2000) stated that research in this field should be independent of the size and age of the enterprise (Keupp and Gassmann 2009) and that the study of IE included research on such behavior and research comparing “national” entrepreneurial behavior in several countries (Peiris et al. 2012). This means that until the year 2000, the notion of IOR did not appear in the IE field.

The notion of OR in IE research was first introduced by Zahra and George (2002), who defined this phenomenon as “the process of creatively discovering and exploiting opportunities that lie outside a firm’s domestic markets in the pursuit of competitive advantage” (p. 266). From this conceptualization, other scholars refined the term to include this aspect. For example, Oviatt and McDougall (2005a, p. 540) defined IE as “the discovery, enactment, evaluation and exploitation of opportunities – across national borders – to create future goods and services”. Subsequently, Styles and Seymour (2006) broadened the scope of the concept by defining it as “behavioral processes associated with the creation and exchange of value through the identification and exploitation of opportunities that cross national borders” (p. 134). From this value creation perspective, Zahra et al. (2014), p. 138) also proposed that IE refers to “the recognition, formation, evaluation, and exploitation of opportunities across national borders to create new businesses, models, and solutions for value creation”.

Peiris et al. (2012) considered that the definition of IE should contain the cognitive perspective of the entrepreneur, more specifically, their intentions, since without intentions there will be no process of entrepreneurial behavior to begin with (Ajzen 1991). They argue that this allows the pre-founding stage of the company to be taken into account, which is a relevant factor in understanding the internationalization process of a firm (Evald et al. 2011; Rialp-Criado et al. 2010). Therefore, they suggested that IE is “the cognitive and behavioral processes associated with the creation and exchange of value through the identification and exploitation of opportunities that cross national borders” (Peiris et al. 2012, p. 300).

These various definitions of IE have resulted in IOR also not having a commonly accepted definition (Angelsberger et al. 2017). Chandra et al. (2009, p. 31) defined IOR as “the way people and firms discover opportunities to enter international markets for the first time or to go into other international markets”, while Muzychenko and Liesch (2015, p. 705) referred to “the emergence of the situational condition which immediately precedes formation of a commitment to proceed with an exchange in a new international market”. Angelsberger et al. (2017) proposed that IOR is “the way an entrepreneur discovers the opportunity to exchange products and services with a new or existing partner in a new international market”. As can be seen, while Chandra et al. (2009) included both the firm and the individual level, the most recent definition from Angelsberger et al. (2017) included only the individual level.

According to the view of Chandra et al. (2009), the IOR phenomenon could be studied at both firm and individual level. On the one hand, the firm-level approach argues that some firm aspects such as the level of international experience (Schweizer et al. 2010) or the network position of the MNCs (Johanson and Vahlne 2009) influence the ability of a firm to recognize IOs. On the other hand, the individual-level approach, based on Shane and Venkataraman’s (2000) statement, that opportunities are identified by individuals and not by firms, claims that some individual aspects such as entrepreneurs international orientation (Crick and Spence 2005), social ties (Ellis 2011), and behavioral, affective, and cognitive aspects (Zahra et al. 2005; Muzychenko and Liesch 2015) are the the triggers for identifying IOs.

However, regardless of whether opportunities are identified by companies or individuals, there is consensus in the literature that there are two different approaches to opportunity recognition, namely serendipitous discovery (passive search) and systematic search (active search) (Chandra et al. 2009; Kraus et al. 2017a). While in passive

search, opportunities are identified through accidental discovery (Kontinen and Ojala 2011a), in active search, opportunities are recognized through a rational and systematic search process (Kraus et al. 2017a). There is empirical evidence that both entrepreneurs and businesses are able to recognize opportunities both rationally and fortuitously (Kraus et al. 2017a; Kontinen and Ojala 2011a). On the one hand, systematic search highlights the importance of information acquisition in the recognition of opportunities (Fiet et al. 2005). Therefore, many individuals and businesses undertake export market research in order to see if an opportunity exists before engaging in international trade (Rubin 2005; Terán-Yépez et al. 2020) as this is a tool that helps to gather and analyze information about international markets through standardized collecting methods and data analysis (Chandra et al. 2009) in order to increase the possibility of discovering IOs (Fiet et al. 2005). On the other hand, serendipitous discovery, even if it is accidental, is not pure luck (Chandra et al. 2009), but includes entrepreneurial alertness as a fundamental aspect of this recognition approach, since being alert enables entrepreneurs and businesses to notice opportunities without actively looking for them (Fiet 2007).

It is also important to point out that in previous literature (Angelsberger et al. 2017; Johanson and Vahlne 2009; Muzychenko and Liesch 2015; Renko et al. 2012), concepts such as international opportunity identification or international opportunity discovery are used interchangeably to refer to IOR. Moreover, several researchers (Angelsberger et al. 2017; Kraus et al. 2017a) argued that the most suitable term to encompass the idea of becoming aware of international opportunities should be international opportunity recognition (IOR). But since this term was introduced from entrepreneurship theory, some studies were and continue to be developed through the concept of OR, associating it to the international context (Cumming et al. 2009; Lundberg and Rehnfors 2018; Reuber et al. 2018; Urban and Willard 2017).

Nevertheless, in order to create a theoretical framework for the IE field, it is necessary to detail the differences that exist between (domestic) OR and IOR. The first clear difference is that OR takes place within the domestic market (Chandra et al. 2009; McDougall and Oviatt 2000), while IOR occurs with opportunity identification in foreign markets (Zahra et al. 2005). Thus, IOR occurs across national borders and plays an important role in the firm's internationalization process (Chandra et al. 2009). Although it is not possible to state that IOR is totally different from (domestic) OR, it must be borne in mind that from an individual-level approach the IOR process is more complex and requires entrepreneurs to have different knowledge, skills, and affective-cognitive attitudes (Karra et al. 2008; Muzychenko and Liesch 2015). In particular, international entrepreneurs require relevant stocks of international knowledge (acquired through international experience or networking) (Karra et al. 2008), which allow them to link ideas and/or resources from different countries (Angelsberger et al. 2017). International entrepreneurs' global mindset, international orientation, self-efficacy in recognizing IOs, passion for cross-cultural encounters, and cross-cultural interpersonal relationships skills also have been found to differentiate IOR from (domestic) OR (Cavusgil and Knight 2015; Weerawardena et al. 2007; Muzychenko and Liesch 2015).

From a firm-level approach, international businesses also reveal differences with regard to domestic firms as far as their ability to recognize IOs is concerned, such as the

level of international experience (Schweizer et al. 2010), network position (Johanson and Vahlne 2009), or the international experience of their employees (Sekliuckiene 2015). In summary, in (domestic) OR, opportunities are located in the domestic market and are discovered by entrepreneurs or firms who are also situated in the domestic market. On the other hand, in IOR, IOs are located in foreign markets and are identified by international entrepreneurs or international firms from their own premises (e.g., discovery through networking or through export market research) or discovery while abroad (e.g., identification in the course of a business or tourist trip) (Angelsberger et al. 2017).

Methodology

Bibliometric analysis

Scientific mapping and bibliometric analysis are spatial representations of how disciplines, fields, specialties, and documents or authors relate to each other (Small 1999). They have been widely used to show and discover the key hidden elements (documents, authors, institutions, themes, etc.) in different fields of research (Cobo et al. 2011; Moed et al. 1995; Morris and Van-der-Veer-Martens 2009). Bibliometric analysis uses secondary data, i.e., is retrospective in nature. Some researchers (Capobianco-Uriarte et al. 2019; Rey-Martí et al. 2016) highlight the importance of this type of research arguing that it generates useful information with which to evaluate scientific activity. According to Zhang et al. (2017), bibliometric analysis allows researchers to examine bibliographical material from a quantitative and objective perspective in order to identify, organize, and analyze information in a specific research field. Bibliometric analysis through key words enables the study of specific details in the main topics of research within a domain and relationships at the micro-level (Chen and Xiao 2016).

As previous bibliometric analysis (e.g., Castillo-Vergara et al. 2018) do, this paper follows these five steps: (1) definition of the field of study; (2) selection of the database, (3) adjustment of research criteria, (4) codification of recovered material, and (5) analysis of the information. Figure 1 summarizes the methodology followed to carry out this research.

Database

Two databases are mostly used to carry out bibliometric analysis, Web of Science (WoS) and Scopus. Taking into account that Mongeon and Paul-Hus (2016) recently noted that Scopus includes more indexed journals than WoS and that 84% of WoS documents can be found in Scopus, this research adopted the Scopus database as a sample. According to Baier-Fuentes et al. (2018), other significant reasons to justify the use of Scopus are (1) the apparent immaturity of the IE field and (2) that Scopus allows records of articles to be obtained that were published in the *Journal of International Entrepreneurship*, a journal indexed in Scopus but not in the WoS. Thus, Scopus database mitigates the risk of missing documents for this research.

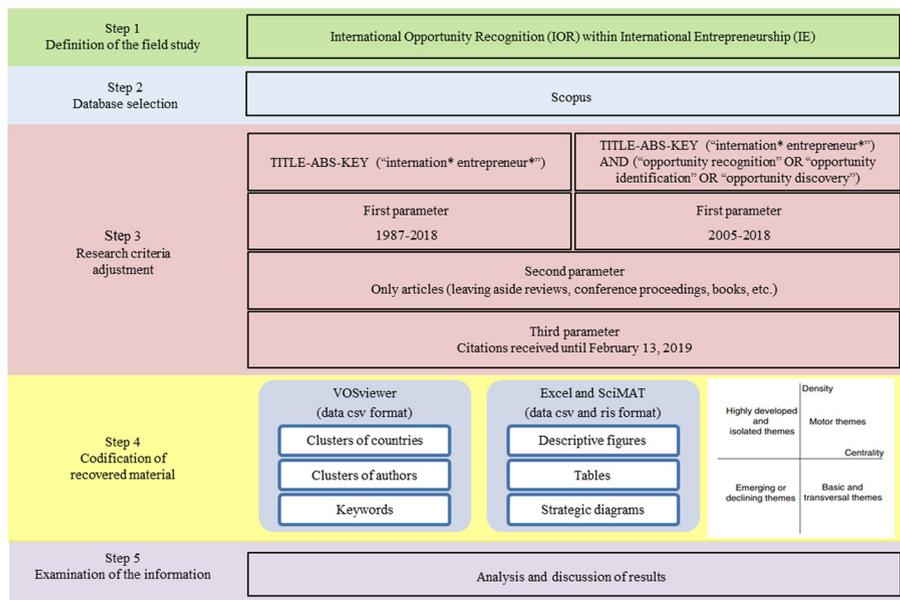


Fig. 1 Methodology flowchart

Software

Two complementary tools were used in this research. On the one hand, VOSviewer (Waltman and van-Eck 2012), which is a powerful and useful tool to construct, visualize, and explore bibliometric maps (van-Eck et al. 2010), facilitating their interpretation (Cobo et al. 2011). It is mainly used for graphical representations of maps that reveal the linking network between countries, authors, institutions, and keywords (Castillo-Vergara et al. 2018).

On the other hand, SciMAT enables scientific map analysis to be carried out in a longitudinal framework (Castillo-Vergara et al. 2018) based on co-words networks (Callon et al. 1983) and on the h-index (Hirsch 2005). It helps to detect research topics, visualize thematic networks, and to discover thematic areas within a specific research field. This study of scientific maps enriches the analysis with bibliometric performance indicators in order to highlight those topics that have received more attention from researchers (Cobo et al. 2012). The main advantage of SciMAT is that it permits the creation of strategic diagrams to visualize the trends in publication patterns over different periods of time measured through the centrality and the density of each topic.

A SciMAT strategic diagram is divided into four quadrants. The topics in the upper right quadrant are well developed and are important for structuring a field of research. These are known as the motor themes of the specialty, since they present strong centrality and high density. The topics in the upper left quadrant have well-developed internal links but unimportant external links, so they are of marginal importance to the field. These topics are very specialized and peripheral. The themes in the lower left quadrant are weakly developed and marginal. The themes in this quadrant have low density and low centrality and represent mainly emerging or disappearing themes. The topics in the lower right quadrant are important for a field

of research but are not developed. This quadrant also contains basic, general, and cross-cutting themes (Cobo et al. 2012). Furthermore, the strategic diagram includes a third dimension. These are spheres whose volume represents one or more of these three different bibliometric indicators, (1) documents related to each topic, (2) number of citations received by the documents related to a specific topic, or (3) the h-index of the theme (Alvarez-Marin et al. 2017).

Data processing

The data processing followed two different parameters in order to achieve the aim of this study. First, to visualize the evolution of the opportunity recognition phenomenon in the IE field through the strategic diagrams of SciMAT, the search parameter was “TITLE-ABSTRACT-KEYWORD (“internation* entrepreneur*”)” as suggested in similar previous studies (Ferreira et al. 2017). The search was conducted in February 2019 and the selected study period was 1987 to 2018 since the first paper included in Scopus that holds the search parameter dates from 1987. Only papers up to 2018 were included in order to compare complete years. The sample includes only articles and avoids reviews to prevent duplication of documents. The final sample consisted of 581 articles. Considering that citations from these articles are also used in this study, citations received by February 13, 2019, were taken into account.

To improve data quality, a process was applied to avoid duplication (both authors' keywords and ISI keywords were used for this), whereby words representing the same concepts were grouped together. In addition, some meaningless keywords for this study, or words with a very broad and general meaning, e.g., “INTERNATIONAL ENTREPRENEURSHIP” and “FIRM”, were removed. In order to perform the analysis through the strategic diagrams the data was divided into two sub-periods. Although it is common to use periods covering the same time span, it was decided and in concordance with previous studies (Cobo et al. 2015; Murgado-Armenteros et al. 2015) that the first period should cover almost thirty years (1987–2012) due to the low number of publications in the early years of this field. Due to this, a first period of a reasonable size was achieved in comparison with the subsequent period, which was necessary for a good analysis of the scientific maps and for detecting the main research topics. Therefore, the data is divided into two consecutive time periods: 1987–2012 and 2013–2018 with 271 and 310 articles, respectively. A third strategic map is presented where all the research developed (1987–2018) is incorporated in order to visualize the most relevant topics of the IE field throughout the entire study period.

The second parameter used in this study was “TITLE-ABSTRACT-KEYWORD (“internation* entrepreneur*”) AND TITLE-ABSTRACT-KEYWORD (“opportunity recognition” OR “opportunity identification” OR “opportunity discovery”)”. This type of search will allow bibliographic data to be extracted from all the articles that mention the opportunity recognition phenomenon in the IE field, so in this study, we are not limited to the international opportunity recognition term. With the help of VOSviewer, it was possible to visualize the linking network between countries, authors, and keywords to present a well-established overview of the worldwide research in this field. As in the first parameter, only the articles (no reviews) between 1987 and 2018 were taken into account (the first paper dates from 2005). The final sample consisted of 38 articles.

Results and discussion

Descriptive analysis

The scientific production analysis is very useful for understanding the literature structure of a field. This provides an overview of the main characteristics included in a bibliometric analysis. Table 1 shows the summary data used to conduct this research.

Evolution of scientific production

Table 2 shows the evolution of the main characteristics of published articles related to IOR in the IE field from 1987 to 2018. The number of articles published on IOR (ApY) has increased significantly in recent years; more than 55% of research was developed in the last 5 years (2014–2018). The IOR/IE column shows the annual number of IOR papers divided by the total number of articles published on IE. As can be seen, the first year (2005) presents the highest percentage for this indicator (15%), followed by 2017 with 14% and 2008 with 13%. Moreover, Fig. 2 shows a comparison between the number of published articles on IE and on IOR in the IE field. According to this, IE research had grown exponentially while IOR research fluctuates over the years, i.e., it is neither constant nor completely exponential. Regarding just the IE research and in concordance with previous research (Baier-Fuentes et al. 2018), more than 80% of research has been published in the last 10 years (2009–2018). Regarding the paper of Baier-Fuentes et al. (2018), it could be said that in both cases, this increase could be explained by three main factors. First of all, many researchers have only recently begun studying the IE field. Second, the emergence of specialized journals about this topic, for example the *Journal of International Entrepreneurship* or the *International Entrepreneurship and Management Journal*. And third, the increased willingness of several journals to publish articles relating to IE (Baier-Fuentes et al. 2018).

Table 2 also shows that the average number of citations (AC/A) has increased consistently from 1.00 in 2005 to 41.82 in 2018. The average number of authors per article (AUpA) is another important factor to bear in mind; in the first 9 years (2005–2013), the average number of authors per article was 1.66, while in the last five years (2014–2018), it had increased to 2.61. The number of countries (COpY) publishing articles on IOR in the IE field has also increased during the study period. In 2017, nine different countries published at least one paper related to IOR in the IE field. This fact (COpY) together with the AUpA demonstrate that during the period there were an

Table 1 Summary of used data

Data	IE research	IOR research within IE
Number of articles	581	38
Number of journals	159	23
Number of authors	1,036	90
Number of countries	63	24
Number of citations	19,863	1,445

Table 2 The characteristics of the evolution of published articles on IOR in the IE field from 2005 to 2018

Year	ApY	IOR/IE	CpY	AC/A	AU	AUpA	JpY	COpY
2005	2	15%	2	1.00	5	2.50	1	4
2006	1	4%	14	5.33	1	1.00	1	1
2007	0	0%	26	14.00	0	0.00	0	0
2008	3	13%	29	11.83	4	1.33	3	4
2009	2	6%	41	14.00	5	2.50	2	3
2010	3	11%	51	14.82	7	2.33	3	4
2011	4	8%	113	18.40	9	2.25	4	4
2012	2	5%	106	22.47	6	3.00	2	2
2013	0	0%	90	27.76	0	0.00	0	0
2014	2	4%	173	33.95	6	3.00	2	5
2015	3	6%	174	37.23	5	1.67	2	5
2016	4	7%	227	40.23	12	3.00	4	6
2017	8	14%	260	38.41	19	2.38	6	9
2018	4	6%	283	41.82	12	3.00	4	3

ApY, number of articles published per year; *OR/IE*, percentage of articles published on IOR in the IE field; *CpY*, number of citations per year; *AU*, number of authors per year; *AC/A*, average number of citations per article (citation total since 1983/total of articles since 1983); *AUpA*, number of authors that published at least 1 article in a specific year; *JpY*, number of journals that published at least 1 article in a specific year; *CopY*, number of countries that published at least 1 article in a specific year

increasing number of collaborations between diverse authors representing different countries to carry out research about IOR. Finally, the number of journals (*JpY*) that published at least one article about this topic in a specific year has also increased in recent years. This fact indicates that the IOR research field has been positively received in an ever-growing group of journals (Servantie et al. 2016).

According to Fig. 3 and in concordance with previous studies (Ferreira et al. 2017), the citations of IE articles and IOR articles in the IE field had also increased across the years. This is very important for a field because it is one of the ways to highlight the quality of the work (Baier-Fuentes et al. 2018). Analyzing only the citations corresponding to IE articles, more than 65% date from the last five years; almost in line with the over 70% of citations that correspond to IOR research over the same period (see

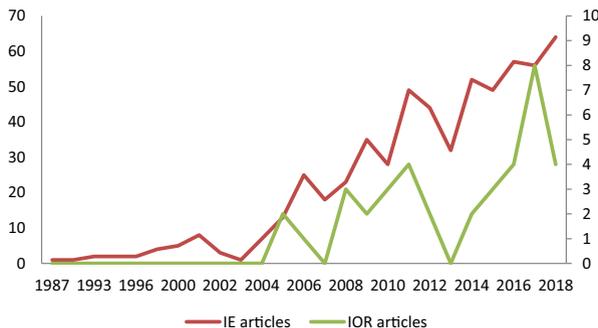


Fig. 2 Comparative trends between IE research and IOR research in the IE field from 1987 to 2018

Table 2). According to Baier-Fuentes et al. (2018), just 6% of IE articles have received more than 100 citations, while 77% of articles have received fewer than 25 citations. Citation figures for IOR articles do not vary so much; 10% of articles have received more than 100 citations and 66% of papers fewer than 25 citations.

To obtain a complete picture of the documents that received more citations, Table 3 presents the ten most cited publications on IOR in the IE field. The number of citations reflects the popularity and influence of each article in the scientific community. It can be appreciated that the most cited and influential paper is Crick and Spence (2005), which has more than 250 citations. It is followed by Zahra et al. (2005) with 235 citations and Ellis (2011) with 177 citations. In an effort to reduce the effect of the year of publication, the indicator C/Y is presented, which calculates the average citations per year received per article since its publication (the month of publication was not taken into account). Despite the inclusion of this variable, the results are not too different, as the first 3 works are repeated, albeit in a different order. In that sense, Ellis (2011) had 22.1 citations per year followed by Crick and Spence (2005) with 18.6 and Zahra et al. (2005) with 16.8.

There are other factors worth remarking upon. First of all, that Zahra, S.A., is the only author that appears in more than one paper in the Top ten list. Second, that there is just one journal that possesses more than one paper ranked in the list, this being the *International Business Review* with 3 articles. Third, that the most recent papers classified in the list dated from 2014. Finally, that regarding the 581 published articles on IE, the first three articles about IOR in the IE field are ranked in the 12th, 18th, and 23rd positions.

Distribution of scientific production by subject area and journals

It should be noted that 84.4% of IE research was published in the subject areas of *Business, Management, and Accounting* (61.3%) and *Economics, Econometrics, and Finance* (23.1%). Following the same trend, IOR research in the IE field has been published mainly in areas such as *Business, Management, and Accounting* (62.1%) and *Economics, Econometrics, and Finance* (25.9%). Thus, and in concordance with Ferreira et al. (2017), it is necessary that the IE field and, as a consequence, the IOR research in the IE field embrace a more multidisciplinary approach that link them with

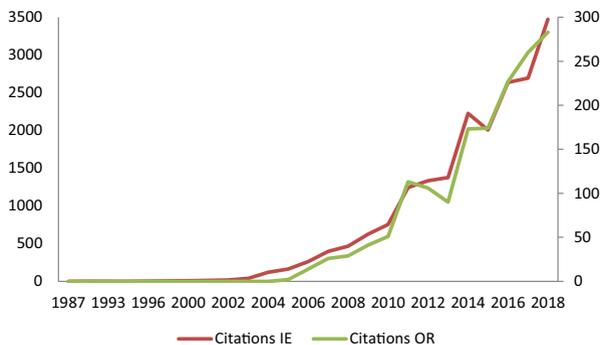


Fig. 3 Comparative trends between IE research citations and IOR research citations in the IE field from 1987 to 2018

Table 3 The ten most cited papers on IOR in the IE field from 2005 to 2018

Title	Author/s	Journal	C	Year	C/Y
The internationalisation of 'high performing' UK high-tech SMEs: A study of planned and unplanned strategies	Crick, D., Spence, M.	International Business Review	261	2005	18.6
Cognition and international entrepreneurship: Implications for research on international opportunity recognition and exploitation	Zahra, S.A., Korri, J.S., Yu, J.	International Business Review	235	2005	16.8
Social ties and international entrepreneurship: Opportunities and constraints affecting firm internationalization	Ellis, P.D.	Journal of International Business Studies	177	2011	22.1
The recognition of first time international entrepreneurial opportunities: Evidence from firms in knowledge-based industries	Chandra, Y., Styles, C., Wilkinson, I.	International Marketing Review	131	2009	13.1
Network ties in the international opportunity recognition of family SMEs	Kontinen, T., Ojala, A.	International Business Review	98	2011	12.3
Building the Born Global Firm. Developing Entrepreneurial Capabilities for International New Venture Success	Karra, N., Phillips, N., Tracey, P.	Long Range Planning	84	2008	7.6
International entrepreneurship: A critical analysis of studies in the past two decades and future directions for research	Peiris, I.K., Akoorie, M.E.M., Sinha, P.	Journal of International Entrepreneur- ship	72	2012	10.3
On the Frontiers: The Implications of Social Entrepreneurship for International Entrepreneurship	Zahra, S.A., Newey, L.R., Li, Y.	Entrepreneurship: Theory and Practice	58	2014	11.6
Cross-cultural entrepreneurial competence in identifying international business opportunities	Muzychenko, O.	European Management Journal	47	2008	4.2
The inception of internationalization of small and medium enterprises: The role of activeness and networks	Ciravegna, L., Majano, S.B., Zhan, G.	Journal of Business Research	40	2014	8.0

C, number of citations; C/Y, number of citations per year

other disciplines such as psychology, which could bring new theoretical perspectives to strengthen this emerging field.

As presented in Table 1, IE articles are published in a wide range of journals. The most commonly used journal for publishing IE research is the *Journal of International Entrepreneurship*, with 85 papers (15% of total papers). Other relevant journals with good levels of scientific productivity about IE are *International Business Review*, *International Journal of Entrepreneurship and Small Business*, *Journal of Business Venturing* and *International Entrepreneurship and Management Journal* (Baier-Fuentes et al. 2018). Regarding IOR research, 23 different journals published articles about this topic, but only 3 have published two or more articles (see Table 4).

Table 4 presents the 23 journals that published IOR articles in the IE field and some indicators, such as the number of published articles, citations, average citations, year of

Table 4 Journals that published IOR articles in the IE field from 2005 to 2018

Journal	A	C	C/A	1st A	Last A	h - Index
Journal of International Entrepreneurship*	10	206	20.60	2006	2017	5
International Business Review*	4	602	150.50	2005	2016	4
International Journal of Entrepreneurship And Small Business	4	9	2.25	2012	2018	2
Australian Journal of Basic And Applied Sciences	1	1	1.00	2011	2011	1
Entrepreneurial Business and Economics Review	1	1	1.00	2017	2017	1
Entrepreneurship Theory and Practice*	1	58	58.00	2014	2014	1
European Journal of International Management	1	2	2.00	2008	2008	1
European Management Journal*	1	47	47.00	2008	2008	1
Industry and Innovation*	1	11	11.00	2010	2010	1
International Journal of Entrepreneurship And Innovation	1	0	0.00	2017	2017	0
International Journal of Entrepreneurship And Innovation Management	1	0	0.00	2018	2018	0
International Journal of Information Management*	1	16	16.00	2010	2010	1
International Marketing Review*	1	130	130.00	2009	2009	1
Journal of Business Ethics*	1	34	34.00	2011	2011	1
Journal of Business Research*	1	39	39.00	2014	2014	1
Journal of Business Venturing*	1	12	12.00	2016	2016	1
Journal of International Business Studies*	1	174	174.00	2011	2011	1
Journal of International Marketing*	1	0	0.00	2018	2018	0
Journal of Small Business And Enterprise Development	1	11	11.00	2017	2017	1
Journal of Small Business Strategy	1	5	5.00	2017	2017	1
Journal of World Business*	1	2	2.00	2018	2018	1
Long Range Planning*	1	84	84.00	2008	2008	1
Management Research Review	1	1	1.00	2016	2016	1

A, number of total articles; C, number of citations for all articles; C/A, average citation per article; 1st A, year of first published article; Last A, year of last published article; *Q1 journals in Scopus database

first publication, year of last publication, and the h-Index. Of course, the fact that twenty journals published just one paper about this topic means that the year of first and last publication is the same. Moreover, the h-Index will always be one in the case of these twenty journals as they received at least one citation and zero when they have not received any citation to date. In spite of these limitations, Table 4 provides relevant information.

The journal with the highest productivity relating to IOR is also the *Journal of International Entrepreneurship* with 10 articles. This journal appears with 206 citations, i.e., an average of 20.6 citations per articles and with an h-Index of 5, which means that there are 5 papers which have received at least 5 citations. The other two journals with more than one published paper are *International Business Review* and *International Journal of Entrepreneurship and Small Business* with four each. It should also be mentioned that the journal with most citations is the *International Business Review*, and that the journals with the most average citations per article are the *Journal*

of *International Business Studies*, *International Business Review* and *International Marketing Review*.

Coombs and Sadrieh (2009) argued that until 2008, IE research was mainly published in entrepreneurship journals. However, as presented in Table 4, it can be seen that a significant percentage of IOR research in the IE field also appears in international business, international marketing, and management journals. Nevertheless, it is also important to mention that almost 50% (11 of 23) journals have begun publishing IOR research in the IE field in the last 5 years (2014–2018). Finally, it is important to mention that fourteen journals from Table 4 are cataloged as Q1 in the Scopus database.

Countries, institutions, and authors

As presented in Table 1, a total of 63 countries have published articles relating to IE. According to the results of Servantie et al. (2016), it could be argued that the country with the most publications concerned with this field is the USA with 140 articles, followed by the UK with 91. Regarding IOR research in the IE field, Table 5 shows the countries that have two or more published articles on IOR in the IE field from 1987 to 2018. The most productive country is Australia with 10 articles, followed by the USA with 6 and the UK with 4, i.e., despite 24 different countries (see Table 1) having published about IOR the major production appears to be concentrated in only a few countries. In fact more than 50% of published articles about this theme was concentrated in three countries. It should be pointed out here that one article could represent more than one country, since countries are given by the affiliation institutions of authors.

Table 5 Countries with two or more published papers on IOR research in the IE field from 2005 to 2018

Country	A	ApH	C	C/A	h-index	1st A	Last A
Australia	10	0.40	277	27.70	5	2006	2017
USA	6	0.02	366	61.00	4	2005	2018
UK	4	0.06	307	76.75	3	2005	2016
Canada	3	0.08	271	90.33	2	2005	2018
Finland	3	0.54	371	123.67	3	2005	2011
Chile	2	0.11	16	8.00	2	2017	2017
Hong Kong	2	0.27	217	108.50	2	2011	2014
Spain	2	0.04	16	8.00	2	2010	2012
Italy	2	0.03	142	71.00	2	2009	2010
Ireland	2	0.41	28	14.00	2	2015	2016
Sweden	2	0.20	28	14.00	2	2015	2016
New Zealand	2	0.41	77	38.50	2	2012	2015
Netherlands	2	0.12	21	10.50	2	2010	2017

A, number of total articles; ApH, number of articles per 1 million inhabitants; C, number of citations for all articles; C/A, average citation per article; 1st A, year of first published article; Last A, year of last published article

This table also shows the number of published articles per 1 million inhabitants. If this variable is considered, Finland achieves first place followed by New Zealand and Ireland. It should also be highlighted that Finland is the country with the largest number of citations followed by the USA and the UK. Considering the variable of the number of citations per article, Finland took once again the first place with 123.67, followed by Hong Kong with 108.50 and Canada with 90.33. This type of variable confirms that these countries have a greater standing based on the citations received for their articles, while other countries such as Chile, Spain, and Netherlands had the least numbers of citations relative to the number of published articles. It has to be said that in the case of Chile, both publications dated from 2017, so they are relatively new.

Another variable used in this analysis was the h-Index. As seen in Table 3, the country with the best h-Index is Australia with 5 followed by the USA with 4 and the UK and Finland with 3 each. Of course, due to the reduced number of works published by each country in this area, the h-Index is not so high. Another important indicator is that 10 of the 13 most productive countries began or have continued to publish about IOR in the IE field in the last 5 years (2014–2018).

The map in Fig. 4 depicts the network visualization based on citations between countries that have cited the studied articles. It is important to point out that the figure indicates that Australia and the USA are the core for relationships between the other countries. It is also notable that there is a strong citation network between the countries that belong to the red cluster, i.e., Australia, New Zealand, Spain, UK, Canada, Hong Kong, and Finland, while countries such as Italy, Chile, and Ireland are more isolated.

The principal characteristics of the seven most productive institutions on IOR in the IE field are displayed in Table 6. They are located in four countries. Only Australia has more than one institution in the top seven, with four centers. All these seven universities have two papers about IOR in the IE field. The University of Sydney has the most citations with 147 and of course (since all institutions have the same number of articles) the largest number of citations per article with 73.50. It is followed by The University of Adelaide with 49 citations and by the National University of Ireland Galway and Högskolan i Halmstad from Sweden with 28 citations each. It is also important to mention that four of the seven institutions have begun publishing about IOR in the IE field in the last four years (2015–2018). It should also be mentioned that just one of the

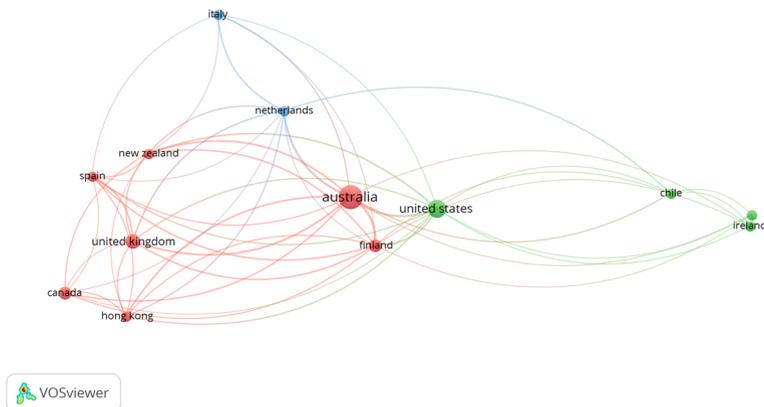


Fig. 4 Network visualization based on citations from 2005 to 2018

institutions (Högskolan i Halmstad) in this group appears in the top ten most productive institutions on IE (Baier-Fuentes et al. 2018; Servantie et al. 2016).

There are 1036 different authors (see Table 1) who have published articles relating to IE research but just three of them have published more than 7 articles; they are Pavlos Dimitratos (14 papers), Dave Crick (9 papers), and Svante Andersson (8 papers). Regarding the authors that have published articles relating to IOR in the IE field, we found 90. From these, only 7 have published more than 1 paper (see Table 7). Table 7 shows also that the majority of authors published their first articles on this subject (1st A) in the last 4 years (2015–2018). These results support the argument that this field of research is in a period of constant growth and consolidation. Even though the majority of researchers came from Australia, it can be seen that there are researchers from a wide range of origins, such as South America, Europe, and North America and it is notable that researchers represent six different institutions. The author with the highest number of citations is Shaker Zahra with 293 (an average of 146.50 per article). Of course, due to the small amount of work by each researcher in this area, the h-Index does not exceed 2.

Figure 5 shows an overlay visualization map illustration which is relevant to show developments over time. From this diagram, it can be seen which authors received the most recent citations. For example, it can be clearly appreciated that articles published by O. Muzychenko and S.A. Zahra were relevant for the emergence of this topic, but they enjoyed their greatest significance between 2008 and 2012. Nowadays, there are other authors such as C. Bianchi, M. Angelsberger, D. Béliveau, or B. Urban that represent the hotspot trends in this subject, because they are receiving more current citations. It can also be noted that this figure presents a highly complex and atomized citation network, probably mainly caused by the limited number of articles published on this topic.

Content analysis

In this section, an analysis of the results obtained through SciMAT was carried out using the 581 IE documents in order to study in more depth the evolution of IOR in the IE field. Second, through VOSviewer and using the 38 IOR documents identified in the IE field, a network of the main keyword co-occurrence is presented in order to detect the most used keywords in IOR research.

Table 6 Institutions with more than one published paper on IOR research in the IE field from 2005 to 2018

Institution	Country	A	C	C/A	1st A	Last A	h-Index
Universidad Adolfo Ibáñez	Chile	2	16	8.00	2017	2017	2
La Trobe University	Australia	2	2	1.00	2017	2017	1
National University of Ireland Galway	Ireland	2	28	14.00	2015	2016	2
The University of Adelaide	Australia	2	49	24.50	2008	2008	2
Queensland University of Technology	Australia	2	16	8.00	2017	2017	2
Högskolan i Halmstad	Sweden	2	28	14.00	2015	2016	2
The University of Sydney	Australia	2	147	73.50	2006	2009	2

A, number of total articles; C, number of citations for all articles; C/A, average citation per article; 1st A, year of first published article; Last A, year of last published article

Table 7 Authors with more than 1 published article related to IOR in the IE field from 2005 to 2018

Author	A	C	C/A	1st A	Last A	h-Index	Country	Affiliation
Bianchi, Constanza C.	2	16	8.00	2017	2017	2	Chile	Universidad Adolfo Ibáñez
Evers, Natasha	2	28	14.00	2015	2016	2	Ireland	National University of Ireland Galway
Glavas, Charmaine	2	16	8.00	2017	2017	2	Australia	Queensland University of Technology
Mathews, Shane W.	2	16	8.00	2017	2017	2	Australia	Queensland University of Technology
Muzychenko, Olga	2	49	24.50	2008	2008	2	Australia	The University of Adelaide
Ratten, Vanessa	2	2	1.00	2017	2017	1	Australia	La Trobe University
Zahra, Shaker A.	2	293	146.50	2005	2014	2	USA	University of Minnesota Twin Cities

A, number of total articles; C, number of citations for all articles; C/A, average citation per article; 1st A, year of first published article; Last A, year of last published article

Evolution of opportunity recognition phenomenon in the international entrepreneurship field

The strategic diagram shown in Fig. 6, which represents the total period under study (1987–2018), presents five motor themes, four peripheral themes, three emerging or decadent themes, and four basic themes. Moreover, Table 8 shows the main characteristics of each topic (number of documents, h-Index, citations, centrality, and density). The size of the spheres presented in Fig. 6 represents the h-Index of each research theme. According to the information presented in Fig. 6 and Table 8, it can be argued

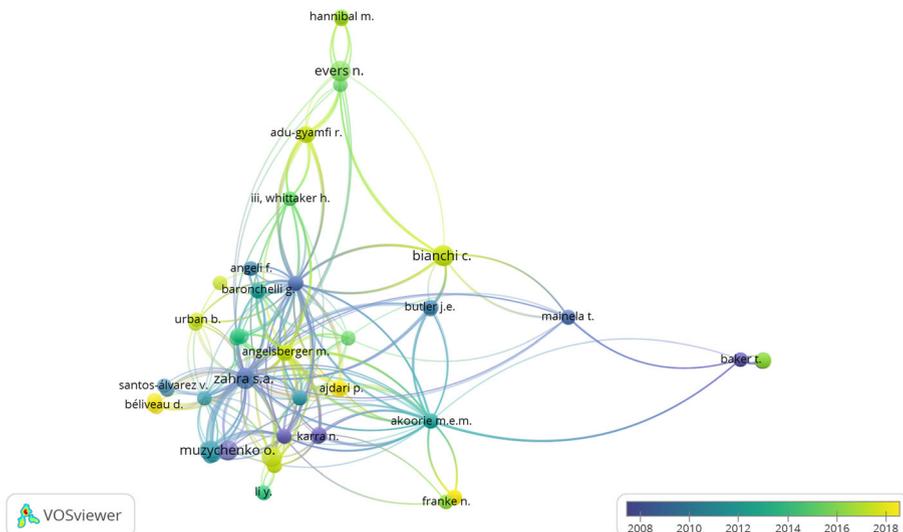


Fig. 5 Overlay visualization based on citations from 2005 to 2018

that the IOR phenomenon in the IE field shows high centrality but low density. Regarding the number of documents and the h-Index, the IOR topic reaches third place among the sixteen themes and it reaches the fifth place for citations.

The visualization of the whole period reveals the most representative topics in the IE field but, as mentioned above, it is important to divide this information into at least two sub-periods in order to observe the thematic evolution of this field of research. Specifically, this study presents two sub-periods, 1987–2012 and 2013–2018.

According to Fig. 7 and Table 9, during the period 1987–2012, the IE field presented 6 motor themes, 1 peripheral theme, 4 emergent or decadent themes, and 1 basic theme. The 6 motor themes are *internationalization* where research was focused on SMEs and IE; *globalization* which concentrated in research about SMEs and entrepreneurs; *internationalization strategies* focused on clusters and resource-based view research; *entry mode* where research was concentrated on foreign markets; *dynamic capabilities*, which is the central node Born Global and SME internationalization; and *business network*. These results are consistent with the evolution of this field, as the first years of IE research were focused on the type of internationalization presented by Born Global firms and in the capabilities and entry modes of these types of companies (Keupp and Gassmann 2009; McDougall and Oviatt 2000; Oviatt and McDougall 2005b).

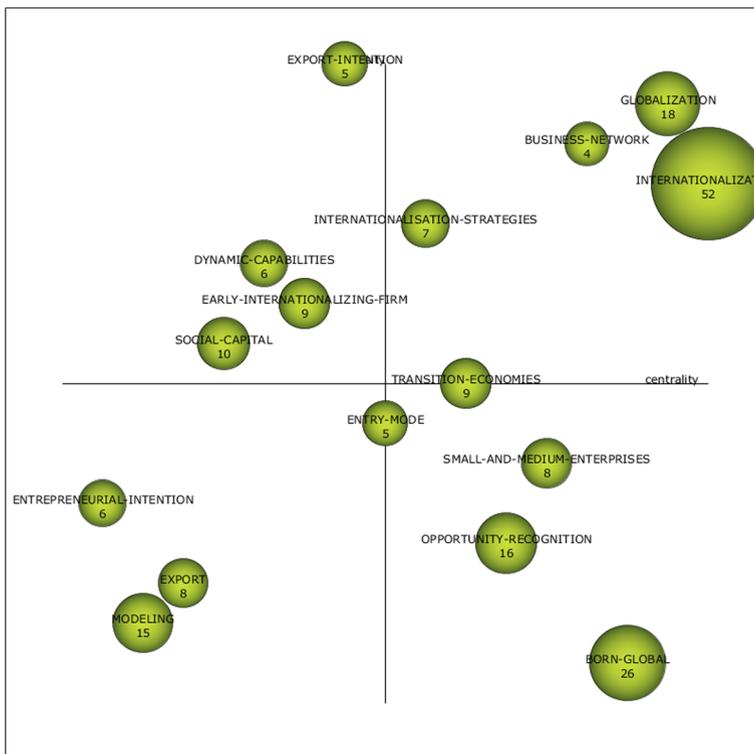


Fig. 6 Strategic diagram of the main topics detected in the international entrepreneurship field for the period 1987 to 2018

Table 8 Bibliometric indicators of the main topics detected in the international entrepreneurship field for the period 1987 to 2018

Topics	Documents	h-Index	Citations	Centrality	Density
Internationalization	363	52	10,966	11.81	8.21
Born global	81	26	4,275	4.39	0.72
Globalization	60	18	1,372	7.51	11.10
Opportunity recognition	38	16	1,243	3.52	2.06
Transition-economies	29	9	729	3.39	3.20
Small and medium enterprises	24	8	512	3.70	2.90
Modeling	22	15	1,281	1.40	1.19
Export	20	8	825	1.70	1.59
Entrepreneurial-intention	17	6	370	1.18	2.84
Social capital	17	10	358	1.8	3.33
Early-internationalizing-firm	16	9	543	2.09	4.44
Entry mode	12	5	139	2.51	3.12
Dynamic-capabilities	12	6	127	1.99	5.56
Internationalization strategies	12	7	138	2.78	7.41
Export-intention	10	5	111	2.23	12.5
Business network	6	4	71	4.25	8.33

In the period 1987–2012, the IOR theme is located in the lower left quadrant, which could mean that it was a nascent/emerging topic within the study period as it has low centrality and low density. The location of themes in this quadrant means that they are, as yet, weakly developed. The *opportunity recognition* topic was concentrated in research about entrepreneurial behavior and networks. These results reflect the real situation of IOR research in its emerging years (2005–2012), when this phenomenon was treated within the areas of entrepreneurial capabilities or entrepreneurial behavior and firm networks for identifying international opportunities (Kraus et al. 2017a).

Regarding the period 2013–2018 presented in Fig. 8 and Table 10, the IE field possessed 13 themes, comprising 4 motor themes, 3 peripheral themes, 3 emergent or decadent themes, and 3 basic themes. The motor themes of this period are *internationalization* as the central node of IE and SMEs, *dynamic capabilities* with research focus in strategic orientations, *entrepreneur* where research was concentrated in SMEs and Globalization, and *international performance* as the central node of research about SMEs and international entrepreneurial capabilities. These results are also in agreement with the evolution of the IE field because in recent years, the research has focused more on the entrepreneur as a focal point in the IE process (Peiris et al. 2012) and in the international performance of the internationalized companies (Kraus et al. 2017b).

Within this period (2013–2018), the IOR topic is located in the lower right quadrant, which shows that it ceased to be an emerging theme as it had been in the previous period, to become a basic and transversal theme, which positions it as a key issue within the field of international entrepreneurship, as argued by Ferreira et al. (2017). This topic has improved in terms of centrality; however, it presents a slight decrease in terms of density, which means that it has yet to be developed, as proposed by some

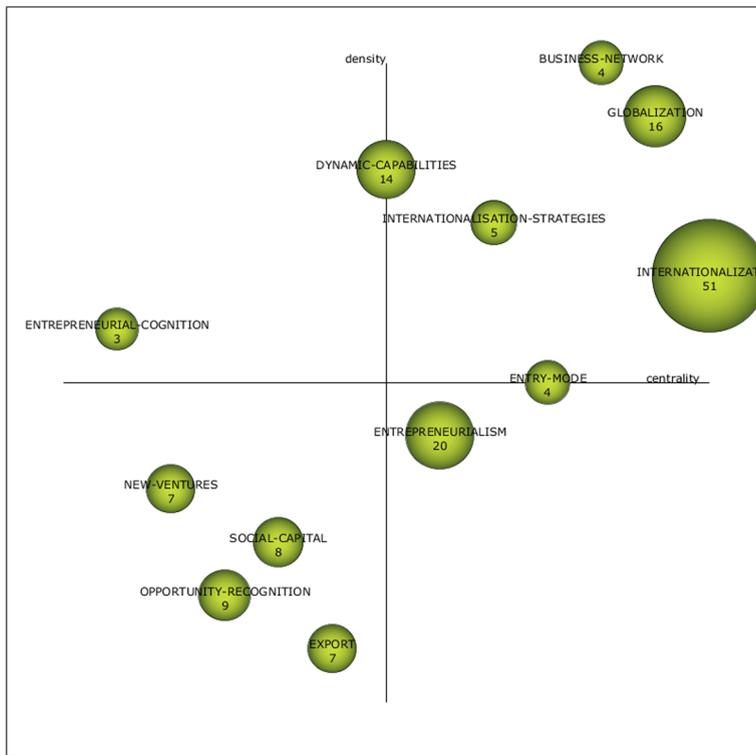


Fig. 7 Strategic diagram of the main topics detected in the international entrepreneurship field for the period 1987 to 2012

Table 9 Bibliometric indicators of the main topics detected in the international entrepreneurship field for the period 1987 to 2012

Topics	Documents	h-Index	Citations	Centrality	Density
Internationalization	159	51	9,414	10.53	7.41
Globalization	32	16	1,19	7.99	15.60
Entrepreneurialism	30	20	1,887	3.00	3.75
Dynamic-capabilities	26	14	2,984	2.61	13.46
Opportunity recognition	15	9	1,048	1.81	2.68
Social capital	11	8	314	1.95	3.57
Export	10	7	528	2.50	2.08
New ventures	8	7	648	1.58	3.57
Internationalization strategies	6	5	53	3.09	12.50
Entry mode	6	4	102	4.12	5.00
Entrepreneurial cognition	5	3	68	0.04	6.25
Business network	4	4	67	4.38	25.00

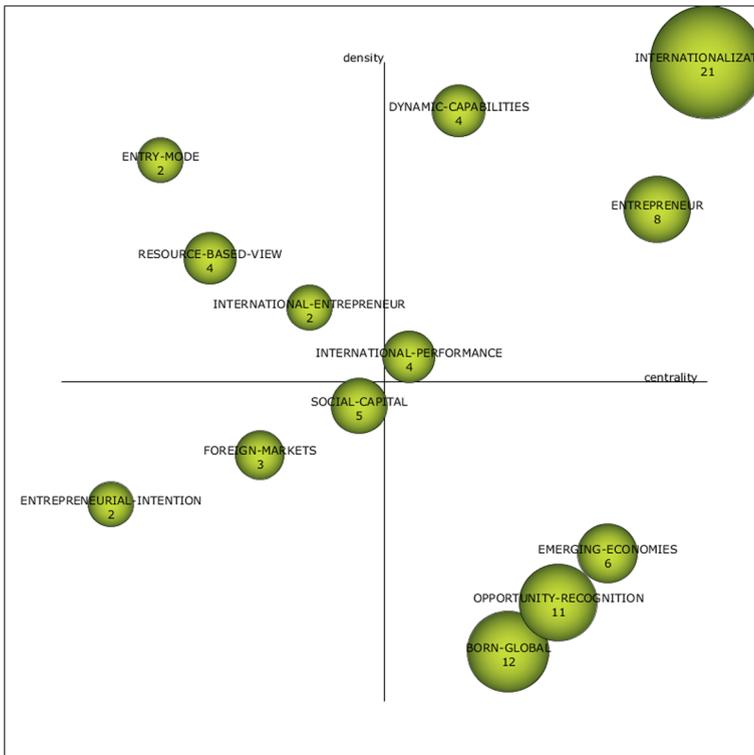


Fig. 8 Strategic diagram of the main topics detected in the international entrepreneurship field for the period 2013 to 2018

Table 10 Bibliometric indicators of the main topics detected in the international entrepreneurship field for the period 2013 to 2018

Topics	Documents	h-Index	Citations	Centrality	Density
Internationalization	204	21	1,552	12.30	8.92
Born global	42	12	516	3.43	1.14
Opportunity recognition	36	11	541	5.14	3.03
Entrepreneur	28	8	182	6.49	7.14
Emerging-economies	19	6	146	5.64	4.07
International performance	19	4	76	2.85	5.67
Social capital	9	5	87	2.16	5.56
Dynamic capabilities	9	4	47	3.01	8.73
Resource-based-view	7	4	98	0.74	6.67
Foreign markets	6	3	60	1.55	5.00
Entrepreneurial-intention	6	2	11	0.23	4.17
International entrepreneur	5	2	25	1.60	6.25
Entry mode	4	2	34	0.34	8.33

recent studies (Angelsberger et al. 2017; Costa et al. 2018; Kraus et al. 2017a; Petuškiėnė and Glinskiėnė 2017). In this second period, the study *opportunity recognition* appeared as the central node of networks and entrepreneurial cognition. According to previous literature, IOR research should encompass social networks (Kraus et al. 2017a) and cognitive aspects of the international entrepreneurs (Peiris et al. 2012) when addressing IOR at an individual-level; thus, we can argue that at the present time IOR is being studied more on an individual level than at enterprise level.

Comparing both periods, the IOR phenomenon appeared in the first period (26 years) in 17 articles, while in the second period (the last 6 years), it appeared in 21 articles, showing its growing relevance in recent years in this field. Although in the first period, IOR obtains more citations (1048) compared to the second period where it receives 541 citations, with regard to the h-Index, in the first period, it achieves 9 and in the second 11. In this respect, it should be noted that the second period includes articles that were published from 2013 onwards, so they have been available for less than five years and therefore citations and are not yet particularly high, but it is relevant that the h-Index is higher.

In summary, it can be argued that the opportunity recognition phenomenon has evolved from being an emerging issue in the period (1987–2012) to become a key topic for this field in the second period (2013–2018), and, nevertheless, should continue to develop. It also allows us to confirm that this issue is enjoying growing interest within the IE field (Ferreira et al. 2017). If the number of studies continue to grow in this topic together with the increasing centrality trend reflected in the second period, it is possible to argue that this theme is getting closer to becoming a motor theme in the field of international entrepreneurship.

Keywords

The 20 most frequently used keywords during the period 2005–2018 are set out in Table 11 divided into three different sub-periods. These keywords characterize the hotspots on IOR research. As expected, the two most used keywords during the complete period of study were international entrepreneurship, which appears in 63.16% of articles and opportunity recognition, which appears in 55.26% of papers. It has to be said that three terms (opportunity recognition, opportunity identification, and opportunity discovery) have been grouped into one (opportunity recognition). Apart from those words, other hotspots keywords throughout the period were SMEs (in 23.68% of articles) and networks (in 18.42% of articles). Also, there were three keywords that appear in 15.79% of papers; these are Cognition, Internationalization and International-New-Ventures. The other 13 keywords appear in less than 11% of articles.

The division of keywords in three sub-periods is relevant to analyze the emergence and evolution of certain terminology during the years. For example, during the first period (2005–2009), apart from the two most repeated keywords, it is terms such as Cognition, International-New-Ventures, Entrepreneurial-Self-Efficacy, Cross-Cultural-Competence and International-Business which mostly appear. This demonstrates, that during this period, when the IOR concept appears, research within this theme was mainly influenced by concepts from “classical” entrepreneurship theory and international business theory (Keupp and Gassmann 2009; Kraus 2011; Zahra and George

Table 11 The top 20 most frequently used keywords in IOR research in the IE field from 2005 to 2018

Keywords	2005–2018		2005–2009		2010–2014		2015–2018	
	A	%	A	%	A	%	A	%
International-entrepreneurship	24	63.16	4	50.00	7	63.64	13	68.42
Opportunity-recognition	21	55.26	3	37.50	7	63.64	11	57.89
SMEs	9	23.68	1	12.50	5	45.45	3	15.79
Networks	7	18.42	0	0.00	4	36.36	3	15.79
Cognition	6	15.79	2	25.00	2	18.18	2	10.53
Internationalization	6	15.79	1	12.50	1	9.09	4	21.05
International-New-Ventures	6	15.79	2	25.00	1	9.09	3	15.79
Entrepreneurial-capabilities	4	10.53	0	0.00	1	9.09	3	15.79
Entrepreneurialism	4	10.53	1	12.50	0	0.00	3	15.79
Entrepreneurial-self-efficacy	4	10.53	2	25.00	0	0.00	2	10.53
Innovation	4	10.53	0	0.00	1	9.09	3	15.79
International-Business	4	10.53	2	25.00	1	9.09	1	5.26
International-opportunities	4	10.53	2	25.00	0	0.00	2	10.53
Prior-knowledge	4	10.53	0	0.00	1	9.09	3	15.79
Alertness	3	7.89	0	0.00	1	9.09	2	10.53
Cross-cultural-competence	3	7.89	2	25.00	0	0.00	1	5.26
Emerging-economies	3	7.89	0	0.00	0	0.00	3	15.79
Foreign-market-entry	3	7.89	0	0.00	1	9.09	2	10.53
Globalization	3	7.89	1	12.50	1	9.09	1	5.26
International-Marketing	3	7.89	0	0.00	1	9.09	2	10.53

A, number of total articles

2002). Also, as argued by Zahra et al. (2005), the cognitive abilities of the entrepreneur also appear in this period.

Two concepts emerged in the period 2010–2014, SMEs and networks, which shows that research was focused on the firm-level of opportunity identification directing attention to active networking of the company (Kontinen and Ojala 2011a; Piantoni et al. 2012). Finally, the third period (2015–2018) shows the merging of some terms, such as innovation or international marketing. However, the most relevant information from this period is the emergence of such terms as entrepreneurial capabilities, prior knowledge, alertness and the continuity of keywords such as cognition and entrepreneurial self-efficacy, which are related to the individual-level of opportunity recognition. These results are supported in previous studies (Angelsberger et al. 2017; Zaefarian et al. 2016). Accordingly, the idea that current research on IOR in the IE field is focused on the individual-level is reinforced.

Figure 9 shows a network map of the main keyword co-occurrences on IOR research in the IE field. The most used keywords appear in the biggest circles. This figure illustrates the link between those keywords considered to be hotspots in IOR research in the IE field. Five clusters can be appreciated in different colors. The first one (red cluster) falls under the term international entrepreneurship, representing some general

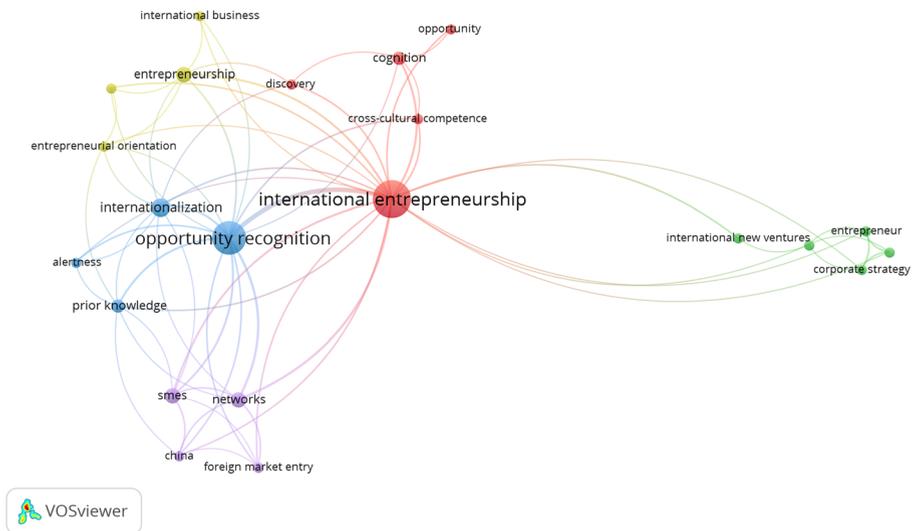


Fig. 9 The network of the main keyword co-occurrences on IOR research in the IE field from 2005 to 2018

keywords such as Discovery or Opportunity, but also encompassing some individual characteristics such as Cognition and Cross-Cultural-Competence. In the second cluster (blue), the most repeated keyword is Opportunity Recognition, representing the internationalization process and certain individual characteristics that are relevant to identify opportunities such as alertness and prior knowledge.

The third cluster (yellow) has as its main keyword, Entrepreneurship, and encompasses some basic terms of entrepreneurship theory such as entrepreneurial-orientation and also is linked with international business. The fourth cluster (violet) has SMEs as a central keyword and represents some important capabilities that need to be internationalized, such as networks and foreign market entry. The last and most peripheral cluster (green) falls under international new ventures (INV), firms that have been rapidly internationalized and have a central role in this field (Baier-Fuentes et al. 2018). This represents the keyword Entrepreneur (the most important actor for an INV) and which is also linked with Corporate Strategy.

Conclusions

The main objective of this study was to provide researchers with a better understanding of the evolution of the international opportunity recognition (IOR) phenomenon in academic literature, through a mix between performance bibliometric analysis and science mapping. With the help of graphic mapping and some bibliometric indicators, such as productivity, citations, and the h-Index, the evolution of IOR research in the IE field was analyzed from different approaches such as published articles per year, citations per year, most cited papers over time, distribution of published articles in subject areas and journals, most productive countries, institutions and authors, evolution of IOR phenomenon in the IE field over periods of time, and, finally, evolution of the most used keywords.

In sum, the results provide evidence that IOR research has undergone a significant increase in recent years, mainly in the last 5 years (2014–2018). Through a strategic diagram analysis to visualize trends of publication, it is possible to argue that IOR research has evolved from being an emerging issue between 1987 and 2012 to become a key topic in the IE field in the last 6 years (2013–2018) and one which, however, should continue to develop. Thus, this study supports the argument that IOR is an area of study that deserves greater interest from academics.

There has been a surge in the rate of publications since 2014 (more than 55% of research) which is accompanied by an important increase in the number of citations per year. In addition, it can be said that more researchers are becoming interested and collaborating in IOR research as, in recent years, the number of authors and the average number of authors per articles have increased. The results obtained through the graphic mapping reveal that O. Muzychenko and S. A. Zhara were important authors not only for contributing to the emergence and development in the early years (2005–2012), but also in providing a better understanding of the relevance of IOR research. Nowadays, there are other researchers who are receiving more attention due to the contemporaneity of their research, such as C. Bianchi, M. Angelsberger, D. Béliveau, or B. Urban.

IOR researchers are now coming from different fields of study; thus, the literature specific to IOR research appears not only in international business or entrepreneurship journals, but also in international marketing and international management journals, thus enriching the knowledge in this topic. The findings also show the increasing willingness of journals to publish IOR articles. However, the bibliometric performance analysis highlights the fact that just three journals accumulate 47% of IOR publications; the *Journal of International Entrepreneurship* accounts for 26% of IOR published papers. This interest in the research into international opportunity recognition is also reflected in a growing number of countries and institutions publishing about it in recent years. However, as with the number of journals, the bibliometric analysis reveals that the vast majority of IOR research productivity is concentrated in a minority of countries, such as Australia, the USA, and the UK, but it is important to mention that the best indicators of influence are for countries such as Finland, Hong Kong, and Canada.

The keywords analysis and the nodes of the strategic diagrams analysis enable the evolution in the IOR field to be determined. According to these, it could be argued that in the nascent years of IOR research, the studies were a pure mixture of entrepreneurship theory, focused on entrepreneurial behavior and cognitive abilities; and international business theory, focused on firm networks and the internationalization of SMEs. This means that IOR within the IE field was treated at both company level and individual level. On the other hand, in recent years, the most used keywords in this field have been more related to personal and psychological characteristics or behaviors, such as social networks, entrepreneurial cognition and other cognitive variables (alertness, prior knowledge, and self-efficacy). This shows that the most recent studies related to IOR are investigating this phenomenon at an individual-level (entrepreneurs).

As final conclusions that may point to different possibilities for future research, it can be stated that despite the growth of IOR research, study in this field is still very scarce. This study provides an exhaustive bibliometric analysis that helps to identify, organize, encapsulate, and analyze the main components of this area and highlights the relevance for further investigation in this thematic area. This phenomenon is a key process in the IE field and has a high centrality within it, confirming that this issue

enjoys a growing interest but that it still has a low research density. In this respect, it is not only important to increase the qualitative and quantitative productivity of IOR research, but according to the results obtained in the section “distribution of scientific production regarding subject areas and journals” and reinforced by the keywords analysis, we argue that it is necessary for this field to continue to be nurtured by a more multidisciplinary approach that strengthens links with other disciplines such as psychology or international marketing. In this way, new theoretical perspectives could be brought to continue to develop this nascent field. Accordingly, collaborations between authors from different countries, institutions, or disciplines are needed to create multidisciplinary research on the IOR phenomenon in the IE field.

In line with the results obtained in the strategic diagram analysis and keywords analysis, where it can be seen that in recent publications some cognitive aspects such as entrepreneurial self-efficacy, prior knowledge, alertness, and cognition have emerged or grown, and in concordance with the definition of Peiris et al. (2012) who established that IE field should encompass the cognitive perspective of the entrepreneur, we firmly believe that the study of IOR should be further developed and extended, paying greater attention to the cognitive and emotional processes of entrepreneurs involved in IOR. For example, it would be interesting to examine how entrepreneurs analyze, internalize, and classify information to detect international opportunities and, in turn, how they construct, frame, create, and interpret these opportunities. Furthermore, it seems important to develop new definitions of international opportunity recognition and to present a robust and comprehensive conceptualization and measurement of the IOR phenomenon. These aspects would help to develop this topic.

For theoretical implications, this manuscript adds new empirical evidence to the IE literature on the evolution of the IOR phenomenon. We contribute to the work of novel and senior researchers to achieve a complete conception of the global research on IOR and how it is distributed between subject areas, journals, countries, institutions, and authors. Moreover, it helps researchers to gain a complete overview about the origin, evolution, and current status of IOR research. Another implication is that this study helps researchers to identify the most relevant trend topics and to detect future research directions. In general, our results support the relevance of IOR within the IE field and contribute to the literature on business internationalization. As far as practical implications are concerned, this study suggests that the active agents of this field need to continue to increase their collaborative ties with researchers from other disciplines because this field needs to be nurtured by a more multidisciplinary approach. Also, we suggest that the active institutions should try to set up more academic events that could contribute to the exchange of ideas and debates between practitioners and academics. Thus, as a potential impact, it is hoped that this manuscript enhances the current thinking regarding the relevance of IOR as the trigger event for the flourishing of IE through the unification of international business and entrepreneurship theories, as recommended by Mainela et al. (2014b).

As with other bibliometric articles, this paper may present some limitations. First of all, since this field is still nascent and underdeveloped, different terms may be found which refer to the same concept. Therefore, despite a thorough check on terminology, there may exist some very specific term that has not been included. This could illustrate a limitation as it may condition the results. In addition, the selection of the database and the selected study periods could also represent a limitation, since the sample of articles

might differ in each database and also the number of years included in each period could condition the results. Additionally, although this study presents certain qualitative indicators, it focuses mainly on an analysis of a quantitative nature (restricted to numbers), so this work could be complemented or extended with a qualitative analysis of the articles, i.e., a domain ontology and thematic analysis.

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Appendix

Table 12 Definitions of international entrepreneurship over time

Authors	Year	Definition
McDougall	1989	"The development of international new ventures or start-ups that, from their inception, engage in international business, thus viewing their operating domain as international from the initial stages of the firm's operation".
Zahra	1993	"The study of the nature and consequences of a firm's risk-taking behaviour as it ventures into international markets".
Oviatt and McDougall	1994	"... a business organization that, from inception, seeks to derive significant competitive advantage from the use of resources and sale of outputs in multiple countries".
McDougall and Oviatt	1997	"New and innovative activities that have the goal of value creation and growth in business organization across national borders".
McDougall and Oviatt	2000	"A combination of innovative, proactive, and risk-seeking behavior that crosses or is compared across national borders and is intended to create value in business organizations".
Zahra and George	2002	"The process of creatively <u>discovering</u> and exploiting <u>opportunities</u> that lie outside a firm's domestic markets in the pursuit of competitive advantage".
Dimitratos and Plakoyinnaki	2003	"... is an organization-wide process which is embedded in the organizational culture of the firm and which seeks through the exploitation of opportunities in the international marketplace to generate value".
Knight and Cavusgil	2004	"Entrepreneurial start-ups that, from or near their founding, seek to derive a substantial proportion of their revenue from the sale of products in international markets".
Oviatt and McDougall	2005	"... is the <u>discovery</u> , enactment, evaluation and exploitation of <u>opportunities</u> – across national borders – to create future good and services".
Styles and Seymour	2006	"Behavioral processes associated with the creation and exchange of value through the <u>identification</u> and exploitation of <u>opportunities</u> that cross national borders".
Mathews and Zander	2007	"... entrepreneurial processes that stretch across the <u>discovery of new business opportunities</u> in an international context to aspects of exploitation including the redeployment of resources and the ultimate engagement with competitors".
Jones et al.	2011	"... entrepreneurial behavior that involves cross-border business activity, or is compared across countries"
Peiris et al.	2012	

Table 12 (continued)

Authors	Year	Definition
Zahra et al.	2014	“the cognitive and behavioural processes associated with the creation and exchange of value through the <u>identification</u> and exploitation of <u>opportunities</u> that cross national borders”.
Zahra et al.	2014	“... the <u>recognition</u> , formation, evaluation, and exploitation of <u>opportunities</u> across national borders to create new businesses, models, and solutions for value creation, including financial, social, and environmental...”

The underlined terms refer to the definitions that contain the concept of opportunity recognition

Source: Adapted and updated from Zahra and George (2002), Zucchella and Scabini (2007), and Zucchella and Magnani (2016)

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