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Higher Educational Institutions and Entrepreneurial Ecosystem – trends and research agenda based on a systematic literature review

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Abstract

Based on different data and scales, research on the 'entrepreneurship ecosystem' limits the acceptance of a single definition. This conceptual limitation and the still recent research, higher education institutions have come to be seen as ecosystems associated with entrepreneurship. The present review aims to contribute to the existing field of knowledge, identify current and emerging thematic areas and trends, and reveal the scientific roots of research on entrepreneurial ecosystems and their relationship with higher education institutions. This work complements previous reviews and studies. The results of the co-citation technique indicate four thematic clusters. Themes were exposed: the importance of the higher education context for the entrepreneurial ecosystem, the evolution and challenges of entrepreneurship education and university-based entrepreneurial ecosystems. The paper concludes by suggesting future research focused on the importance of building an integrated approach to entrepreneurial ecosystems and higher education institutions on a regional scale.

Introduction

Higher education institutions (HEI) and their surroundings play a "fundamental role for contemporary societies in the field of education and knowledge generation" (Kobylinska & Lavios, 2020: 118). For the authors, during the last decade, the university and its surroundings have become a special ecosystem.

The systematic literature review (SLR) followed in this extended abstract included a rigorous protocol and definition of research steps and a literature review based on scientific articles published in WoS and Scopus.

This work is innovative in four points. First, it consolidates the articles published on the topic until 2021. Secondly, with the RSL a bibliometric data analysis was carried out using R-Bibliometrix. Third, rigorous bibliometric techniques were used, namely co-citation analysis. Fourth, it will seek to develop a framework for future research focused on the importance of building an integrated approach to entrepreneurial ecosystems and higher education institutions, on a regional scale.

Entrepreneurship Ecosystems and Academic Entrepreneurship Ecosystem

An EE is a set of individual elements combined in a complex way. In isolation, each can generate entrepreneurship but cannot sustain it (Isenberg, 2010, 2011). Acs et al. (2014) defined entrepreneurial ecosystems as a dynamic, institutionally embedded interaction between entrepreneurial attitudes, capabilities and aspirations of individuals that drives the allocation of resources through the creation and operation of new projects. Stam and Spigel (2017) point out that it is the coordination that occurs between actors and interdependent factors that enables productive entrepreneurship in each territory.

In recent decades, some universities have oriented themselves towards a more entrepreneurial direction through the realization of the third mission as a key player in promoting national and regional economic and social development (Etzkowitz & Leydesdorff, 2000; Yi & Uyarra, 2018) resulting from the interaction of three actors belonging to different helixes - University - Industry - Government: Triple-Helix Model (Etzkowitz & Leydesdorff, 2000). Pita et al. (2021) pointing out that universitiesactively contribute to the development of EEs by providing a skilled workforce and stimulating new enterprises, such as start-ups or spin-offs. Another challenge facing HEIs is to shift their focus from education about entrepreneurship to educating for entrepreneurship. This encompasses any programme or pedagogical process of education aimed at achieving entrepreneurial skills and attitudes

(Bischoff et al., 2018).

Against entrepreneurial HEIs and their pedagogical competencies of entrepreneurship education, researchers highlight that the entrepreneurial university itself can form an EE (Miller & Acs, 2017; Wang et al., 2021). The EE developed with an academic campus as a context is referred to as "University-based Entrepreneurship Ecosystem" (UBEE) or "University Entrepreneurship Ecosystem" (UEE) or "Academic Entrepreneurship Ecosystem" (AEE). All these terms refer to the ecosystem developed on the university campus, which are part of a wider ecosystem. However, little literature exists on the EEA's structure and function and particularly how the transition from the academic entrepreneurial system to an EEA occurs (Hayter, 2016; Yi & Uyarra, 2018). Meyer et al. (2020) propose an evaluation and planning model for EEBUs founded identifying the main actors, the most important and significant dimensions for these actors and the creation a research instrument containing the relevant variables for the actors. Within this context, further research work on evaluations of AEEAs is needed.

Methodology

The research methodology used to evaluate entrepreneurship ecosystems and their relationship with Higher Education Institutions was the Systematic Literature Review (SLR), using bibliometric analysis techniques.

Figure 1 elucidates the process of data collection and analysis in this study. The final dataset contains 87 documents published between 2011 and 2021, representing the work of 227 authors from 33 different countries. The average years from publication is 3 and the average number of citations per documents 16,37. The number of authors per document is 2,61 and the collaboration index rate between authors is 2,91.

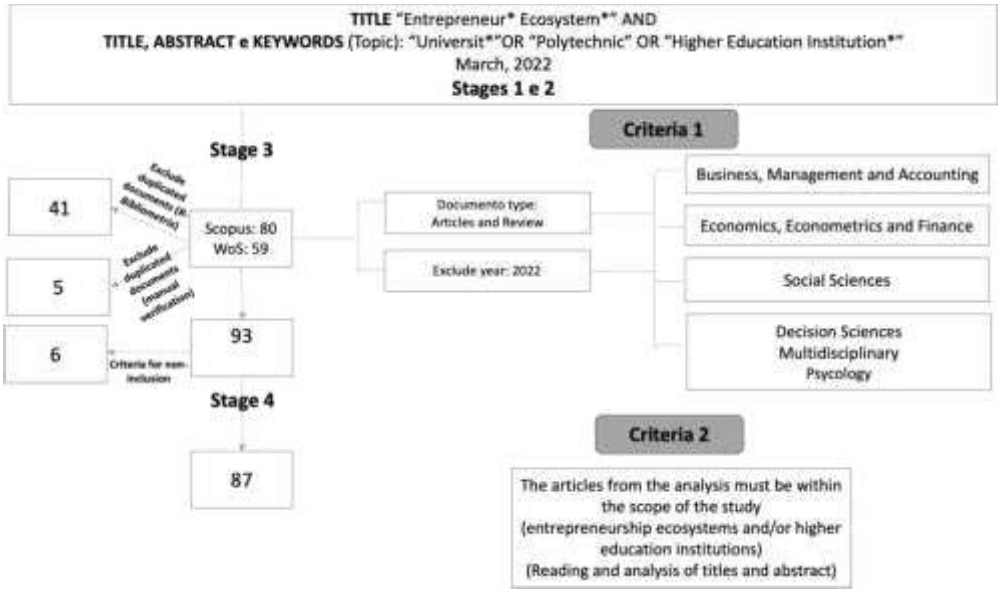

Figure 1. Process of data collection and analysis

Bibliometric analysis of co-citations

A bibliometric analysis was carried out to understand how this field of study is divided into research clusters, and the co-citations were analysed. Based on the visualization of Figure 2 and after analyzing the resulting network and the content of the articles, it is concluded that the research is divided into four thematic clusters

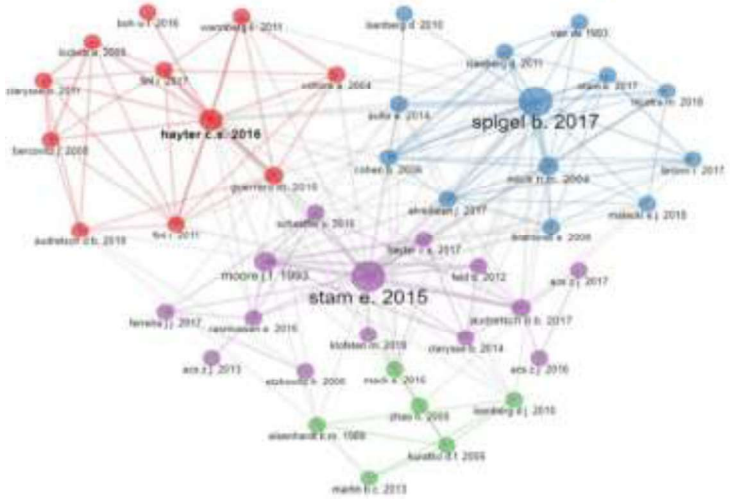

Figure 2. Thematic evolution, with cut-off points

Cluster 1 (Blue) – Conceptualisation and attributes of Entrepreneurship Ecosystems

No consensus has been reached in the academic community on the theoretical characterization of the concept and the elements that characterize EE. Cohen (2006) was the first to use the concept of EE and defined it as a group of interconnected actors in a local geographical community committed to sustainable development by supporting and helping projects. Isenberg (2010, 2011) made the concept popular, defining it as a set of individual elements that are combined in a complex way. For the author, in isolation, each of them can generate entrepreneurship but cannot sustain it (Isenberg, 2011). Based on theoretical contributions, diverse literature provides tools that show several factors considered important for a successful EE (Van de Ven, 1993; Neck et al, 2004; Cohen, 2006). The works of Isenberg (2010, 2011) list six domains present in the ecosystem: policy, funding, culture, support, human capital and markets.

Although the topic of the attributes of EEs is innovative it has not been without trials. Several articles highlight criticisms of previous work (Alvedalen & Boschma, 2017; Brown & Mason, 2017; Malecki, 2018; Nicotra et al., 2018; Stam & Spigel, 2017). Alvedalen and Boschma (2017), Nicotra et al. (2018) and Stam and Spigel (2017) highlighted the lack of a clear analytical framework to empirically explain the cause-effect relationship of EEs' attributes and their effects on productive entrepreneurship.

Cluster 2 (Lilac) – The importance of context and higher education for Entrepreneurship Ecosystems

Stam (2015), expresses himself critically concerning studies of EEs. He underlines that it is not only generating entrepreneurship that makes it a good EE. He also mentions that the approaches only offer a long list of elements without a cause-effect relationship and concludes that it is unclear what level of geographical analysis the approaches have taken into consideration. The author refers that a new emerging approach to EE occurs, conveying a new view on people, networks and institutions. From this emerging approach, differentiations have emerged at two levels: spatial context and dynamics of knowledge ecosystems. For Stam (2015), the common denominator in this cluster seems to be that

entrepreneurs create value in a specific institutional context.

Clarysse et al. (2014) analysed the tension between knowledge and business ecosystems. In relation to the success factors they seem similar: diversity of organisations and key actors. However, regarding the factors, anchor organisations in knowledge are universities and public research organisations that do not directly compete with the ecosystem.

According to Schaeffer and Matt (2016), most countries and regions are trying to adopt Triple Helix model. Universities have evolved towards taking an active role in regional development and the dynamics of local networks. This evolution in the model involves inter-institutional relationships between three actors- academy, industry and government, leading to an increasing overlap of their roles.

Cluster 3 (Green) – Evolution and challenges of entrepreneurship education

This cluster explores entrepreneurship education and the development of students' intentions to be entrepreneurs. Kuratko (2005) notes that the growth and development in programmes and curricula dedicated to entrepreneurship and the creation of new projects have been remarkable. Although there has been this significant growth, the author points out two specific challenges to academia: 1) development of academic programmes and specialised human resources to improve the quality of courses and 2) commitment by institutions to create formal academic programmes. Martim et al. (2013) point to the need to investigate the links between entrepreneurship education and the creation of human capital elements and their relationship with entrepreneurial outcomes. For the authors, it is unclear what impact entrepreneurship education and training (EET) might have on university students.

Cluster 4 (Red) – Evaluation models of entrepreneurial universities

As mentioned in clusters 2 and 3, although recent studies already include universities as part of the knowledge system, research lacks an understanding about the structure and function of the UEE (Hayter, 2016). Cluster 4 attempts to fill this gap through qualitative, quantitative amixed methods studies that analyse: social networks and academic entrepreneurship (Clarysse et al., 2011; Fini et al., 2011; Vohora, 2004); Spinoffs (Lockett & Wright, 2005; Fini et al, 2011, 2017; Vohora, 2004; Boh et al., 2016; Clarysse et al., 2011; Hayter, 2016) and the Entrepreneurial Environment and academic programmes supporting entrepreneurship (Fini et al., 2011; Bercovitz & Feldman, 2008).

Conclusion and Implications

For Kraus et al. (2020), RSLs are a methodology increasingly used to synthesize the existing body of literature in the field of entrepreneurship. In order to clarify the concept of EE and EEA, this work identified the literature streams that proved to be most important, bringing together the main studies on the subject through an RSL. This RSL revealed the embryonic state of research (2011-2021) and reinforced the scientific importance of the topic since about 68 per cent of the articles were published in the last three years.

The developed co-citation analysis allowed obtaining an understanding about the existing field of knowledge on EEs and EEA, identify their scientific origins, and reveal research roots. The table below (Table 1), reveals a synthesis of the future lines of research identified in the four clusters and their respective thematic groups.

Table 1: Suggestions for future lines of research, by clusters.

Future lines of Research	
Cluster 1 and 2	• Study if the HEI develops strategies adapted to the specificities of its EE
Cluster 3 and 4	• Analyse the role of higher education students in the growth and sustainability of the academic EE; • Investigate the entrepreneurial spirit of regional contexts based on the knowledge acquired by entrepreneurship education. • Establish mechanisms to collect appropriate data and to establish the different levels of success of EE outcomes, by the HEI.

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