Entrepreneurship Development and Open Educational Resources: A Bibliometric Analysis

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Entrepreneurship development is highly pivotal to economic growth. Therefore, higher education institutions are continuing to upgrade entrepreneurship education (EE), and entrepreneurship research has rapidly grown in recent years. However, open educational resources, such as open access academic publishers have not yet acknowledged EE could have an exclusive outlet for publication. Therefore, although rapidly growing in numbers, the scholars of EE are having only one Scopus indexed journal that is specifically focused in this domain. Therefore, based on these wide gaps, a bibliometric analysis has been done in the broader research domain of entrepreneurship to understand its growing importance. Accordingly, the implications are given to the publishers.

Key words: Entrepreneurship development, entrepreneurship education, entrepreneurship research, bibliometric analysis, academic journal, open education, higher education institution.

Introduction

Many countries are taking a range of initiatives to develop and promote sustainable entrepreneurship in their economies (Otchia, 2019; Pierrakis, 2018). This is because in today’s era of automation, artificial intelligence and industrial revolution, sustainable entrepreneurship is the only source of consistent job creation. Therefore, today entrepreneurship development is the key concern globally (Ogbari, et al., 2019; Szerb & Trumbull, 2018). In recent times, higher education institutions (HEIs) worldwide have also recognised their roles to promote sustainable entrepreneurship in the economies (Manimala, 2017). Therefore, a few years ago, HEIs worldwide started introducing entrepreneurship programs, however, they still lag behind in the development of suitable pedagogies and curricula as entrepreneurship education (EE) is still in emerging phase (Amjad, 2020; Amjad...
et al., 2020a, 2020b; García-González, 2020). To date, academic authorities are continuing to upgrade their curricula and pedagogic approaches, so the graduates could meet the practical entrepreneurial needs. Such efforts of HEIs further signify the high importance of entrepreneurship development in today’s era.

Among the efforts of HEIs in promoting sustainable entrepreneurship, an exceptional increase in the trend of entrepreneurship research over the last few years is further evidence that justifies the high importance of entrepreneurship development in the economies. Along with the upgrading of pedagogies and curricula, HEIs worldwide are spending considerable amounts and time to explore and understand entrepreneurial science and challenges (Amjad et al., 2020c). As a result of this, Figure 1 illustrates the enormous growth in entrepreneurship research over the last decade.

**Figure 1.** Number of documents by year

Entrepreneurship being a rapidly growing field of study needs to be accompanied by the open educational resources (e.g., see Nascimbeni & Burgos, 2019; Ramírez-Montoya et al., 2020), so that it could easily reach to the masses, and thus, sustainable entrepreneurship could be developed. Among the open educational resources, open access academic journals hold the key importance as they disseminate the latest knowledge to the general public by removing most of the major barriers (Tlili et al., 2019). Despite this, the major open access publishing houses have not yet acknowledged ‘entrepreneurship’ as a substantially exclusive field of study.
As an example of this, the current study is focusing on one of the largest fully open access publishing houses, that is, Multidisciplinary Digital Publishing Institute (MDPI) having 221 publication outlets to date. In the current example, the MDPI has not yet acknowledged entrepreneurship as a substantially exclusive field of study. This practical gap is identified by the fact that the exclusive entrepreneurship journal is still missing from the wide range of their publication outlets. In later sections, the same example would be analysed to understand the importance of entrepreneurship and EE research.

Besides the emergence of entrepreneurship as a field of study and a widely researched domain, the subdomain of EE is also rapidly growing as EE at HEIs is still in the emerging phase (Amjad, 2020; Amjad et al., 2020a, 2020b; García-González, 2020). Figure 2 is illustrating the growth of research specifically in ‘entrepreneurship education’ by year. Despite this growth, a practical gap is seen as the field of EE is not exclusively recognised by most of the major publishers. The evidence is in the Scopus database which is to date the largest database of peer-reviewed journals (Elsevier, 2019) and shows that to date there is only one journal that is specifically focused on ‘entrepreneurship education’.

**Figure 2. Growth in the research of entrepreneurship education by year**

As illustrated in Figure 2, the subdomain of EE is progressing rapidly primarily because EE as a field of study is still in an emerging phase at HEIs. As discussed earlier, HEIs are continuing to upgrade EE pedagogies and curricula in order to promote and develop sustainable entrepreneurship. Therefore, the demand for research in EE is rising, however, to bridge the above stated practical gaps, there is the need for large open access publication houses, such as MDPI to acknowledge entrepreneurship and EE as substantially exclusive fields of research. Such recognition by the open educational resource houses could play a significant role in the development of entrepreneurship in the economies. To understand the
importance of entrepreneurship and EE research further and give thorough implications to all publishers, and particularly to MDPI, a bibliometric analysis of the domain of entrepreneurship has been conducted to specify and explain what exactly MDPI and others are missing.

**Literature Review**

The current study aiming to conduct a bibliometric analysis in the domain of entrepreneurship is a new attempt in the entrepreneurship, EE and bibliometric literatures simultaneously. As the general public particularly in developing countries generally lack the awareness (Hameed et al., 2017), open educational resources could play a vital role in increasing the awareness of general public regarding entrepreneurship from multiple aspects. First, the general public could get to know the latest research findings in the field of entrepreneurship, which could assist them to start and grow their entrepreneurial careers, and solve complex entrepreneurial issues. Second, through the open educational resources, the general public particularly, the prospective entrepreneurship students, could also access the EE literature and become aware of the updated curricula and pedagogic approaches in EE. This could enable them to choose the institutions that are using the updated curricula and pedagogic approaches to teach entrepreneurship. This notion or demand could also put pressure on the business schools to rapidly update their teaching curricula and pedagogies.

Literature shows one of the major problems in the entrepreneurship career is facing entrepreneurial failure (Baidoun et al., 2018; Bakhtiari, 2017; Garo, 2017; Hanage et al., 2016; Molin & Sjöberg, 2017; Shahbani et al., 2017). One of the examples is the US, where only half to a third of new enterprises survive beyond 5-10 years (SBA, 2019). Another example is Australia, where 96.8% small business start-ups either exit or grow very little in the first five years (Hendrickson et al., 2015). The failure of entrepreneurs not only affects failing entrepreneurs and job creation but also discourses upcoming potential entrepreneurs from entering the market in the first place (Bakhtiari, 2017). Hence, in recent years, fewer entrepreneurs are entering in the market and those who enter are having a greater probability to fail and exit (Bakhtiari, 2017; Hanage et al., 2016).

In such scenarios, the open educational resources could play a vital role in the development of entrepreneurship. In this regard, to encourage entrepreneurship, the United Nations also has passed a resolution called ‘Entrepreneurship for Development’. This resolution has highlighted the importance of teaching entrepreneurial skills at all levels of education. The resolution has also emphasised the value of skill development training programs, capacity building and start-up incubators as a part of EE (Crossroads Report, 2016). Thus, it highlights the utmost importance of entrepreneurship and EE, and the open educational resources are needed for a greater contribution in these domains.
Discussing the development of entrepreneurship, it is argued that entrepreneurs worldwide face many challenges and among them marketing is one of the major concerns for entrepreneurs for the survival and growth of their businesses (Cavusgil & Cavusgil, 2012; Krake, 2005; Simpson & Taylor, 2002; Westgren & Wuebker, 2019). One of the reasons is that the markets today are more open and global than decades ago and the customers have a free choice to use modern tools for accessing the global markets. This brings many challenges for entrepreneurs which include high competition, complexity in coordinating marketing strategies, uncertainties and high risk (Cavusgil & Cavusgil 2012; Westgren & Wuebker, 2019). Thus, it strongly indicates the need to upgrade the entrepreneurship curricula and pedagogies at HEIs based on the current entrepreneurial and marketing needs.

Overviewing the EE literature to understand the modern pedagogic approaches, as an example many studies in the EE literature (e.g., Ferrandiz et al., 2018; Lloyd et al., 2019; Pouratashi & Zamini, 2019) recommend work-based learning pedagogies to be implemented at HEIs. Ezeani (2018) finds low skills and technical incompetence; and lack of creativity and innovation among the HEI graduates, and therefore, recommends incorporating skill development and enhancing technical competence in the EE. Ferrandiz et al. (2018) have also emphasised on acquisition of entrepreneurial skills, entrepreneurial learning and co-curricular activities at HEIs. Moreover, Nabi et al. (2017) in their review have highlighted many studies that are emphasising intensive experiential programs to be the part of EE. Garo (2017) suggests that the students must have experiential learning and HEIs should play the role of a facilitator in order to provide the right pedagogies and appropriate environment to the students to get real experiences and practical skills. Manimala (2017) recommends interdisciplinary programs; entrepreneurship skill development; specialised offerings in entrepreneurship; and real-life entrepreneurial opportunities as part of pedagogy. All of these examples indicate a high need to incorporate open educational resources so that not only the HEIs but the students and general public could also get awareness about the modern pedagogic techniques and updated knowledge.

The above discussion highlights a high importance of open educational resources in the domains of entrepreneurship and EE, and therefore, these resources should be promoted and grow. Aiming this, the current study has conducted a bibliometric analysis of entrepreneurship and EE domains, and discussed one of the largest open educational resource houses, such as MDPI. As the purpose is to understand the practical gaps in the open educational resources regarding entrepreneurship and EE, therefore, the implications made after the analysis are quite similar for all major open access publication houses.
Procedure

A standardised and replicable procedure was used to search and analyse the documents. First, the Scopus database was chosen because it is to date the largest database of peer reviewed journals (Elsevier, 2019). In Scopus database, keyword “entrepreneur OR entrepreneurial OR entrepreneurship” was searched in the title of the documents. The initial step foregrounded more than 35000 documents. Out of this result, only the ‘journal articles’ were included, which means the sources other than the journals, for example books, were excluded as the current analysis was aimed specifically at journal publications. All authors, subject areas, source titles, affiliations, funding sponsors, countries and languages were included to cover the widest range of journal articles. This concluded the final sample of 22307 documents from years 1906 to 2019, which were used in the analysis of broader domain of entrepreneurship, and its growth over the time.

To understand the practical gap and its consequences, one of the largest fully open access publishing houses MDPI is discussed as an example. For graphical illustrations, the analytical figures in Scopus were used. Moreover, the MS excel files were also exported from Scopus, that were used for bibliometric analysis. For bibliometric analysis and illustrations, VOSviewer was used, which analysed the MS excel files imported from Scopus. At the end, the authors interpreted the results which are given in the subsequent section.

Results

To track the growth of entrepreneurship research, the total number of documents by year are shown in Figure 1. There are total 159 journals found in the current study that have published entrepreneurship research. The top journals publishing the entrepreneurship research are: Small Business Economics, International Journal of Entrepreneurship and Small Business, Journal of Business Venturing, International Entrepreneurship and Management Journal, Entrepreneurship Theory and Practice, Entrepreneurship and Regional Development, Journal of Entrepreneurship Education, International Journal of Entrepreneurial Behaviour and Research. Figure 3 below is illustrating the documents per year in these top eight journals, all of which have published at least 300 entrepreneurship articles to date.

Among the top eight journals, it could be noticed that the Journal of Entrepreneurship Education stood at top in the entrepreneurship research in the years 2018 and 2019 (see Figure 3). Primarily, this is because it is the only journal indexed in Scopus database with a specific focus on EE which is a rapidly emerging subfield within entrepreneurship as discussed in earlier section. In the same ranking as per Figure 3 is drawn, the major contributor among MDPI’s journals is the Sustainability which stands at 18th rank.
MDPI’s Contribution in Entrepreneurship Research

Among the sample articles, the total number of entrepreneurship articles published by the MDPI is only 149 which makes 0.67% of all entrepreneurship research published in Scopus indexed journals. With having no specifically focused entrepreneurship journal, among MDPI journals, the major contributor in entrepreneurship research is the Sustainability. This indicates a wide gap under the MDPI’s umbrella, due to which the contribution of MDPI in entrepreneurship research; and entrepreneurship development is very limited. Figure 4 below illustrates the documents per year published by MDPI.
After finding out the share of MDPI in entrepreneurship research worldwide, it is also important to find the top authors, their collaboration networks and their roles in receiving the citations for MDPI journals. For that, Figure 5 has been deduced, which is illustrating the collaboration networks of authors in entrepreneurship research who published in MDPI journals.
As evident in Figure 5, due to the absence of exclusive entrepreneurship journal in MDPI, the entrepreneurship researchers do not have extensive collaboration networks. The researchers are rather split in isolated small groups or pairs which makes them less likely to: 1) produce papers in global context, and, 2) receive a high number of citations. Moreover, publishing the entrepreneurship research in a ‘non-entrepreneurship’ journal receives less scholarly attention from the entrepreneurship academic communities, thus making the articles less favorable to be cited.
**MDPI’s Standing in Relation to the Global Research**

To see the top three institutions where entrepreneurship research has been carried out the most in the world, and the usage of MDPI’s platform by the authors in these institutions, Figure 6 has been deduced during the analysis of the sample.

**Figure 6. Documents by affiliation (top three)**

![Bar chart showing documents by affiliation for Indiana University, Erasmus Universiteit Rotterdam, and Vrije Universiteit Amsterdam.]

It has been found that the authors from top three affiliations in Figure 6 have published 530 entrepreneurship articles collectively. Out of which, only one article is published in the MDPI journal. One of the most commonly perceived reasons for this narrow share is the absence of the exclusive entrepreneurship journals under the MDPI’s umbrella.

Further, to see the top three authors in the entrepreneurship domain, and their choices of MDPI journals to disseminate their valuable research, Figure 7 has been deduced.
After the thorough analysis, it has been found that globally the top three authors in entrepreneurship research (see Figure 7), having more than 200 articles collectively, have not published a single article in MDPI journals. The most obvious assumption for this could also be the absence of an exclusive entrepreneurship journal in MDPI.

Upon investigating the funding sponsors for entrepreneurship research, it has been found that until 2019, total 2187 entrepreneurship articles are funded by the sponsors, that are published in various Scopus indexed journals. Whereas, the share of MDPI is only 99 entrepreneurship articles (i.e., 4.5%) among all. Despite the brand positioning of MDPI as relatively a quick publishing body, it has not been able to attract even 5% of entrepreneurship articles funded by various sponsors. This also raises the question on MDPI’s article processing charges (APC), such as, is the APC of MDPI is higher than the affordability of sponsors? Or, because of the perception of high APC, is MDPI not the first choice of funding bodies? Anyhow, the answers to these questions are to be found by the MDPI’s governing body.

Implications for All Publishers

EE is a rapidly emerging subfield within entrepreneurship as the HEIs are progressively aiming to upgrade the EE to meet the economic needs. Therefore, this domain needs exclusively focused outlets for the scholars to disseminate their research and contribute in the upgrading of EE worldwide. As stated earlier there is only one journal indexed in Scopus
database which is exclusively focusing on EE. This indicates a serious shortage in the outlets of EE research, which promptly needs to be addressed by the top publishers as the EE is rapidly emerging as a field of study in business schools worldwide, which is also evident in Figure 2 and Figure 3.

**Implications for MDPI**

The current bibliometric analysis incorporating the example of a specific publisher is a new attempt in the domain of entrepreneurship. As entrepreneurship development is pivotal to economic growth (Bakhtiari, 2017), therefore, the domain of entrepreneurship as a field of study is growing rapidly. In the times of automation, artificial intelligence and industrial revolution, many jobs are becoming obsolete. Therefore, HEIs worldwide have recognised the need to develop and upgrade EE as sustainable entrepreneurship is the only source of consistent job creation. This signifies the need for more open educational resources through which the scholars could disseminate their valuable research of entrepreneurship to the masses. Therefore, having exclusive entrepreneurship journals are inevitable for the top publishers worldwide, and particularly for a large open educational resource house, such as MDPI, as this domain has already grown enormous and continuing. Hence, for the MDPI that does not have exclusive entrepreneurship journals yet, it is much needed to have at least one in the current times.

Entrepreneurship is a broad area of study having many subdomains or intersections with other domains, for example, education, technology, marketing or psychology. This may raise the question for MDPI being which subdomain or subject area it needs to focus on? To answer this question, the keywords’ analysis of entrepreneurship articles published in MDPI has been done to see which are the prominent keywords that the authors use in entrepreneurship articles they send to MDPI. Figure 8 below illustrates the network visualisation map of the authors’ keywords in MDPI.
As evident in Figure 8, one of the most commonly occurring keywords is ‘education’ which appears in four different ways (i.e., education; entrepreneurial education; entrepreneurship education; higher education). This clearly signifies the importance of the subdomain entrepreneurship education. Therefore, MDPI not only needs the inclusion of an exclusive entrepreneurship journal, but the scope of the journal must also cover entrepreneurship education in particular.

**Conclusion**

Entrepreneurship development is pivotal to the economic growth. HEIs worldwide have also recognised this, and therefore, upgrading the entrepreneurship curricula and pedagogic approaches with the aim of developing entrepreneurship. Similarly, open educational resources could also play a vital role in the development of entrepreneurship in the economies by disseminating the latest knowledge to the general public including entrepreneurs and
students, by removing most of the major barriers. In this regard, a practical gap is found, whereby an extreme shortage could be seen in the number of EE journals that are indexed in Scopus. This gap could significantly be filled by one of the largest fully open access publishing houses i.e., MDPI. Therefore, incorporating the example of MDPI, the current study has conducted a bibliometric analysis in the domain of entrepreneurship to highlight the importance of both entrepreneurship and EE. The results have shown what exactly the publishers, and particularly MDPI are missing. Based on that, the implications are given to all the publishers, and particularly to MDPI for the inclusion of an exclusive entrepreneurship journal which is particularly focused at EE due to its rapidly growing practical need.
REFERENCES


