

The development of Sustainable Entrepreneurship Research Field

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Abstract: Sustainable entrepreneurship contributes both to the economic and non-economic country's development. The reason is that it creates employment sources, enhances products and processes, and sets up new companies and changes people's lives. The topic of sustainable entrepreneurship has been the focus of many studies and has received substantial recognition from academics and practitioners. Previous research suggests a noticeable increase of publications on the topic in recent decades, characterizing a multifaceted and ambiguous research field. This article analyzes the development of sustainable entrepreneurship research field. Through bibliometric techniques and tools, this study allows mapping the main articles on sustainable entrepreneurship and analyzing the most substantial contributions to the advances of research in this field. The chronological analysis of literature from the Web of Science - Social Sciences Citation Index (WoS-SSCI) database – until January 2018 – was realized. As a result, 282 articles were retrieved, which were published in 140 journals and written by 663 authors affiliated to 413 institutions, from 50 countries. Bibliometric analysis allowed identifying journals that stand out due to the number of quotes and articles, which can be used as a reference for future studies. Therefore, this article provides the overview of the development of sustainable entrepreneurship research field and the future trends. For example, there are opportunities for research in the South American context.

Keywords: Sustainable Entrepreneurship; Sustainability; Sustainable Opportunities; Social Entrepreneurship; Environmental Entrepreneurship.

1. Introduction

Historically, an enterprise's success is explained almost exclusively based on its economic performance. The purpose of entrepreneurship research is to generate economic gains or, in some cases, to create employment sources. Those were the factors that traditionally would determine the entrepreneurship contribution to the territories development [1,2]. Therefore, value creation is measured in economic-financial terms, by indicators such as sales, profit or returns on investment (ROI), and it is always understood as the maximization of individual profit [3]. In other words, *entrepreneurship is committed to economic development and wealth generation* [4, 5] *meanwhile, environmental and social issues were mostly avoided*. However, issues related to environmental and social issues and the role of enterprises are not recent and have been the subject of discussion since the last century [6].

Over the last decade, the wish to understand the real impact of companies on society has grown exponentially. Some authors have been indeed talking about an economic paradigm shift. The traditional understanding of value creation merely in terms of economic profit has extended to cover non-economic gains [7]. The scale and nature of human and economic activities have exceeded what the planet can physically sustain [8]. The first group of authors [9] that stressed the link between sustainable development and entrepreneurship, pointed out that companies sustainability is attested by the main activities performed in their environments, impact evaluation, goal achievement, transparent communication of results, and that they must be oriented to the satisfaction of the people vital needs by applying the concept of creative destruction [10], as precondition and driving force in the transition to a more sustainable entrepreneurial ecosystem.

They concluded, "*innovators and entrepreneurs will consider sustainable development as one of the greatest business opportunities in the history of trade*". Sustainable development had often been seen as a cost factor that hindered competitiveness. The authors provided a new perspective on sustainable development as a source of business opportunities. Following this path, an increasing number of researchers have started paying attention to the connection between sustainable development and entrepreneurship [11-13].

Sustainable entrepreneurship is nowadays a mainstream that began with sustainable management and entrepreneurial initiative and in recent years has been focused on by researchers from different academic backgrounds [14, 15]. In general terms, there are two key perspectives on sustainable entrepreneurship. On the one hand, there are those academics who believed that any entrepreneurial activity must be subordinated to the relationship between sustainable entrepreneurship and the triple bottom line. Their researches are mainly published in sustainable management journals [16]. On the other hand, there are those academics who support the concept of triple bottom line with a perspective of entrepreneurial processes [17, 18] and emphasize the relationship that must exist between individuals and opportunities. According to these, sustainable entrepreneurship can be defined as "*The examination of how opportunities will bring into existence future goods and services as discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences*" [11]. In addition to this definition, Table 1 presents other definitions of sustainable entrepreneurship found in works with a high influence in the field (at the time of this work, all the articles had received more than 200 citations).

Table 1. A literature review of the sustainable entrepreneurship definition

Definitions and key aspects	Reference
"The examination of how opportunities to bring into existence future goods and services are discovered, created, and exploited, by whom, and with what economic, psychological, social, and environmental consequences".	[11] (p. 35)
"The process of discovering, evaluating, and exploiting economic opportunities that are present in market failures which detract from sustainability, including those that are environmentally relevant".	[17] (p.58)
"The discovery and exploitation of economic opportunities through the generation of market disequilibria that initiate the transformation of a sector towards an environmentally and socially more sustainable state".	[26] (p. 482)
"We view sustainable entrepreneurship as the discovery, creation, evaluation, and exploitation of opportunities to create future goods and services that is consistent with sustainable development goals"	[27] (p. 58)
A focus "on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society".	[30] (p. 142)
"An innovative, market-oriented and personality driven form of creating economic and societal value by means of break-through environmentally or socially beneficial market or institutional innovations".	[29] (p. 226)

¹ Social Science Citation Index - SSCI / Web of Science, 1992 - 2018 (January 29th).

Entrepreneurs are absolutely aware of the impact that their companies directly or indirectly have on the environment [19]. It is not only about the exploration of opportunities and market threatens, but also about consciously analyzing the social, economic and environmental impact that large corporations' performance is having on territories. Small and medium sized enterprises make a substantial contribution to both the economic growth and the employment generation in most countries around the world [20]. The individual impact generated by SMEs is relatively small, but their collective impact is substantial and indispensable for most of the regions. SME's usually represents around 95% of the private enterprises in modern countries, , thus, they play an important role in the economic activities. Therefore, when addressing SMEs we can state that, due to their more limited resources, their understanding of sustainable practices may differ from that of large enterprises [22]. For a better comprehension, it could be measured that the impact of SMEs' sustainability by the implementation of Global Reporting Indicators (GRI) and its commitment to develop new growing opportunities and lower their risk profiles by the development and the delivering of solutions to reach the Sustainable Development Goals (SDG), so as to achieve their strategies, goals, activities and capitalized benefits.

In order to get an overview of the presented topic, a previous definition of sustainable entrepreneurship is required. Initially, [23], in its approach to sustainable entrepreneurship, it was concluded that this is an ambiguous term from the triple bottom line perspective. Hereafter, [24, 25] stated that sustainable entrepreneurship "is based on variables such as financial performance, company's years of experience and business stability". For this reason, it is evident that sustainable entrepreneurship receives much attention from different research domains, such as "social enterprises and environmental management research", which leads to a wide range of definitions. By contrast, [11] defined sustainable entrepreneurship as "the examination of the discovery of present-future opportunities and the economic, psychological, social and environmental consequences". Also, [17] focused on the "discovery, evaluation and exploitation of economic opportunities present in market failures".

Besides, [26] concluded that the discovery and exploitation of opportunities influence "the transformation of a sector towards an environmentally and socially more sustainable state ". Also, [27] considered sustainable entrepreneurship as the "discovery, creation, evaluation and exploitation of opportunities to bring into existence future goods and services that are consistent with the sustainable entrepreneurship goals". They completed this definition by adding that sustainable entrepreneurship is focused on the preservation of nature, life support, and community in the pursuit of opportunities". However, some academics from social and environmental management journals defined sustainable entrepreneurship as "corporate activities in which the main goal is to substantially contribute to the sustainable development [16]. Authors such as [28] defined sustainable entrepreneurship as "the sum of all the elements of sustainable development, not only some of them" or simply as "a distinct approach to balancing the triple bottom line requirements". Finally, [29] concluded that sustainable entrepreneurship must be approached as an innovative, market-oriented and personality driven form of creating economic and societal value through environmental market development. Table 1 presents the main definitions of sustainable entrepreneurship published in the most important scientific journals that address this topic.

The authors [11] have widened the definition of conventional entrepreneurship given by [31] in order to include a sustainable perspective. They defined sustainable entrepreneurship as "The examination of how opportunities to bring into existence future goods and services are recognized, developed, and exploited by whom and with what economic, psychological, social, and environmental consequences". For this reason, the close alignment with the terminology of conventional entrepreneurship helps in establishing a common conceptual basis for entrepreneurship as a research domain [32]. Other definitions bear some resemblance. It is

remarkable that a consensus has been reached on the articles published by the main journals to denominate the topic under study "sustainable entrepreneurship", understanding "sustainable" in terms of the triple bottom line model (economic, social and ecological). Although it may seem obvious that the importance of a unified terminology to define and position the flood of research that is far from being unified as the reviewed literature as proved, can't be underestimated. Hence, all definitions take a process approach to sustainable entrepreneurship instead of focusing on the individual entrepreneur, according to recent researches; emphasis was laid on the action-oriented entrepreneurship process, and not on the individual entrepreneur's traits [33].

There are previous works that have analyzed sustainable entrepreneurship literature, such as "Sustainable Entrepreneurship: A Current Review of Literature", by [34], which evinces the credibility and increasing interest that sustainable entrepreneurship has gained to undoubtedly become an influential concept in entrepreneurship, even though it still bears a controversial and ambiguous definition. At this point, a research to review and critically evaluate what has been either studied or omitted is requisite. Also, [35], in his article "Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions", concluded that sustainable entrepreneurship research must focus on investigations of qualitative and quantitative dimensions of nets, and how they mitigate the financial and market challenges of the new sustainable ecological enterprises and the established SMEs face.

Moreover, in his article "Sustainable Entrepreneurship Orientation: A Reflection on Status-Quo Research on Factors Facilitating Responsible Managerial Practices", [36] identifies three relevant levels in the successful implementation of sustainable management practices: individual, organizational and contextual. On the individual level, sustainable entrepreneurs tend to derive their purpose of acting in a more sustainable manner from their personal values and traits. On the organizational level, internal corporate culture and resources reconfiguration are critical determinants to embrace a sustainable orientation. Finally, on the contextual level, researchers focus on how entrepreneurs can help society and the environment by means of sustainable entrepreneurship.

These three reviews show that researchers must clearly identify both the possible similarities and differences between the various schools of thought and the definitions that have been proposed in a research field that is still fragmented and limited, as proved by the studies published in a wide range of journals, addressing a variety of research concerns about numerous enterprises. The present research aims to bring clarity to the bibliometric review on the topic of sustainable entrepreneurship by the analysis of keywords, with a restricted focus on scientific literature, without considering either its similarities or its differences with other terms. The methodology adopted in this bibliometric study will be describe in the following section.

2. Materials and Methods

A bibliometric study uses data and bibliographic indicators in order to both outline the scientific production development [37] and to analyze the relevant literature from a specific field [38]. The whole field of bibliometric includes quantitative aspects and models of scientific communication, storage, dissemination, and data retrieval [39]. Hence, bibliometric studies have been also applied to measure the impact of published works, counting the number of quotations found in different areas of knowledge [40]. Besides, a bibliometric study provides essential information to the analysis of quantitative data from the selected works [41], which allow identifying the characteristics of the current research on a subject, past trends and future directions/possibilities. To carry out the present bibliometric study, procedures and techniques similar to those used in other bibliometric studies and systematic reviews of literature were adopted [42]. Two phases were defined: (2.1) Literature Search and (2.2) Analysis of literature.

2.1. Phase 1: Literature Search

The articles search was performed on Web of Science – Social Sciences Citation Index (WoS-SSCI) database, and all the available and complete years until the time of the investigation were considered: from 1956 to 2018. WoS-SSCI is one of the most complete scientific information databases available online; it is composed by magazines/journals reviewed by recognized researchers from the international scientific community, focused on scientific and academic production related to applied social sciences and contains indicators such as quote counting [42, 43].

To conduct the search for literature on sustainable entrepreneurship, indexed in WoS-SSCI database, keywords were identified to allow retrieving related articles. The search for keywords is a useful procedure to ensure the objectivity and replicability of the process of recollection and localization of documents for bibliographic reviews. Initially, the WoS-SSCI list of subject terms (thesaurus) was consulted in order to identify synonyms related to the research. Titles, summaries, keywords and quotations [11, 17] [26-29], among others, were also consulted. 50 keywords that can be used as research terms were listed by using these procedures (including variations such as plural, singular and others) [43, 44]. Among these words are: sustainable: "sustainable entrepreneurship" (or "sustainability entrepreneurship"), "sustainable entrepreneurial opportunity/ies, "sustainable opportunity (or "sustainable opportunities"), among others, such as, "ecological sustainability entrepreneurship"- "green", "sustainable", "ecological", "environmental", "entrepreneur*" (including entrepreneur, entrepreneurial, entrepreneurship), "ecopreneur*" (ecopreneur, ecopreneurial, ecopreneurship), "enviropreneur*" "social/environmental/economic entrepreneurship", (enviropreneur, enviropreneurial, enviropreneurship)-"Conventional entrepreneurship", "Economic Goals; Social Goals; Ecological Goals" among others.



Figure 1: Keywords of sustainable entrepreneurship research field

In order to know if an article would fall under the scope of the present bibliographic study, each word was individually searched on WoS-SSCI database and every result of the search –titles, summaries- was observed. After these first procedures, the main keywords used as search terms was "sustainable entrepreneurship" (or "sustainability entrepreneurship") to derive similar works. These terms were searched under Topic (title, summary and/or keywords from literature indexed in WoS-SSCI). Only Articles (or reviews) in English and the research areas: business, economics, environmental sciences, ecology, science, technology engineering, public administration, social sciences, were included.

Considering that the discussion of the differences between the terms "sustainable entrepreneurship" and "sustainability entrepreneurship" is not the purpose of this work, some

criteria for inclusion and exclusion of articles were adopted. The inclusion criteria for selection of articles were: (1) articles from journals reviewed by peers; (2) business economics or environmental sciences ecology or science technology, other topics on engineering or public administration or social sciences); (3) every single article published between 1992 and 2018; (4) conceptual articles; (5) empirical studies. We decided the exclusion of (1) articles that did not come from journals reviewed by peers; (2) articles that were not related to entrepreneurship; (3) articles that were not related to sustainability.

From these procedures were found 282 publications in January 29th, 2018 (the date that can be considered as a reference for the number of quotations where mentioned). Therefore, the search for literature that has been performed is restricted to scientific literature on sustainable entrepreneurship, without considering its differences or similarities with other terms. The results of the bibliometric analysis are presented in the results section.

2.2. Phase 2: Analysis of the literature

Based on the 282 identified articles, we sought to identify documents that could be considered relevant within sustainable entrepreneurship. In order to achieve it, two groups of documents were created by using the following criteria:

Group 1 - At first, all works were listed in descending order, according to the number of received quotes. The bibliometric indicator TLCS (Total Local Citation Score), which shows the count or number of quotes in works regarding sustainable entrepreneurship, was used. The first 29 works were selected considering the total of 63 quotes in the group's collection. After reading titles and summaries from these 29 articles we observed that 4 of them were not specifically related to sustainable entrepreneurship. The group was finally reduced to 10 articles, which were read and reviewed.

Group 2 - Most recent articles: initially were selected articles published in the last years: 2015 and 2018 (a total of 147 articles). Since they were recent works, where the number of quotes are neither significant nor can be used to select relevant works on a subject [30], the selection criterion was based on the publication in high impact journals (based on the number of quotes). The list of journals used as a reference to carry out this selection is shown in the result section. A total of 39 articles were selected. After reading titles and summaries, as it had been done with the most cited documents (group 1), we verified that only 10 of them focused on sustainable entrepreneurship. These 10 articles were promoted to the next stage.

A total of 20 works from groups 1 and 2 were analyzed in accordance with the conceptual scope of the research (definitions and key aspects of sustainable entrepreneurship). The investigation type (theoretical or empirical), the approach (qualitative and/or quantitative) and gaps and opportunities for future works, were identified.

3. Results

282 articles on sustainable entrepreneurship were retrieved after a search on Social Science Citation Index / Web of Science (SSCI/WoS) database. These articles were published in 140 journals and written by 663 authors from 413 institutions in 50 different countries. We also observed that these 282 articles used 15.945 bibliographic references, an average of 56.54 references per article. Table 2 shows an overview of general results (bibliographic data) obtained in the research.

Table 2. General results: Publications on sustainable entrepreneurship

Elements	Quantity
Articles	282
Journals	140
Authors	663
Institutions (author affiliation)	413
Countries	50
References	15.945

² Social Science Citation Index - SSCI / Web of Science (January 29th.).

With regard to the distribution of publications over time (Figure 2), we verified that, during the period available in the database (from 1992 to 2017, extended to January 29th, 2018), the first two works on sustainable entrepreneurship were published in 1992, 10 works from 1997 to 1999, 0 works from 2000 to 2002 -which seems odd-, 4 works from 2003 to 2005, 18 works from 2006 to 2008, 43 works from 2009 to 2011, 58 works from 2012 to 2014. Finally, 147 works have been published from 2015 until January 29th 2018.

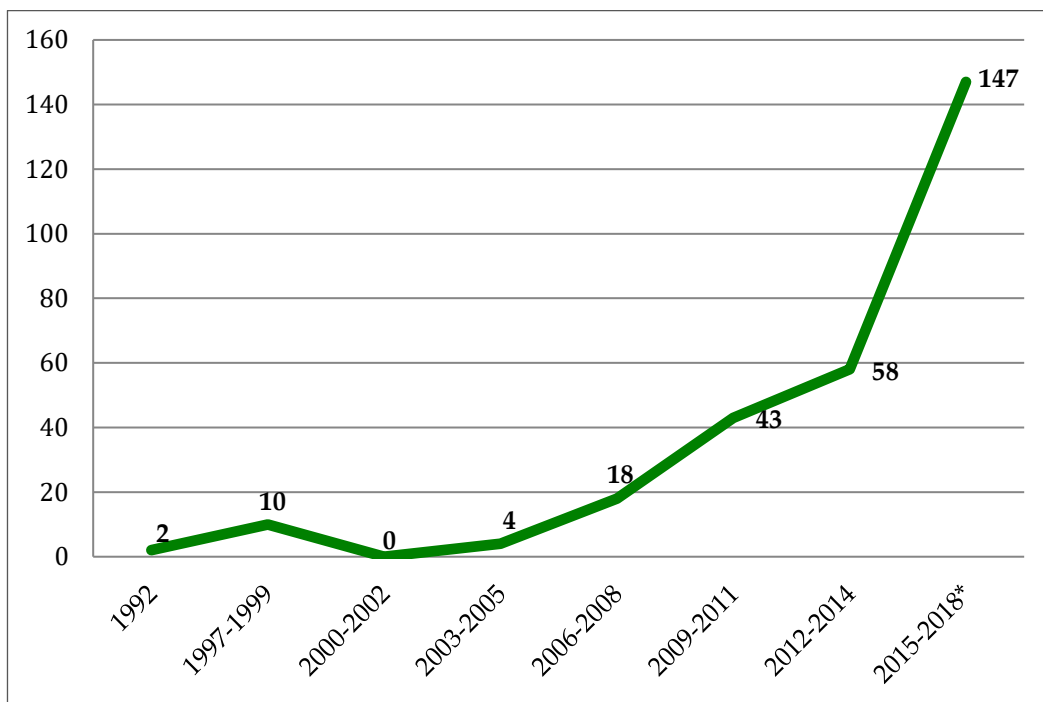


Figure 2: Chronologic distribution of publications on sustainable entrepreneurship

Note: (*) Value estimated based on data until January 29th 2018.

Source: Social Science Citation Index - SSCI / Web of Science, 1992 - 2018.

Among the 140 journals containing works on sustainable entrepreneurship, we sought to identify the most relevant for this research. Both the number of works published in each journal and the number of quotes were considered as indicators. Table 3 shows the list of the main journals according to the number of articles on sustainable entrepreneurship. It also shows the quotation rate for these journals, measured with (*Total Local Citation Score*), which means the total number of quotes received in the 282 articles. These journals have published 109 articles on sustainable entrepreneurship, which represents the 39% of the total. The four journals with the highest number of published articles, over 10 works each, are *Journal of Cleaner Production*, an international journal, with 23 articles; *Sustainability*, with 22 articles; *Business Strategy and The Environment*, with 11

articles; and *Journal of Business Venturing*, with 10 articles. These results allow us to infer that the editorial line of these journals reflects an interest in this specific topic and, otherwise, researchers recognize these journals as relevant channels to communicate their findings in the research area.

In order to identify the journals with the highest impact, the 140 journals were listed in descending order, in accordance to the number of quotes found in the 282 articles (a total of 15.945 quotes; an average of 56,54 quotes per journal). It proves that sustainable entrepreneurship researchers often use articles that have been published in these journals when quoting documents on this topic (Table 3). Altogether, these journals were quoted 3720 times, which represents the 30% of the total number of quotes. Tables 3 and 4 shows that *Journal of Cleaner Production* has the highest number of publications on the topic (23 works), but its impact is not the highest (223 quotes). *Sustainability*, which comes in second place in the ranking (23 works) comes in tenth place among the journals with the highest impact (33 quotes). Meanwhile, three journals with 11, 10 and 8 articles each (see Table 4), are among the most quoted when it comes to sustainable entrepreneurship. They are: *Business Strategy and The Environment*, *Journal of Business Venturing*, *Journal of Business Ethics*, *Journal of Management Studies*, *Journal of Organizational Change Management*, *Organization & Environment*, with 1.996 quotes. Finally, journals with 5 articles, *Small Business Economics and Sustainable Development*, have 88 quotes together.

Table 3. Most important journals of the collection on sustainable entrepreneurship

Journals	Quantity of articles	Citations*
Journal of Cleaner Production	23	223
Sustainability	22	33
Business Strategy and The Environment	11	307
Journal of Business Venturing	10	925
Journal of Business Ethics	9	213
Journal of Management Studies	8	79
Journal of Organizational Change Management	8	363
Organization & Environment	8	109
Small Business Economics	5	37
Sustainable Development	5	51

³ Note: (*) January 29th, 2018. Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science.

Table 4. Top 10 journals quoted from the collection on sustainable entrepreneurship

Journals	Quantity of articles	Citations*
Strategic Management Journal	2	2055
Journal of Business Venturing	10	925
Journal of Marketing	1	365
Journal of Organizational Change Management	8	363
Business Strategy and The Environment	11	307
Journal of Cleaner Production	23	223
Journal of Business Ethics	9	213
Journal of Management	2	200
Journal of the Academy of Marketing Science	2	184
Academy of Management Perspectives	1	127

⁴ Note: (*) January 29th, 2018. Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science.

Table 4 lists the authors with the highest number of publications on sustainable entrepreneurship. Their works represent the 6% of the total number of articles that have been identified in this study (17 of 282). These authors are affiliated to institutions from different countries, such as United States, Canada, Germany and Rumania. The list of all the represented countries does not include any South American country. In general, the 3% of institutions represented by the authors, with works, which have been reviewed in this study, are located in the United States (38%), Canada (19%), Germany, Rumania and New Zealand (43%). The countries where the institutions with the most prolific authors are located (Table 5) may be diverse, but it is not in the case of authors with the highest number of quotes: The 10 most quoted authors are researchers affiliated to institutions located in the United States, with exception of four authors: Wagner M (University of Wuerzburg, Germany); Schaltegger S (University of Lueneburg, Germany) and Cohen B & Winn MI (University of Victoria, Canada).

Table 6 also shows authors (Winn M, Ireland, R and Ketchen, D) who have published 1 article. (York, J) have published 4 articles and Menon, A; Dean, T; Wagner, M., McMullen, J., Cohen, B. and Schaltegger, S. have published 2 articles each. Altogether have reached 1964 quotes on sustainable entrepreneurship. The article by [49] titled *“Enviropreneurial marketing strategy: The emergence of corporate environmentalism as a market strategy”* is quoted 730 times and the article by [17] titled *“Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action”* is quoted 289. It means that both Menon, A. and Dean, T. are among the authors with an average of 1 article on the topic (Table 4) and most of the quoted authors that have been included in the collection analyzed in Table 5 are the main authors of the highly quoted documents.

Table 5. Authors with the largest amount of publications on sustainable entrepreneurship

Authors	Quantity of articles*	Institutions (Author’s affiliation)	Country
Shepherd, D.	4	Baylor University	USA
Shrivastava, P.	4	Concordia University	Canada
York, J.	4	University of Virginia	USA
Patzelt, H.	3	Technical University of Munich	Germany
Vatamanescu, E.	3	Bucharest University	Rumania
Walton, S.	3	University of Otago	New Zealand

Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science.

Table 6. Most quoted authors on sustainable entrepreneurship journals

Authors	Quantity of articles *	Citations	Institutions (Author’s affiliation)	Country
Menon, A.	2	730	Colorado State University	USA
Dean, T.	2	289	University of Colorado,	USA
Wagner, M.	2	281	University of Wuerzburg	Germany
McMullen, J.	2	236	Indiana University	USA
Cohen, B.	2	221	University of Victoria	Canada
Winn, M.	1	219	University of Victoria	Canada
Schaltegger, S.	2	207	University of Lueneburg	Germany
York, J.	4	199	University of Virginia	USA
Ireland, R.	1	190	Baylor University	USA
Ketchen,	1	190	Auburn University	USA

Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science

The documents included in Table 7 are the most quoted articles on sustainable entrepreneurship. After the analysis performed on 13 articles, which are among the most quoted, several relevant aspects, that have been discussed in the literature and can help to understand the topic of sustainable entrepreneurship, were identified. In general, some documents provide an explicit definition of sustainable entrepreneurship. Following a chronological order we'll begin our analysis with the author [49], who introduces the terms "environmental concerns" and their effect on the corporate competitive landscape, by incorporating market size variables (sales) and environmental awareness, with his article *"Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy"*. Later on, [9], in his article *"Global sustainability and the creative destruction of industries"*, focus on *how creative destruction happens*, which was not competitive in the XIX siecle, fostered by sustainability, can increase corporate gains. Afterward, there are authors such as [17], in his article titled *"Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action"* explained how entrepreneurship can help resolve the environmental problems of global socio-economic systems and suggested that environmental market failures represent opportunities for achieving profitability.

Another author [11], in his article titled *"Market imperfections, opportunity and sustainable entrepreneurship"* analyses the relationship between market imperfections and entrepreneurial opportunities and between organizations and natural environment. He concludes that identification and exploitation of market imperfections in the natural environment enables the attainment of entrepreneurial rents and, simultaneously, of more sustainable markets. Afterward, in his article *"Ecopreneurship - a new approach to managing the triple bottom line"* he identifies a strong link between entrepreneurial initiative and environment. He concludes that entrepreneur's style allows the achievement of environmental, social and economic goals. Furthermore, in his article *"Green Management Matters Regardless"*, the author states that from a moral or normative perspective the obligation for green management is absolute. Also, in his article *"The Concept of Opportunity in Entrepreneurship Research: Past Accomplishments and Future Challenges"*, he put emphasis on the comprehension of the nature of opportunities, its causes, effects and processes in order to reach sustainability. [26], in his article *"Greening Goliaths versus emerging Davids -Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship"*, suggests that an ambidextrous innovation policy that can simultaneously pursue incremental and disruptive innovation is needed in order to achieve sustainability.

In this article *"The entrepreneur-environment nexus: Uncertainty, innovation, and allocation"* [46] also concludes that environmental issues clearly represent the kind of opportunity that entrepreneurs can take to orient themselves to sustainability and that environmental entrepreneurship is more effective for the new profit seeking companies. In addition, in his article *"The influence of sustainability orientation on entrepreneurial intentions - Investigating the role of business experience"*, stated that, the individual sustainability orientation of entrepreneurs can contribute to the understanding of both entrepreneurial intentions and the impact of entrepreneurial experience. Moreover, [29] in his article *Sustainable Entrepreneurship and Sustainability Innovation: Categories and Interactions* claims that the degree of environmental or social responsibility orientation in the company is assessed on the basis of environmental and social goals and policies, the organization of environmental and social management and the communication of environmental and social issues. Along with this line of thought, [18], in his article *"The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial. Action Linking. "What Is to Be Sustained" With "What Is to Be Developed"*, claims that Sustainable entrepreneurship is focused on the preservation of nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is construed as a

whole. Finally, [53] in his article “*Sustainability-oriented innovation of SMEs: a systematic review*” concludes that proactive behaviors result in greater sustainability-oriented innovation capabilities and, therefore, in a better interaction with stakeholders, which increases innovation capabilities and improves organizational dynamics.

Table 7. Most cited articles in the collection on sustainable entrepreneurship

Authors	Article Title	Journal	Citations *
[49]	Enviropreneurial marketing strategy: The emergence of corporate environmentalism as market strategy	Journal of Marketing	365
[17]	Toward a theory of sustainable entrepreneurship: Reducing environmental degradation through entrepreneurial action	Journal of Business Venturing	224
[11]	Market imperfections, opportunity and sustainable entrepreneurship	Journal of Business Venturing	219
[29]	Sustainable Entrepreneurship and Sustainability Innovation: Categories and Interactions	Business Strategy and the Environment	197
[51]	The Concept of Opportunity in Entrepreneurship Research: Past Accomplishments and Future Challenges	Journal of Management	190
[26]	Greening Goliaths versus emerging Davids - Theorizing about the role of incumbents and new entrants in sustainable entrepreneurship	Journal of Business Venturing	147
[54]	Green Management Matters Regardless	Academy of Management Perspectives	127
[9]	Global sustainability and the creative destruction of industries	Sloan Management Review	114
[53]	Sustainability-oriented innovation of SMEs: a systematic review	Journal of Cleaner Production	105
[46]	Journal of Business Venturing	Journal of Business Venturing	95
[18]	The New Field of Sustainable Entrepreneurship: Studying Entrepreneurial Action Linking What Is to Be Sustained With What Is to Be Developed	Entrepreneurship Theory and Practice	92
[50]	The influence of sustainability orientation on entrepreneurial intentions - Investigating the role of business experience	Journal of Business Venturing	84
[52]	Ecopreneurship - a new approach to managing the triple bottom line	Journal of Organizational Change Management	71

⁷ Note: (*) January 29th, 2018. Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science.

Table 8 lists the 39 articles that were classified during the period of 2015-2018. These articles help to understand which are the advancements in sustainable entrepreneurship research. Literature searches were performed in order to know which are the types of research, gaps, future lines of research and the most recent and relevant aspects of the topic addressed in this bibliometric study.

An approach to sustainable entrepreneurship relies on three specific analytical dimensions [55]: (1) the purpose of the initiative, (2) its form of organization and ownership, and (3) its embeddedness into local community or social movements. Besides, [35] refers to the fragmented and inconsistent findings in the field of sustainable entrepreneurship and the variety of terms used in it, such as ecopreneurship, environmental entrepreneurship, environment and green entrepreneurial spirit. Also, [56] claims that translating a sustainability message into a tangible product involves the support of three techniques: preservation, transformation and adding novelty. Other authors [57-60] refer to the key findings that the triple bottom line of ecological, social and economic goals is integrated sequentially, not simultaneously, that is to say, sustainable entrepreneurs must: (1) be motivated by identities based on both commercial and ecological logics; (2) prioritize commercial and/or ecological goals; and (3) approach stakeholders in a broadly inclusive, exclusive, or co-created manner in order to acquire financial resources through crowdfunding, because sustainable entrepreneurs do not seem to be ready to respond to the challenges or to take any risks by investing in green business, but also that the government and educational institutions do not recognize their own role and the need of supporting the development of green entrepreneurship.

However, [61] claims that future studies should further connect sustainable and institutional entrepreneurship research, and take group and individual factors into account when explaining how sustainable entrepreneurs engage in institutional change. Thus, the green entrepreneurial spirit is a personal drive, a mission, a location and a future orientation in terms of sustainability. Sustainable entrepreneurs create new symbols, construct new measures, build consensus, and forge new relations to alter or create new institutions. Also, entrepreneurial collaboration has three feedback effects: it creates accessible modes; diversity of scope; and an increased scale of institutional change strategies. Finally, sustainable entrepreneurs that act by themselves intend to engage in institutional change strategies to increase the adaptability to complaints by using their interpersonal nets.

Table 8. Recent articles selected in the collection on sustainable entrepreneurship

Authors	Article Title	Journal
[36]	Sustainable Entrepreneurship Orientation: A Reflection on Status-Quo Research on Factors Facilitating Responsible Managerial Practices	Sustainability
[62]	Drivers of innovation success in sustainable businesses	Journal of Cleaner Production
[63]	Configurational paths to social performance in SMEs: The interplay of innovation, sustainability, resources and achievement motivation	Sustainability
[64]	Empirical Study on Sustainable Opportunities Recognition. A Polyvinyl Chloride (PVC) Joinery Industry Analysis Using Augmented Sustainable Development Process Model	Sustainability
[65]	Eco-innovation and business performance: the moderating effects of environmental orientation and resource commitment in green-oriented SMEs.	R and D Management
[66]	Identifying key performance factors for sustainability development of SMEs – integrating QFD and fuzzy MADM	Journal of Cleaner Production

Authors	Article Title	Journal
	methods	
[67]	Sustainable Entrepreneurial Orientation: A Business Strategic Approach for Sustainable Development	Sustainability
[68]	Building corporate reputation through sustainable entrepreneurship: The mediating effect of ethical behavior	Sustainability
[69]	A methodology for analysing sustainability in energy scenarios	Sustainability
[70]	Who takes more sustainability-oriented entrepreneurial actions? The role of entrepreneurs' values, beliefs and orientations	Sustainability
[71]	The Intersection of Sustainability, Marketing, and Public Policy: Introduction to the Special Section on Sustainability	Journal of Public Policy & Marketing
[72]	The study on ecological sustainable development in Chengdu	Physics and Chemistry of the Earth
[73]	Start-up sustainability: An insurmountable cost or a life-giving investment?	Journal of Cleaner Production
[74]	Sustainable entrepreneurial orientation in family firms	Sustainability
[75]	Toward a Romanian NPOs sustainability model: Determinants of sustainability	Sustainability
[76]	The Interplay Between Sustainable Entrepreneurs and Public Authorities: Evidence From Sustainable Energy Transitions	Organization and Environment
[77]	Ecopreneurs, rural development and alternative socio-technical arrangements for community renewable energy	Journal of Rural Studies
[78]	Entrepreneurial orientation and its effect on sustainability decision tradeoffs: The case of sustainable fashion firms	Journal of Business Venturing
[80]	Sustainable Corporate Entrepreneurship: Performance and Strategies Toward Innovation	Business Strategy and the Environment
[81]	Environmental Entrepreneurship and Interorganizational Arrangements: A Model of Social-benefit Market Creation	Strategic Entrepreneurship Journal
[82]	Sustainable Entrepreneurship and B Corps	Business Strategy and the Environment
[83]	Internal Drivers and Performance Consequences of Small Firm Green Business Strategy: The Moderating Role of External Forces	Journal of Business Ethics
[84]	Ecopreneurship and Ecopreneurs: Limits, trends and characteristics	Sustainability
[85]	Sustainability-driven innovation at the bottom: Insights from grassroots ecopreneurs	Technological Forecasting and Social Change

Authors	Article Title	Journal
[86]	Testing environmental Kuznets curve hypothesis: the role of enterprise's sustainability and other factors on GHG in European countries	Journal of Business Economics and Management
[87]	Embodied Multi-Discursivity: An Aesthetic Process Approach to Sustainable Entrepreneurship	Business and Society
[88]	Increasing sustainable tourism through social entrepreneurship	Internat. Journal of Contemporary Hospitality Management
[56]	Aesthetic mediation of creativity, sustainability and the organization	Journal of Cleaner Production
[89]	Grazing, exploring and networking for sustainability-oriented innovations in learning-action networks: an SME perspective	Innovation
[90]	A theoretical framework for sustaining culture: Culturally sustainable entrepreneurship	Annals of Tourism Research
[91]	What influences environmental entrepreneurship? A multilevel analysis of the determinants of entrepreneurs' environmental orientation	Small Business Economics
[35]	Doing business in a green way: A systematic review of the ecological sustainability entrepreneurship literature and future research directions	Journal of Cleaner Production
[57]	Sustainable Entrepreneurship: A Convergent Process Model	Business Strategy and the Environment
[92]	Kicking Off Social Entrepreneurship: How A Sustainability Orientation Influences Crowdfunding Success	Journal of Management Studies
[93]	Rethinking green entrepreneurship – Fluid narratives of the green economy	Environment and Planning A
[58]	Exploring Environmental Entrepreneurship: Identity Coupling, Venture Goals, and Stakeholder Incentives	Journal of Management Studies
[94]	How Social Entrepreneurs Facilitate the Adoption of New Industry Practices	Journal of Management Studies
[95]	Intergenerational Fairness and the Crowding Out Effects of Well-Intended Environmental Policies	Journal of Management Studies
[96]	How to Green the red Dragon: A Start-ups' Little Helper for Sustainable Development in China	Business Strategy and the Environment

⁸ Note: (*) January 29th. 2018. Source: Data collected from Social Sciences Citation Index – SSCI / Web of Science.

4. Discussion

The flood of literature on sustainability is among the main findings of this bibliometric study on sustainable entrepreneurship. The first articles appear at the beginning of the 90s, after 2006 the number of articles on this topic increases significantly. The data reflects that this growth has not stopped and that the topic of sustainable entrepreneurship is still a developing stream of research. Hence, the existence of a diversity of definitions to describe it is not surprising.

A remarkable result of bibliometrics is that the articles that were published in impacting journals found a common ground on how to define sustainable entrepreneurship and terms related to environment, such as: "green", "sustainable", "ecological", "environmental", "entrepreneurial" "ecopreneur*" "ecopreneur" "enviropreneur*" "Environmental Entrepreneurship" "Ecological Goals" "Economic Entrepreneurs", etc. Hence, this study reveals the importance of equilibrating the economic, social and ecological achievements in sustainable organizations, by making use of the source and the creation of sustainable entrepreneurial opportunities.

When aiming to really understand the research field and be able to provide theoretical and practical contributions, quality scientific research requires the access to knowledge accumulated in previous studies on the specific topic. Thus, this study contributes to developing the entrepreneurship research by performing a bibliometric review of scientific literature with the help of one of the most recognized databases, Web of Science-Social Sciences Citation Index. Besides, the present work can be a guide for future researchers, especially for those who are not familiar with sustainable entrepreneurship.

By providing the chronological distribution of publications, this work allows the systematic review of scientific literature on the topic over time. The first two works that were retrieved from the database were published in 1992, and from 1997 to 1999 10 works were published. From 2000 until now 282 documents on sustainable entrepreneurship have been published, which confirms, what other researchers pointed out, that collaboration within the sustainable entrepreneurship context is a relatively new concept that has attracted the scientific community's interest after 2005. The increasing interest and relevance is proved by the significant rise in the number of publications from the year 2006 until now (considering the final date, January 29th, when this work was finished).

The present bibliometric study also allows the identification of the most prominent journals and works in the research field of sustainable entrepreneurship. Two lists of journals were provided: (i) Journals with the highest number of articles and (ii) the most quoted journals (high impact journals). The results reflect that most articles were published in *Journal of Cleaner Production*, *Sustainability*, *Business Strategy and the Environment* *Journal of Business Venturing*. Articles that stand out in the area, documents with a high number of quotes and documents that have been published in high impact journals in the last two years are also listed. All the provided lists enable researchers to start up or move forward on their research and get acquainted with the most prominent works in the field, that is to say, those high-impact documents that other researchers have used to support their research.

Different lines of research, that may be useful for future researches on sustainable entrepreneurship, have been identified in the context of our bibliometric review. On the one hand, there is the need for theoretical development. Although there is a big number of conceptual works on sustainable entrepreneurship, there are some authors that still develop theoretical models [15, 18, and 56] form a framework in order to detect sustainable development opportunities. Current theories and empirical studies suggests a causal model, with the identification of sustainable development opportunities as a variable dependent on environmental and community awareness and the insertion of a moderating variable such as corporate knowledge. Sustainable

entrepreneurship must focus on the sustainable systems' features that tend to be complex, disperse, global, uncertain, and interdependent and have long-term horizons. The differential role of large and small companies in the transformation towards sustainable development can't be neglected. That is to say, it is about understanding the nature of opportunities, its causes and effects by means of empirical studies [51].

Other important factors to carry out future researches are motivations for innovation and sustainable entrepreneurship models, which need to be adjusted to the corporate environment [29] through different perspectives, in order to explore variables that focus on nature and lifestyle [18] and that should strengthen the connection between sustainable institutional entrepreneurship research and institutional entrepreneurship research [61]. Besides, the directly proportional relationship between uncertainty and innovation opportunities [58] must be analyzed by performing empirical tests on social entrepreneurship initiatives in the field of sustainable energies [58] and by analyzing how ecologically sustainable entrepreneurs and their companies influences communities and society [35], since social and ecological factors can be a source of business opportunities [57]. Finally, this document also provides an exhaustive analysis of the selected works, showing possible gaps and opportunities for new researches on sustainable entrepreneurship. Interested researchers could use the provided information and results to conduct their investigations. New research opportunities demand a thorough investigation to explore the interrelations between the aspects of collaboration within the sustainable entrepreneurship context. For instance, researchers could find an answer to the question: *How the change in public policies is influencing the creation of more sustainable corporations in the territories?* And another critical topic for new research: *Should we analyze the case of regions in which sustainable entrepreneurial initiative has caused legal institutional changes?*

4.1. Limitations

Bibliographic studies allow retrieving and condensing large amounts of bibliographic information, however, they have some limitations. The limitations of this study are at least related to two issues that are intrinsically connected: (i) the variance in human judgment and (ii) the characteristics of both the database and the quote counting/number used in this analysis. The use of just one database, although justified, is a human decision, which shows an obvious scope limitation, due to the fact that it contains just a sample of article. Hence, the reviewed publications represent merely a part of the scientific production on the topic, so general conclusions can't be drawn. Researches that have been published in other databases and languages (Spanish among them) are not represented here. Database properties - indexed journals, quote counting, indexing references- also affect directly the process of retrieving and selecting publications and, therefore, the results.

As previously described (phase 2: Systematic Analysis), quote-counting/numbering was used to select articles relevant to the analysis and research illustration. In order to minimize the bias, this study has only considered articles on the specific topic of sustainable entrepreneurship, instead of considering the whole amount of quotes that each article had in WoS (a database that contains articles on many different topics and fields). Similarly, quotes from the collection (indicator TLCS - Total Local Citation Score) were used to identify and selected journals that focuses on the topic, instead of using Journal Impact Factor (which shows the number of quotes found in scientific and social journals [97], regardless of the topic).

Human judgment is required to determine how many articles/journals must be included as data sources in a literature review, hence, it affects the framework and scope of the research. The objective of quote-counting is to provide a bibliometric indicator - in other words, to use those quotes found in articles/journals to define a starting point and minimize the subjectivity of the article's collection (groups 1 and 2). However human judgment is unavoidable because it determines what is relevant

and what is not in the process. It should be mentioned that among the limitations in the use of bibliometric indicators based on quoting, it is the fact that the type of predominant references can vary according to the area of knowledge and depends on the way quotes are registered in the database [97, 98]. Thus, quote books were not considered in the present study. These limitations must be taken into account when assessing the results presented in this study.

Some of these articles limitation are related to the bibliometric method that has been used. The use of quoting count/numbers to select journals and articles does not allow us to understand the context in which the article or the journal was quoted since it can be a sporadic quote (that appears once or twice in the text) or a quote essential to the theory building. Future researches can include all documents that have been retrieved and analyze their contents in order to understand how the quote was made and which of them are really crucial to the sustainable entrepreneurship research development.

In conclusion, the present literature review on sustainable entrepreneurship allows us to know the history and the current state of the field at international level by using Web of Science - Social Sciences Citation Index (WoS-SSCI) for data retrieval. There is also another limitation derived from the use of just WoS-SSCI. Despite the importance this database has in the scientific community, we suggested future bibliometric studies on the topic considering also other databases, such as Scopus, Science Direct, EBSCO and Scielo. A review of the scientific production on sustainable entrepreneurship by Latin-American researches both in southamerican and international journals could be carried out.

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