

Analysis of Potential Research Topics for Entrepreneurial Factors and Sustainability using Bibliometric Study

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ABSTRACT

Sustainability is a topic that is currently the focus of researchers because it is related to human interaction with the environment to maintain resource sustainability. Human activities can cause environmental degradation. One way to minimize this is to apply the principles of entrepreneurship. The importance of principles and the identification of entrepreneurial factors to implement sustainability is a research opportunity that still needs improvement. By using bibliometrics analysis using R tools, this study seeks to identify research gaps and potential topics for future research related to entrepreneurial factors and sustainability. Research and content-based analysis were conducted on 95 articles obtained from Scopus. The research results have identified constructs and methods that can become potential topics for future entrepreneurs and sustainability researchers. In addition, the results of this study identify that research related to the topic of entrepreneurship and sustainability in developing countries still needs to be developed. This research theoretically enriches knowledge related to bibliometric analysis in entrepreneurship and sustainability. Furthermore, this research guides other researchers in the field of entrepreneurship and sustainability in determining the constructs and research methods.

KEYWORDS: Sustainable, Environment, Entrepreneurship, Bibliometrics.

JEL CLASSIFICATION: M13, M14, Q5

1. INTRODUCTION

Sustainable development can be associated with various meanings, which can be the main topic of development discussions. According to Mensah (2019), sustainable development is human interaction with the environment without destroying resources for the future. In order not to have an impact and make significant permanent changes to the ecosystem, a development model is created that aims to lessen the effects of human activity on the ecosystem in accordance with the objective of sustainable development (Dhahri & Omri, 2018). There are 17 goals in the Sustainable Development Goals (SDG) according to the UN 2030 agenda (Kroll & Zipperer, 2020). In Pérez-Barea et al.'s (2015) research, this behaviour is a socially responsible society. Human activities depend on ecosystems and the ability of ecosystems to maintain activities, where an ecosystem is defined as the physical environment and all living things that coexist and interact in this area (Dhahri & Omri, 2018). York and Venkataraman (2010) stated that one of the solutions to the causes of environmental degradation is entrepreneurship. Many prestigious journals in this field have conveyed the idea that entrepreneurship can be a solution to various environmental and social problems (Hall et al., 2010; Kuckertz & Wagner, 2010; Teixeira & Forte, 2017). Crnogaj et al. (2014) define sustainable entrepreneurship as one of the branches of entrepreneurship which is not only to create a successful and profitable business but also to improve economic, environmental, and social conditions.

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Many parties welcomed the statements in the SDGs with considerable excitement and interpreted them as a call to action (Mintrom & Thomas, 2018). Action is a necessary factor in entrepreneurship (McMullen & Shepherd, 2014). Previous studies have also stated the close relationship between entrepreneurial practice and action (Roy, 2020). Certain behavioural responses from entrepreneurs can lead to a tendency towards sustainable entrepreneurship (Muñoz & Cohen, 2018). Entrepreneurial behaviour refers to the actions, not just the intentions of the entrepreneur; action is the result of the translation of intentions that are formed into something real through entrepreneurial behaviour (Li et al., 2020). Previous studies have attempted to promote sustainable entrepreneurial behavior by explicitly acknowledging the role of motivation, values, and intentions in entrepreneurial behavior (Dixon & Clifford, 2007; Muñoz & Dimov, 2015).

Previous studies have argued that entrepreneurial behaviour was initially triggered by entrepreneurial intentions (Shirokova et al., 2016; Yi, 2021). This is also supported by Neneh's research (2019), which states that the strongest predictor of entrepreneurial behaviour is entrepreneurial intention. The degree to which people are willing to try and how much effort they intend to put in to conduct the behavior is defined as intentions and their position as a predictor of entrepreneurial behavior (Ajzen, 1991). As a result, the intention is regarded as a good predictor of behavior, as well as entrepreneurial actions, since it enables academics to examine potential futures and create business strategies (Ajzen et al., 2009; Martin et al., 2013). The theory of planned behaviour illustrates the evaluation of behavior (attitude), perceived social pressure to execute behaviour (subjective standards), and perceived ease or difficulty in completing behavior (perceived behavioural control) (Ajzen, 1991). Entrepreneurial intentions are driven by various variations of motivation (He et al., 2020).

Entrepreneurial individuals who make sustainable decisions for their businesses have solid values and motivation for environmental change and sustainable development issues (Muñoz, 2018). There is still little research that discusses how sustainable entrepreneurs can adapt to their behaviour and align with their motivational orientation, how motivation changes over time, and how these changes affect company development (Solesvik et al., 2013). Entrepreneurial motivation is translated into entrepreneurial behaviour in entrepreneurs, who train through the creation of enterprises (Nhemachena & Murimbika, 2018). Motivation is a kind of perception about how attractive entrepreneurial behaviour is to something (Solesvik et al., 2013). According to several experts, entrepreneur motivation accounts for a significant portion of the variances in how sustainability is incorporated into new venture formation (Font et al., 2016) and the intentions, which can serve as the foundation of entrepreneurial decisions (Shane et al., 2003).

Previous studies (Hall et al., 2010) have shown several necessary conditions for entrepreneurship to help achieve sustainability goals. Thus, previous research suggests that future studies can expand on research examining whether entrepreneurship can achieve sustainable development goals by using a mediating or moderating model of other entrepreneurial factors (Hall et al., 2010). With current global difficulties such as uncertain climate change, increasing poverty, rapid urbanization, and food insecurity, it is necessary to have a practical understanding of sustainable development, especially in developing countries (United Nations, 2021). There is already a wide range of research on entrepreneurs and businesses, but studies on entrepreneurial motivation are still in the early stages of development (Shi and Wang, 2021). From the above explanation, it can be argued that entrepreneurial values are closely related to realizing and achieving sustainable development goals. However, research related to this topic is still underdeveloped even though this topic is fascinating to be used as a

research topic in the future due to the importance of the role of entrepreneurship and sustainability at this time. Thus, by conducting a bibliometric study, this study tries to analyse and identify potential topics for future research related to entrepreneurial factors and sustainability using research and content-based analysis.

The study is structured as follows. First, we have the introduction. In the next section, a literature review of the research is developed for the formulation and explanation of the conceptual framework and hypotheses. Section three explains the data collection and methodology used in this study. Section four represents the results and discussions. Lastly, section five is the conclusion, limitation, and future research.

2. LITERATURE REVIEW

2.1. Sustainable Development Goals

The current environmental issue is one of the things that has attracted a lot of attention, such as climate change, which is marked by ozone depletion, as well as deprivation of ecosystems and loss of biodiversity due to rampant deforestation (Safari et al., 2018). Thus, customer attention, government agenda, and business agenda focus on environmentally friendly innovation (Naor et al., 2015). Many countries have established and established environmental protection agencies. The task of this agency is to examine projects/development proposals on different dimensions of sustainability. They also have the legal authority to approve or not approve the project (Kwatra et al., 2020). Kwatra et al. (2020) explains that sustainable development not only emphasizes the needs and rights of the current generation to develop but also emphasizes the responsibility so that the community can protect the environment together so that intra and inter-generational justice is created. However, Mensah (2019) argues that the problem of sustainable development basically rests on the pillars of three different but interrelated dimensions, namely the environment, economy, and society, that are centered on inter-and intragenerational justice. That is why decision-makers must constantly pay attention to the relationships, complementarity and exchange among these pillars, ensure responsible human behaviour, and not only focus on intergenerational and intra-generational. With the SDGs, we gain a new and broader understanding of sustainability as an economic, social, and environmental challenge (Kroll & Zipperer, 2020). There is a term for individual behaviour that is relatively more positive towards the environment, namely pro-environmental behaviour (PEBs) (Safari et al., 2018). To realize responsible consumers, financial constraints can be a challenge. However, some consumers may be willing to pay more for environmentally friendly products. Therefore, a way is needed to reconcile this changing mindset (Naderi & van Steenburg, 2018).

2.2. Entrepreneurial Factors in Relation to Sustainable Development Goals

The main factor influencing the beginning of entrepreneurship is entrepreneurial motivation (Shi & Wang, 2021). An important precursor to entrepreneurial activities is entrepreneurial motivation (Carrier, 1997). This is because the main topic of entrepreneurial research and one that is crucial to entrepreneurial activity is entrepreneurial motivation (Shi & Wang, 2021). According to personal needs, entrepreneurial motivation is the inner drive to pursue a certain vision and goal through entrepreneurship (Wang et al., 2021). Other research has demonstrated that the growth of entrepreneurial intention is influenced by the motivation of the entrepreneur (Antonioli et al., 2016; Barba-Sánchez & Atienza-Sahuquillo, 2018; Lang & Liu, 2019). The intention is how much effort is planned and an indication of how hard people are willing to try to do the behaviour; then, the motivating elements that affect behavior are thought to be captured by intention (Ajzen, 1991). So, it is important for us to know what can be done to

foster entrepreneurial intentions, not only in the conventional field of entrepreneurship but also the intention for entrepreneurship in sustainable development (Kuckertz & Wagner, 2010). The intention is basically an individual's readiness to take certain actions by considering the representative relationship between cognitive behaviour and conative behaviour (Ridha et al., 2017). Entrepreneurial intentions and behaviour were attributed solely to the personality of the individual (Kuckertz & Wagner, 2010). In addition, a critical antecedent of entrepreneurial behaviors is entrepreneurial motivation (Evelien et al., 2014). Schlepphorst et al. (2020) defined intention as desire impacted by various reasons, with motivation also influencing behavior.

3. RESEARCH METHODOLOGY

The current study used a bibliometric methodology derived from Price (1965). It entails analysing scholarly communication's statistics data via publication citations (Price, 1965). This study was analysed through three stages adapted from Lazar and Chithra (2020), as outlined in Figure 1.

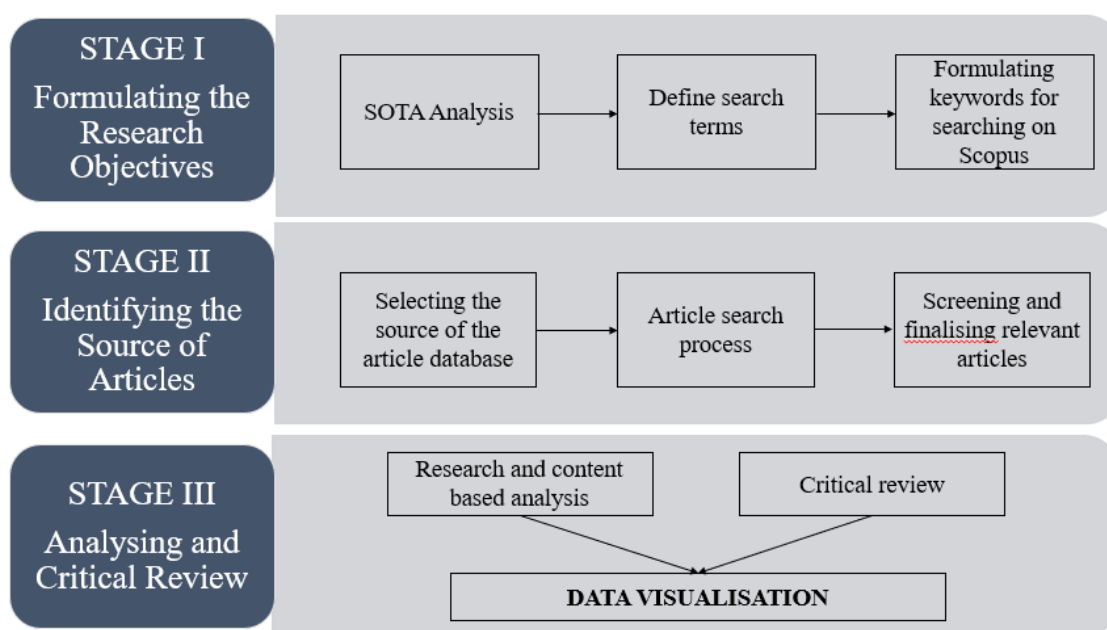


Figure 1. Research Design

Source: adapted from Lazar and Chithra (2020)

3.1. Stage I: Formulating the Research Objectives

The determination and formulation of research objectives are carried out to confirm what gaps the author wants to answer. Furthermore, this determination also strengthens the novelty position of the research. The result of this stage is that it is determined that the purpose of this study is to analyse how the relationship between entrepreneurial factors is in realizing the value of sustainable development goals. However, the author conducts a further analysis to determine what entrepreneurial factors are related to the SDG. From this analysis stage, it is found that the entrepreneurial factors that can influence the SDG are entrepreneurial motivation, behaviour, and intention. Further, the keywords for the search were formulated as shown below: (TITLE-ABS-KEY ("entrepreneur* motivation") OR TITLE-ABS-KEY ("entrepreneur* intention") OR TITLE-ABS-KEY ("entrepreneur* behaviour") AND TITLE-ABS-KEY("sustainab*")).

3.2. Stage II: Identifying the Source of Articles

At this stage, the author determines which article source to choose, namely Scopus. The reason for collecting data is based on Scopus because this database is a frequently used database for the rigorous development of social science research (Nurhalimatus & Wiryono, 2022). From the keywords that have been determined in phase I, the search within Titles, Abstracts, and Keywords yielded 263 documents consisting of 202 articles, 30 conference papers, 14 book chapters, six conference reviews, five books, five review papers, and one editorial. Next, in order to get relevant results, the writer chooses some limitations. First, limit the year of publication in the last ten years so that the information obtained remains relevant. The second limitation is to limit the document only to the form of articles. The third limitation is the subject area adapted to the topic of entrepreneurship, so the author limits the subject area to Business, Management and Accounting and Economics, Econometrics and Finance. As a result of this limitation, the authors have reduced 168 documents to produce 95 articles for further analysis in phase III.

3.3. Stage III: Analysing and Critical Review

The last stage is to analyse and provide a critical review of the articles that have been collected. The analysis is divided into two types, namely research-based and content-based analysis. Understanding research trends, international initiatives, and the scope of a proposed system are all aided by research-based analysis (Lazar & Chithra, 2020). When employing content-based analysis, it is beneficial to examine the proposed system's overall structure (Lazar & Chithra, 2020). These two types of analysis will be further analysed and given a critical review using R tools because it can generate a robust statistical analysis of data. The results of this analysis will be visualized so that it can be analysed in more detail. Bi-dimensional maps, dendrograms, and social networks are just a few examples of intuitive visualizations or maps that can be used as part of analysis methodologies to represent and extract relevant knowledge from data (Aria & Cuccurullo, 2017). A descriptive bibliometric study was conducted using the Bibliometrics R tools to compile all the documents into a matrix (Wahyudi & Kiminami, 2021).

Furthermore, the analysis and critical review of R results will produce the relationship and trend between entrepreneurial factors and sustainability. In addition, the results of this analysis will identify potential and interesting topics for future research. From the explanation of these three stages, the flow of this research is summarized and can be seen in Figure 2.

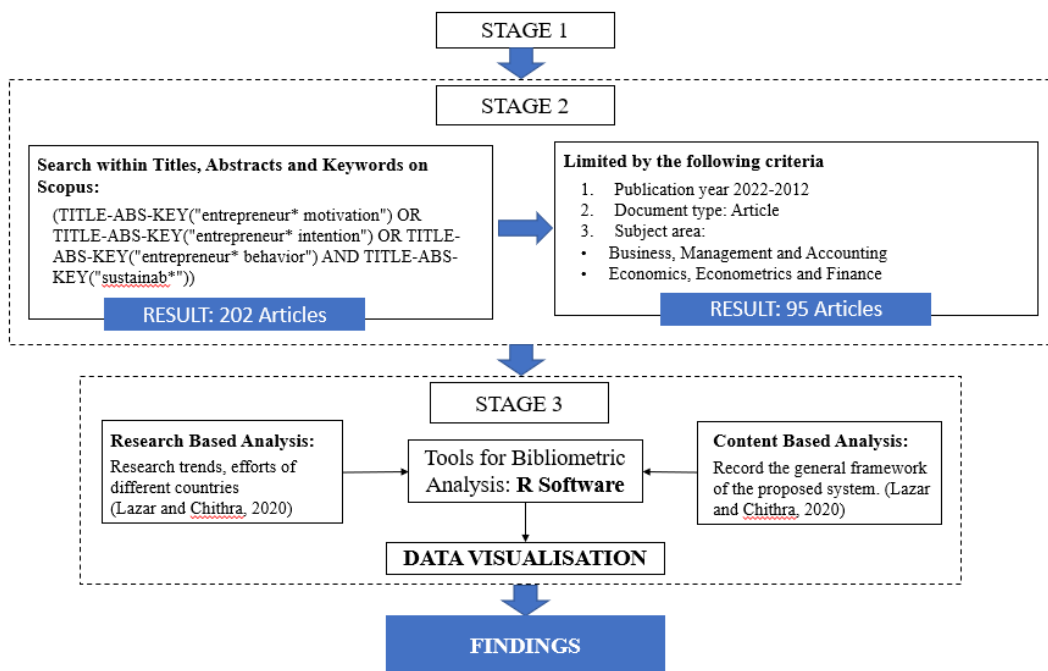


Figure 2. Research Outline
Source: created by Author

4. RESULT AND DISCUSSION

4.1. Research-Based Analysis

The results of the trend analysis of the publication of 95 articles on entrepreneurial and sustainability factors using R tools have fluctuations. From 2012-2014 publications related to articles on this topic experienced an increase, until finally decreased in 2015. Furthermore, publications related to this topic increased sharply from 2015 to 2016, until finally continuing to increase until 2021. In 2016 there were several events that have an impact on economies worldwide. The author assumes that one solution to solving these problems is closely related to entrepreneurial factors and sustainability, so that publications related to this topic will increase in 2016. In addition, 2016 is the year of transition between Millennium Development Goals (MDG) to Sustainable Development Goals (SDG). On September 25, 2015, the concept of the SDGs was just completed, so research on this topic and those using the word sustainability has increased. Data related to fluctuations in publications on entrepreneurship and sustainability can be seen in Table 1.

Table 1. Annual Scientific Production

Year	N	MeanTCperArt	MeanTCperYear	CitableYears
2012	1	33,0	3,3	10
2013	3	43,3	4,8	9
2014	5	9,6	1,2	8
2015	2	13,5	1,9	7
2016	9	6,7	1,1	6
2017	8	21,5	4,3	5
2018	10	28,0	7,0	4
2019	13	8,2	2,7	3
2020	15	8,1	4,1	2
2021	19	3,5	3,5	1
2022	10	1,3	-	-

Source: created by Author

In addition to showing the number of publications per year (N), the data in Table 1 also shows data on the average total citations per article (MeanTCperArt) and the average total citations per year (MeanTCperYear). It can be seen that 2013 had the highest MeanTCperArt and MeanTCperYear because, in that year, there was an article from El Ebrashi (2013) with the title *Social Entrepreneurship Theory and Sustainable Social Impact from the Social Responsibility Journal*, which had been cited 67 times. However, the results of generating the 20 most relevant sources in R tools analysis show that although the articles from the *Social Responsibility Journal* have been cited 67 times, this does not make the journals among the top 5 most relevant sources. The journal that occupies the most relevant position for this topic is the *International Journal of Entrepreneurial Behavior and Research* from the publisher Emerald. This journal has various scopes, one of which is social, sustainable, and informal entrepreneurship, closely related to entrepreneurial factors and sustainability. The data for the 20 journals that are most relevant to the topic of entrepreneurial factors and sustainability can be seen in Figure 3.

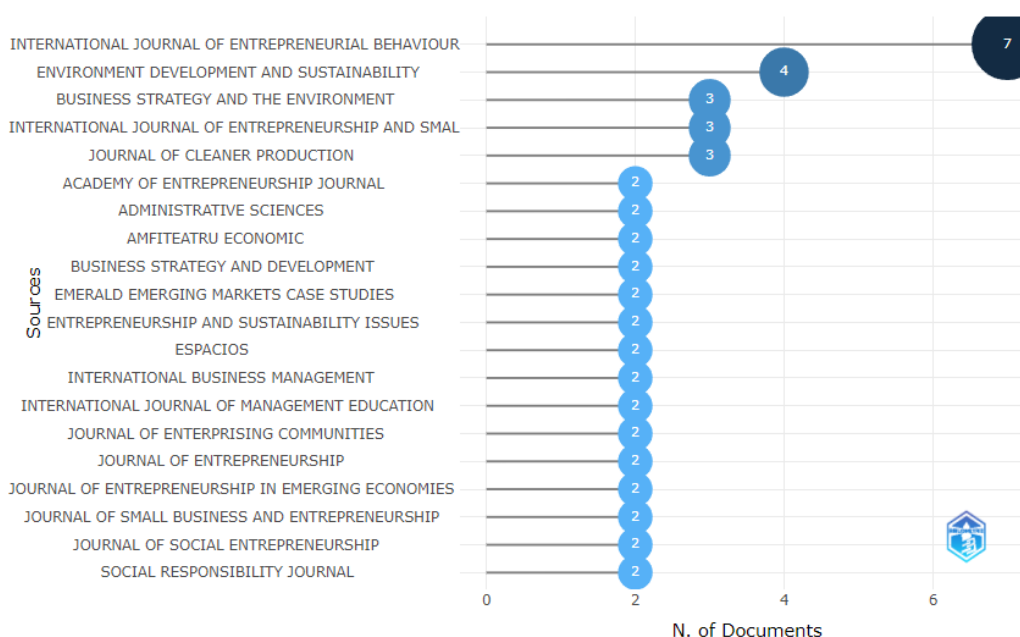


Figure 3. Most Relevant Sources

Source: R Tools

From the data above, the author will further analyse the five journals most relevant to entrepreneurship and sustainability. It can be seen in Table 2. The top five most relevant journals came from various publishers, Emerald, Springer, Wiley, Inderscience, and Elsevier. In addition, 4 of the 5 top five most relevant journals have the same scope, focusing on sustainability. The *International Journal of Entrepreneurship and Small Business* scope only focuses on the entrepreneurial factor and does not mention the sustainability factor. This journal is ranked 4th in the top five most relevant journals. In addition, the author also analyses the h-index and the number of articles published in five journals that occupy the top five most relevant journals. *The International Journal of Entrepreneurship and Small Business*, ranked 1st, has the highest h-index, the h-index = 5. In addition, this journal has the highest number of publications on entrepreneurial factors and sustainability in the last ten years, namely seven articles (Frequency= 7). The interesting thing the author got from the analysis using R tools was that the *Journal of Cleaner Production*, which was ranked 5th, had the same number of publications as the journals ranked 3rd and 4th, which are *Business Strategy* and the *Environment and International Journal of Entrepreneurship and Small Business*. In fact, the *Journal of Cleaner Production* has a higher h-index compared to journals ranked 2nd, 3rd, and 4th. However, it turns out that the same frequency and higher h-index do not make the *Journal of Cleaner Production* rank higher in the category of the most relevant journal. This is because the h-index or Hirsch index measures the impact of a particular researcher rather than a journal (Schreiber, 2008).

Table 2. Top 5 Most Relevant Source

Most Relevant Journal	Scope	Rank	Frequency	h index	PY_start
International Journal of Entrepreneurial Behaviour and Research	Social, sustainable and informal entrepreneurship	1	7	5	2017
Environment, Development, and Sustainability	Includes a wide range of sustainability-related activities, techniques, and policy implication of sustainability.	2	4	2	2016
Business Strategy and the Environment	Activities ranging from environmental management to sustainable business growth	3	3	2	2020
International Journal of Entrepreneurship and Small Business	Focuses on specialized research areas such as self-employment among aboriginal/indigenous peoples, self-employment among ethnic enclaves, the impact of religion on entrepreneurs, entrepreneurs in the informal sector, entrepreneurs in the ethnic enclaves, and gender issues in self-employment.	4	3	2	2017
Journal of Cleaner Production	Sustainable and environmental factors, including governance, legislation, and policy for sustainability	5	3	3	2017

Source: created by Author

As explained above, the h-index analysis is more suitable for being associated with the author. Thus, the researcher's output and the impact of their publications on citations are both intended

to be gauged by the authors' h-index (Hirsch, 2005). The author analysed ten authors with the highest h-index and the most total citations. The results of the analysis can be seen in Table 3. The first rank is Katharina Fellnhofer, with an h-index = 2, and her articles have been cited 115 times. Fellnhofer has two articles. The first article, entitled *Drivers of Entrepreneurial Intentions in Sustainable Entrepreneurship* (2017), was written by Vuorio as the first author, Puumalainen as the second author, and Fellnhofer as the third author. The first article caught the attention of researchers, so this article has been cited 88 times. In the second article, Fellnhofer (2017) acts as the sole author of the article entitled *Drivers of Innovation Success in Sustainable Businesses*, which has been cited 27 times.

Table 3. Author Impact

No	Author's Name	h_index	Title	TC	Total	Year
1	Fellnhofer, K.	2	Drivers of Entrepreneurial intentions in Sustainable Entrepreneurship	88	115	2018
			Drivers of innovation Success in Sustainable Businesses	27		2017
2	Dickel, P.	2	Who Wants to be A Social Entrepreneur? The Role of Gender and Sustainability Orientation	20	37	2021
			The interplay of Corporate Entrepreneurship, Environmental Orientation, and Performance in Clean-Tech Firms—A Double-Edged Sword	17		2020
3	Eckardt, G.	2	Who Wants to be A Social Entrepreneur? The Role of Gender and Sustainability Orientation	20	37	2021
			The interplay of Corporate Entrepreneurship, Environmental Orientation, and Performance in Clean-Tech Firms—A Double-Edged Sword	17		2020
4	Liang, C.	2	Before Non-Profit Organisations Become Social Enterprises	12	15	2019
			Transforming Non-Profit Organisations into Social Enterprises: An Experience-Based Follow-Up Study	3		2021
5	Peng, Xe.	2	Before Non-Profit Organisations Become Social Enterprises	12	15	2019
			Transforming Non-Profit Organisations into Social Enterprises: An Experience-Based Follow-Up Study	3		2021
6	Hossain, M. S.	2	Determinants of Sustainable Competitive Advantage from Resource-Based View: Implications for the Hotel industry	7	12	2022
			Factors influencing Sustainable Competitive Advantage in The Hospitality industry	5		2021
7	Khyareh, M.	2	Macroeconomic Effects of Entrepreneurship: Evidences from Factor, Efficiency and innovation Driven Countries	7	12	2019

No	Author's Name	h_index	Title	TC	Total	Year
			Competitiveness, Entrepreneurship, and Economic Performance: Evidence from Factor-, Efficiency-, and innovation-Driven Countries	5		2019
8	Puumalainen, K.	1	Drivers of Entrepreneurial intentions in Sustainable Entrepreneurship	88	88	2018
9	Vuorio, A. M.	1	Drivers of Entrepreneurial intentions in Sustainable Entrepreneurship	88	88	2018
10	Ebrashi, R. E.	1	Social Entrepreneurship Theory and Sustainable Social Impact	67	67	2013

Source: created by Author

From the data above, it can be seen that authors who have a higher h-index will rank higher because they have more than one article. This causes Vuorio and Puumalainen, the first and second authors in the article entitled Drivers of Entrepreneurial intentions in Sustainable Entrepreneurship, which have been cited as many as 88 times, only to occupy positions 9 and 8, respectively. This is because authors ranked 8-10 are not as productive as authors ranked 1-7, even though they have a significant number of citations.

Furthermore, the authors also analysed the country of origin of the corresponding author. From this data, the authors take the five most productive corresponding author countries; the results can be seen in Figure 4. From this ranking, it can be seen whether the corresponding author cooperates with authors from the same country or collaborates with authors from different countries. Thus, there are two types of articles. The first type is single country publications (SCP), when all authors are from the same nation, and these publications show intra-nation cooperation (Sweileh et al., 2017). The second is multiple-country publications (MCP), which are examples of inter-country collaboration, or international collaboration, in which the authors are from various nations (Sweileh et al., 2017). In the first place, Germany produced nine articles, seven articles had authors from Germany, and two articles were the result of collaboration between Germany and other countries. Of the top five most productive countries, the number of SCPs is more than MCPs. The author assumes that the topic of entrepreneurial factors and sustainability is a topic that is more focused on in-depth analysis within a country, for example, analysing how a country can realise entrepreneurship and sustainability without having to compare several countries.

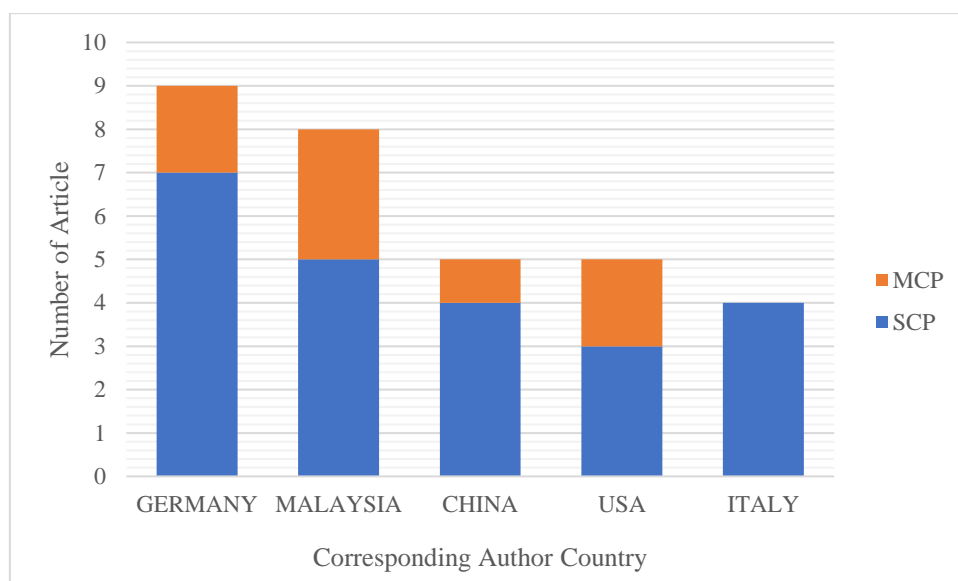


Figure 4. Top 5 Most Productive Countries

Source: created by Author

Furthermore, the authors related the results obtained from the R tool analysis between the five most productive countries and the most cited countries. These results can be seen in Table 4. From the data, it can be seen that Germany occupies the first position as the most productive and most cited country. The author assumes that Germany is a country that has a high concern for the issue of sustainability and is also an entrepreneur. In addition to providing many articles about this, the author from Germany has also succeeded in providing quality articles that are cited by many people. The interesting thing from this finding is that the two countries included in the top five most productive countries did not even make it into the top five countries with the most citations, namely China and Malaysia. In addition, it can be seen that the five countries that occupy the top five most cited articles come from developed countries. This can be a motivation for authors in developing countries to be able to produce articles that can compete with articles from developed countries.

Table 4. Most Cited Countries

Country	Total Citations	Number of Articles
Germany	161	9
Finland	116	3
Spain	89	3
USA	80	5
Italy	68	4
Egypt	67	1
Malaysia	66	8
United Kingdom	66	3
Lebanon	59	1
China	34	5

Source: created by Author

4.2. Content-Based Analysis

The content-based analysis is an analysis of the dimensions contained in the article. In addition, this analysis is also needed to help understand the general framework of the system proposed by these articles by analysing the construct and how relevant it is (Lazar & Chithra, 2020). To understand and perform content-based analysis, the authors take data from the R tools that produce rankings for the most cited globally. Articles with many citations indicate that the article has many insights and benefits for other researchers. The results for the most cited globally can be seen in Table 5.

Table 5. Articles Most Cited Globally

Author	Year	Title	DOI	Total Citations	TC per Year
Vuorio et al.	2018	Drivers of Entrepreneurial Intentions in Sustainable Entrepreneurship	10.1108/IJEER-03-2016-0097	88	17,60
El Ebrashi, R.	2013	Social Entrepreneurship Theory and Sustainable Social Impact	10.1108/SRJ-07-2011-0013	67	6,70
Ayuso, S. and Navarrete-Báez, F.E.	2018	How Does Entrepreneurial and International Orientation Influence SMEs' Commitment to Sustainable Development? Empirical Evidence from Spain and Mexico	10.1002/csr.1441	66	13,20
Yunis et al.	2017	Impact of ICT-Based Innovations on Organizational Performance: The Role of Corporate Entrepreneurship	10.1108/JEIM-01-2016-0040	59	9,83
Lourenço et al.	2013	Promoting Sustainable Development: The Role of Entrepreneurship Education	10.1177/0266242611435825	47	4,70

Source: created by Author

In first place is the article from Vuorio et al. (2018), entitled *Drivers of Entrepreneurial Intentions in Sustainable Entrepreneurship*, which was cited 88 times. Using a quantitative study, Vuorio et al. (2018) prove that attitudes toward sustainability and perceived entrepreneurial desirability enhance sustainability-oriented entrepreneurial intentions. This research has been cited by many people because Vuorio (2018) in his research used a popular theory, namely The Theory of Planned Behavior by Ajzen (1991) and combined it with the Sustainability Development Goals, which is an issue that attracts the interest of researchers around the world. In his research, Vuorio et al. (2018) also showed very interesting results, he stated that when applied to sustainable entrepreneurs, the theory of planned behavior needs to be modified.

In the second position is an article from El Ebrashi (2013) entitled *Social Entrepreneurship Theory and Sustainable Social Impact*, which was cited 67 times. This article has been widely cited because the author employed Schumpeter's entrepreneurial theory, which was at the forefront of the literature on economic growth. Then, through economically sustainable and viable models, social entrepreneurship theory might contribute to social development (Ebrashi, 2013). Next is an article by Ayuso and Navarrete-Báez (2018) entitled *How Does Entrepreneurial and International Orientation Influence SMEs' Commitment to Sustainable Development? Empirical Evidence from Spain and Mexico*, cited 66 times. This article is interesting because it underlines the significance of resources and capabilities as drivers for enterprises' sustainable development engagement and offers support for the RBV (Resource-Based View Theory) within the framework of sustainable development.

The interesting thing from the data above is that of the five articles cited the most, only two were sourced from journals included in the 20 most relevant journals. The journal belonging to Vuorio (2018) that is cited the most comes from the most relevant journal, namely the International Journal of Entrepreneurial Behavior and Research. El Ebrashi's (2013) journal comes from the Social Responsibility Journal, ranked 20th in the journal category most relevant to entrepreneurship and sustainability. Meanwhile, the articles ranked 3rd, 4th, and 5th, with the most citations, did not come from the 20 most relevant journals. This is an interesting finding because the article is considered relevant so that it has many citations judged from the content and not from the source of the journal or publisher.

Analysing the content of an article is done not only by reading the contents of the article but also by looking at the co-word analysis. Co-word analysis is the process of mapping and clustering terms taken from keywords, titles, or abstracts in a bibliographic collection to create the conceptual framework of work (Aria & Cuccurullo, 2017). The results of the word co-occurrence network analysis extracted from keywords can be seen in Figure 5.

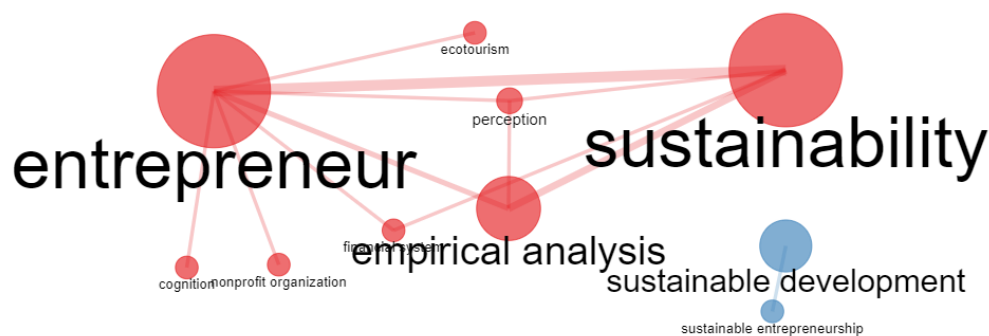


Figure 5. Word Co-Occurrence Analysis from Keywords

Source: R Tools

The data above shows that the words entrepreneur, sustainability, and empirical analysis are in the red cluster. The red cluster is the most used keyword (Nurhalimatus & Wiryono, 2022). The second cluster is the blue cluster, consisting of the words sustainable development and sustainable entrepreneurship. The keywords entrepreneur and sustainability also have large node sizes. The largest node indicates that its occurrences were relatively large, as well as these keywords were commonly used in the included articles (Zhang et al., 2022). From the above data, it can be seen that many researchers use empirical analysis for the topic of entrepreneurship and sustainability.

Furthermore, the analysis of word co-occurrence originating from the title was also carried out. The results of the analysis can be seen in Figure 6. This result is similar to the word co-occurrence analysis from keywords, except that the word co-occurrence analysis from the title raises more words that have started to refer to various research constructs. The words entrepreneurship, sustainable, and entrepreneurial remain the words with the largest nodes in the red and blue clusters. From these results, we can see what words or constructs are still under research and become opportunities for future research.

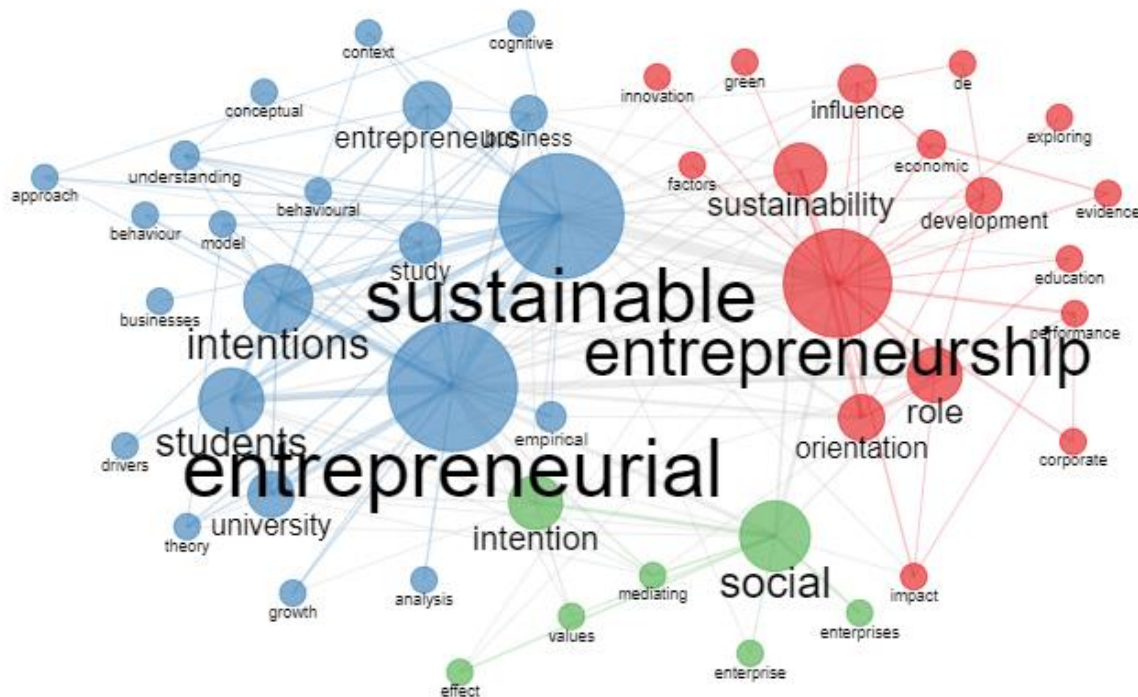


Figure 6. Word Co-Occurrence Analysis from Title

Source: R Tools

4.3. Potential Topic for Future Research

Entrepreneurship and sustainability are topics that have become hot topics among researchers. Interestingly, these two topics are due to the first reason; sustainability provides a new and enlarged understanding of sustainability as an economic, social, and environmental challenge (Kroll & Zipperer, 2020). The second reason is that numerous empirical studies have attempted to determine how much entrepreneurship adds to national economic growth (Hu et al., 2018). In this article, the author has conducted research and content-based analysis to be able to find several potential topics for future research.

The interesting thing obtained from the results of the research-based analysis that can become a potential topic for future research is related to the country that is the object of research for the topic of entrepreneurship and sustainability. From these results, it can be seen that the sources of the articles that are widely cited are from developed countries. This is an opportunity for researchers in developing countries to enrich content and analysis related to entrepreneurship and sustainability in developing countries. From these results, it can be analysed what causes research on the topic of entrepreneurship and sustainability in developed countries to be relevant and cited by many researchers? There are various reasons that can answer this question; it can be the method used, the research idea and the way of conceptualizing it is unique and

interesting, or the use and adaptation of relevant theories. These things are closely related to the content of the article, so they must be analysed and adapted by writers from developing countries in order to produce articles that are widely cited and provide benefits to other researchers.

The findings resulting from this research-based analysis have a close relationship with the content-based analysis. From the content-based analysis, it can be seen that future research can elaborate on the components of the entrepreneurial concept to be developed as a potential research topic. This can be seen from the word co-occurrence analysis from the title, which shows that there are still many small nodes that can become potential topics for future research related to entrepreneurship and sustainability. In addition, in the word co-occurrence analysis from keywords, it can be seen that research on the topic of entrepreneurship and sustainability is dominated by empirical research. This is an opportunity for studies that use literature studies or bibliometrics analysis.

5. CONCLUSION AND FUTURE RESEARCH

This study analyses several articles related to entrepreneurship and sustainability to discover what potential topics have not been explored and become research opportunities for researchers in this field. Using the bibliometrics method, the author analyses articles related to entrepreneurship and sustainability that have been collected from Scopus by conducting research and content-based analysis. From the author's analysis, it can be concluded that research related to entrepreneurship and sustainability in developing countries still needs improvement. Sustainability is currently one of the missions and commitments that are being intensively realised in developing countries. This can be realised by the existence of entrepreneurs as actors who play an important role in developing countries, especially in the field of the country's economy. Therefore, these two topics have the potential to be developed in future research. In addition, research using bibliometric analysis methods and literature studies related to entrepreneurship and sustainability is still under research. This is a novelty for this research and answers the gap from previous research, which still focuses on empirical research.

It is hoped that this research can enrich knowledge in the entrepreneurship and sustainability field. This research is beneficial as a guide for other researchers in the field of entrepreneurship and sustainability in determining the constructs and research methods. In addition, this study also helps other researchers choose which journals are appropriate and relevant regarding the topic of entrepreneurship and sustainability. This research helps build state-of-the-art (SOTA) for research in the field of entrepreneurship and sustainability. However, this study was not without limitations. The first limitation is that the selection of keywords is limited to the search for entrepreneurial and sustainability factors. Sustainability in this term is also limited only to the definition of sustainable development. It is hoped that future research can use other keywords or combine entrepreneurial and sustainability keywords with other constructs. The second limitation is that the data used is only sourced from Scopus. It is hoped that future research will use other sources, such as the Web of Science, and others. The third limitation is the document type because this study only uses and analyses articles as a data source. Future research is expected to use other types of documents, such as book chapters or conference papers, as data sources.

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