

The Importance of Entrepreneurship and the Exploration of Future Development Directions

Constantin Florin BOGDEA

*University Politehnica of Timisoara, Timișoara, Faculty of Management in Production and Transportation, Romania
constantin.bogdea@student.upt.ro*

Elena Cristina RADA

*Department of Theoretical and Applied Science – DiSTA, Insubria University of Varese, Varese, Italy
elena.rada@uninsubria.it*

Geanina – Ioana BOGLUȚ*

University Politehnica of Timisoara, Timișoara, Faculty of Management in Production and Transportation, Romania

**Corresponding author, geanina.boglut@student.upt.ro*

Grațian - Daniel GOLOȘIE

*University Politehnica of Timisoara, Faculty of Management in Production and Transportation, Timișoara, Romania
gratian.golosie@student.upt.ro*

Mircea SAMFIRESCU

*University Politehnica of Timisoara, Faculty of Management in Production and Transportation, Timișoara, Romania
mircea-ilie.samfirescu@student.upt.ro*

Abstract. *Entrepreneurship occupies an important place in the current dynamics of business and education. This research investigates the evolution of entrepreneurship research through a comprehensive bibliometric analysis. In an evolving global economic context, increased interest in entrepreneurship research has led to the use of Harzing Publish or Perish software to collect data from major research platforms such as Google Scholar, Scopus and Web of Science. A total of 920 relevant articles on entrepreneurship published between 2012 and 2022 were identified via Google Scholar. At the same time, entrepreneurship directions that need attention and can contribute to the entrepreneurial knowledge base were identified. In a landscape marked by rapid changes in information and communication technology, coupled with the significant influence of the digital economy, assessing the impact of these factors on entrepreneurship becomes essential. Using VOSviewer, we highlighted collaborations between authors, the impact of articles and key elements such as keywords in research. This research not only provides an overview of current entrepreneurship research, but also identifies unexplored areas and opportunities for future research directions. In conclusion, this review highlights emerging challenges and perspectives that can guide both academic research and entrepreneurship practice in the coming period.*

Keywords: VOSviewer, entrepreneurship, business, education.

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Introduction

In a global economic environment characterized by profound and fast change, entrepreneurship research has become an area of intense interest, adapting to the challenges and opportunities brought by the digital revolution (Ács et al., 2014; Jennings et al., 2013; Nambisan et al., 2019). This study proposes a comprehensive bibliometric analysis of the literature on entrepreneurship in the digital age, with the central objective of identifying major trends in publications, assessing collaborations between researchers and entities, and highlighting potential inconsistencies and future research directions (Artene et al., 2017; Sarfraz, Ji, et al., 2022) .

In an environment marked by rapid advances in information and communication technology and the fundamental transformations brought about by the digital economy, assessing the impact of these factors on entrepreneurship becomes essential (Bae et al., 2014). Technological advances and the extensive integration of digital tools into business models have generated significant changes in the entrepreneurial ecosystem (Venkataraman, 2019). Thus, in a landscape characterized by volatility and continuous innovation, entrepreneurship in the digital age is a fascinating territory of socio-economic change (Ivascu et al., 2019). Accelerating transformational processes in technology and communication have significantly influenced the way businesses are run and developed (Nambisan, 2017). In addition to technological challenges, the impact of the COVID-19 pandemic has amplified the need for innovation and adaptability within the entrepreneurial environment (Martin et al., 2013). In this complex context, the bibliometric analysis we propose not only aims to provide a retrospective on existing research, but also to explore the implications and emerging opportunities in a changing economic landscape (Nambisan, 2017). The importance of entrepreneurship in business and education begins to grow and develop new dimensions of innovation, business models and communication in the context of sustainability principles (C. Busu et al., 2021; M. Busu et al., 2021; Cioca et al., 2019; Ivascu et al., 2015; Sarfraz, Ye, et al., 2022). The economic implications of the development of new models are important and contribute to the sustainable development of companies (Pislaru et al., 2011).

This study not only provides an overview of the current state of research on entrepreneurship in the digital age, but also identifies unexplored areas and opportunities for future research directions. Through this ambitious bibliometric approach, we aim to contribute to a thorough understanding of the evolution and dynamics of research in this field, highlighting key issues that deserve attention in future research, both academic and practical.

Methodology

The data collection process was carried out using Harzing Publish or Perish software, facilitating the extraction of information from the Google Scholar platform. A set of 920 relevant articles on entrepreneurship, published between 2012 and 2022, identified in the Google Scholar database, were analyzed. Thus, the research provides a detailed analysis, both from a quantitative and visual perspective, of the results obtained revealed significant issues and emerging trends in entrepreneurship in the digital context.

Thus, the present work was carried out in two steps: the collection of articles was carried out from the Google Scholar database, using the Harzing Publish or Perish tool, identifying a series of 920 articles in the field of entrepreneurship, published between 2012 and 2022, then carrying out a quantitative and visual analysis of the results obtained previously. This analysis includes citation analysis and keyword occurrence analysis of literature related to the topic of entrepreneurship.

With the data collected and analyzed using the Harzing Publish or Perish tool and VOSviewer, we aim to highlight the complex connections between researchers, institutions and countries involved in the study of entrepreneurship in the digital age. We will also explore possible inconsistencies and gaps in the current literature, thereby providing meaningful contributions for researchers, practitioners, and policy makers. Finally, this ambitious review aspires to bring new insights and challenges to entrepreneurship research in the current digital landscape. At the same time, using the VOSviewer tool, we outlined networks to highlight collaborations between authors, the impact of articles and relevant issues such as keywords and countries involved in the research.

The primary data used in the present research are shown in Table 1.

Table 1. Summary of data source and selection

Data base	Google Scholar
Publication date	2012-2022
Searching topics	Entrepreneurship
Document type	Articles
Language	English
Results	920 items

Source: Authors' own research.

Results and discussions

Google Scholar was used to obtain a database in the field of entrepreneurship. In Table 1, the summary of the data search source and the criteria used is presented. The first publication indexed, is a 2012 publication, in which the authors discuss the economic and psychological determinants that impact the transition of scientists to academic entrepreneurship ((Mason, Colin; Brown, 2014)).

Table 2 shows the number of publications in the field of the research topic for the period under review.

Thus, between 2013 and 2018 the most articles were published in the field under analysis. The maximum number of articles published in the Google Scholar database was in 2013, when 122 articles were published in the field of entrepreneurship, representing 13.26% of the total number of articles identified. Since 2017, there has been a considerable decrease in the number of articles published in the entrepreneurship sphere, in the year.

2022, with only 29 articles published, only 3.15% of the total articles analysed.

Table 2. Number of publications per year

Year	No. of publication	% of 920
2012	98	10.65%
2013	122	13.26%
2014	118	12.83%
2015	102	11.09%
2016	101	10.98%
2017	86	9.35%
2018	76	8.26%
2019	71	7.72%
2020	63	6.85%
2021	54	5.87%
2022	29	3.15%
TOTAL	920	100.00%

Source: Authors' own research.

Figure 1 shows graphically the evolution of the number of publications in the field of entrepreneurship from 2012 to 2022.

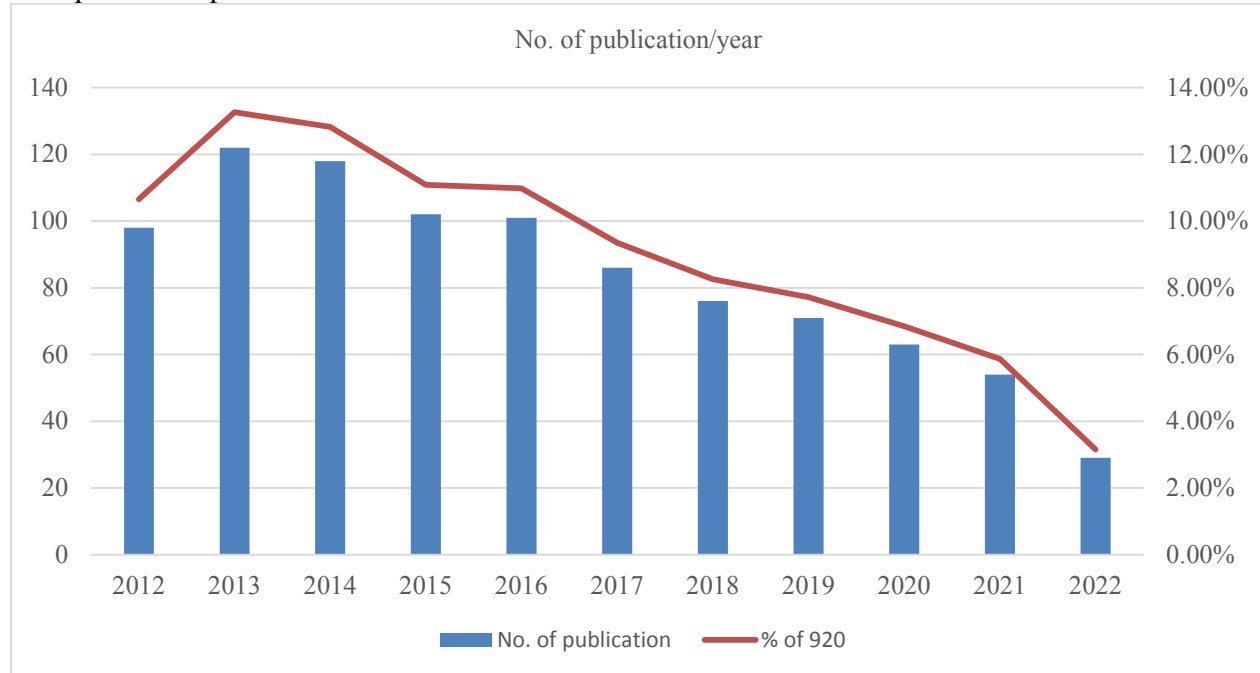


Figure 1. Number of publications/years

Source: Authors' own research.

In terms of the most cited authors in the period under review, we can note the paper entitled the distinctive domain of entrepreneurship research, published by S. Venkataraman in 2019 in the journal *Seminal ideas for the next twenty-five years*. In this paper, the author argues that entrepreneurship research should focus on understanding how opportunities arise to realize future goods and services.

The top 10 most cited authors in the Google Scholar database are presented in Table 3. The table provides information on the title of the paper, place of publication, year of publication and number of citations for each paper.

Table 3. Top 10 authors and articles by citation

Author	Title	Publication	Year	Quote
S Venkataraman	The distinctive domain of entrepreneurship research	Seminal ideas for the next twenty-five years	2019	5360
FM Santos	A positive theory of social entrepreneurship	Journal of business ethics	2012	2387
S Nambisan	Digital entrepreneurship: Toward a digital technology perspective of entrepreneurship	Entrepreneurship theory and practice	2017	2205
TJ Bae, S Qian, C Miao, JO Fiet	The relationship between entrepreneurship education and entrepreneurial intentions: A meta-analytic review	Entrepreneurship theory	2014	2165

Author	Title	Publication	Year	Quote
BC Martin, JJ McNally, MJ Kay	Examining the formation of human capital in entrepreneurship: A meta-analysis of entrepreneurship education outcomes	Journal of business venturing	2013	1936
C Mason, R Brown	Entrepreneurial ecosystems and growth-oriented entrepreneurship	Final report to OECD, Paris	2014	1834
ZJ Acs, E Autio, L Szerb	National systems of entrepreneurship: Measurement issues and policy implications	Research policy	2014	1781
R Decker, J Haltiwanger, AR Jarmin	The role of entrepreneurship in US job creation and economic dynamism	Journal of Economic	2014	1519
JE Jennings, CG Brush	Research on women entrepreneurs: challenges to (and from) the broader entrepreneurship literature?	The Academy of Management Annals	2013	1514
S Nambisan, M Wright, M Feldman	The digital transformation of innovation and entrepreneurship: Progress, challenges and key themes	Research policy	2019	1493

Source: Authors' own research with VOSviewer.

An analysis of co-authors helps to observe the level of collaboration between authors. The VOSviewer is used to create a network where each node indicates the number of published articles.

The network analysis resulted in a total of 16 authors, grouped into 5 clusters. Each cluster, being represented by a different color (Figure 2). Each node in the cluster is weighted by the number of articles co-cited by authors in the cluster.

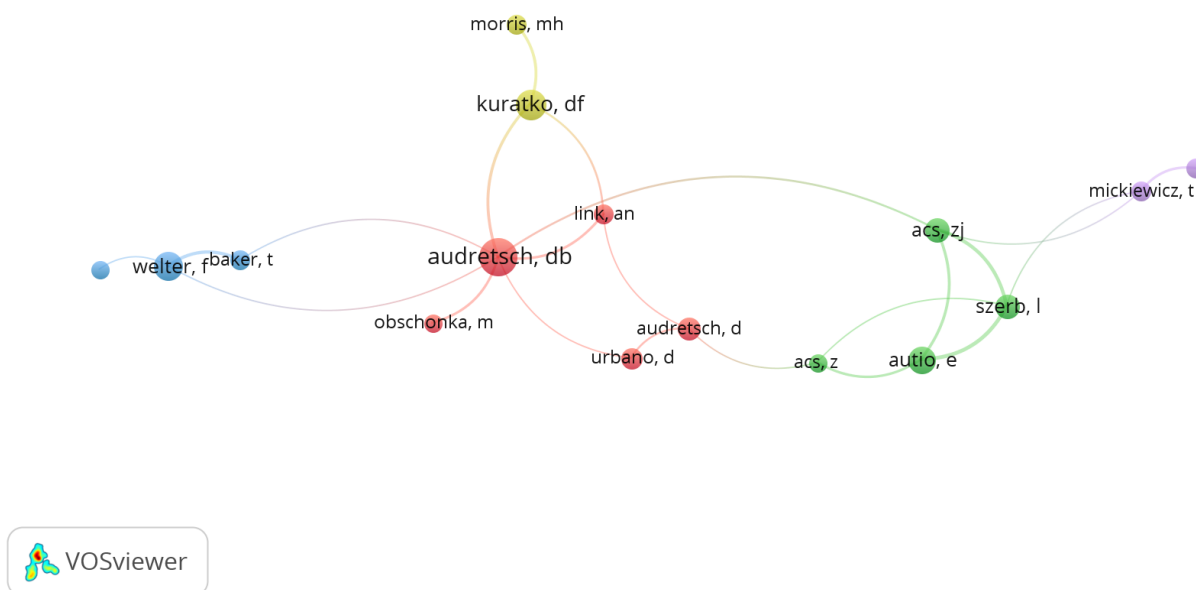


Figure 2. Co-authorship network of authors

Source: Authors' own research with VOSviewer.

The largest network consists of 3 authors: David Audretsch (Indiana University, Bloomington, USA), Martin Obschonka (Friedrich Schiller University, Jena, Germany), David Urbano (Universitat Autònoma de Barcelona, Spain), publishing papers on topics such as entrepreneurial opportunities for growth, dynamics of innovative entrepreneurship, European perspectives on entrepreneurship. The second cluster consists of 3 authors: Zoltan Acs (George Mason University, USA), Laszlo Szerb (Faculty of Business and Economics, University of Pécs, Hungary) and Erkkö Autio (Imperial College Business School, London, London, UK), who have published articles on the influence of economic growth and policy factors on entrepreneurship, as well as annual papers on the Global Entrepreneurship Development Index. The third cluster consists of Candida Brush (Babson College - Arthur M. Blank Centre for Entrepreneurship), Friederike Welter (Institut für Mittelstandsforschung, Bonn, Germany) and Ted Baker (University of Cape Town Graduate School of Business, Cape Town, South Africa) (Alexa et al., 2023; Decker et al., 2014; Marius et al., 2013).

A bibliometric analysis of keywords, forming networks between them, helps to group publications with common research objectives. To create these networks, the VOSviewer program was used to generate the keyword network based on the frequency of occurrence of keywords in the publications in the database analysed (Figure 3).

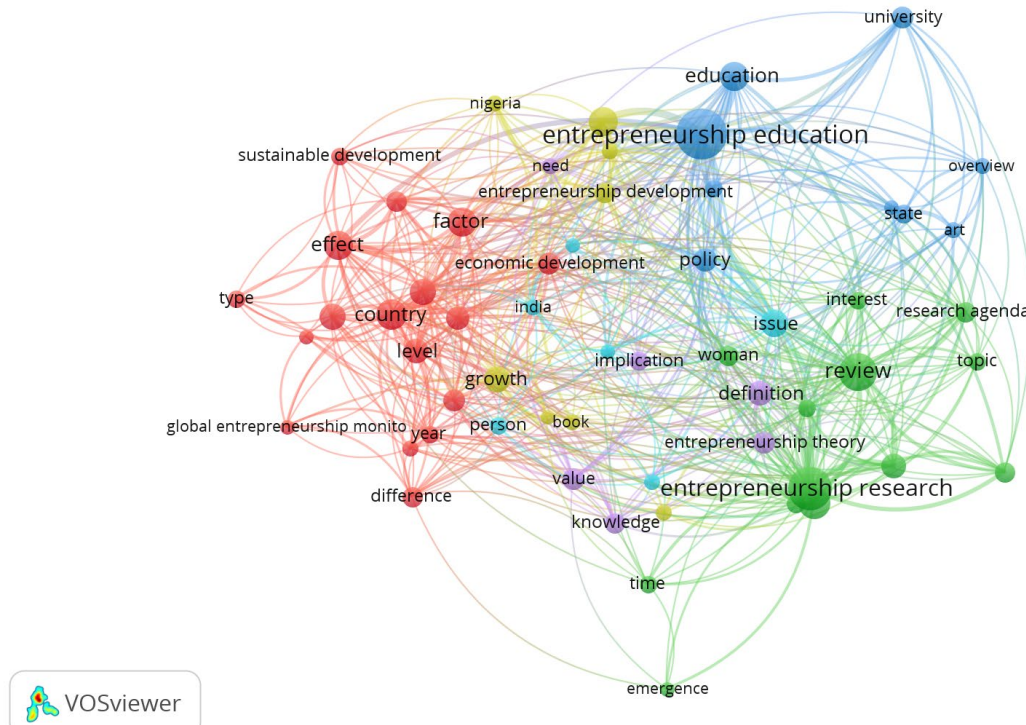
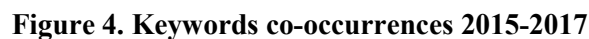


Figure 3. Keywords co-occurrences

Source: Authors' own research with VOSviewer.

The analysis identified 1072 keywords and a minimum threshold of 6 occurrences for each identified keyword. The top five most common keywords identified by number of occurrences are as follows (Table 4): entrepreneurship education (121 occurrences), entrepreneurship research (91 occurrences), review (65 occurrences), country (44 occurrences) and factors (40 occurrences).

The frequent use of the keywords was between 2015 and 2017 (Figure 4).



Other keywords relevant to entrepreneurship research used during the period under review are: influencers, involvement, sustainable development, economic development, effect, interests, etc.

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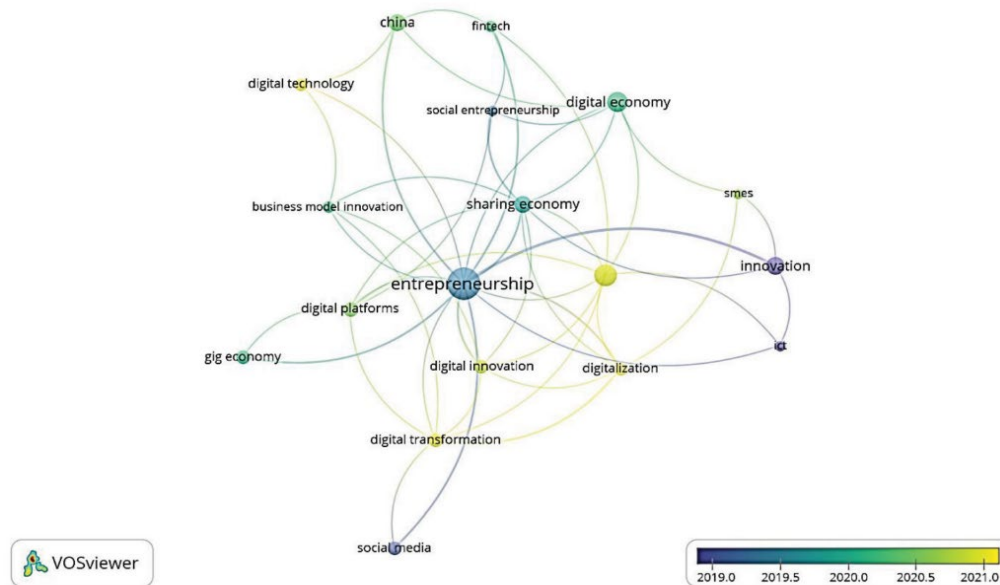


Figure 5. Keywords co-occurrences 2019-2021

Source: Authors' own research with VOSviewer.

According to the above data, there are several directions in the entrepreneurship sphere that have not been exploited so far and which may be of interest for the future. One such topic is the emergence of entrepreneurship, which from the data analysed with the help of VOSviewer software, in the period analysed, the mentioned concept registered several only 10 appearances.

Another hitherto unexplored topic of interest is the concept of the need for entrepreneurship in society, a broad topic that may be of great interest to the research area.

Also, the problems encountered in entrepreneurship were found not to be a topic of interest for the period under review.

Conclusion

In conclusion, this paper identifies trends in entrepreneurship research, future opportunities, and the authors most interested in the field. The analysis showed that the period from 2013 to 2018 was a period of great interest for research in entrepreneurship, with the maximum number of articles published in the Google Scholar database in 2013, when 122 articles were published in the field of entrepreneurship, representing 13.26% of the total number of articles identified. Since 2017, a major decrease in the number of articles published in this field has been observed, thus in 2022, 29 articles were published, only 3.15% of the total articles analyzed.

The paper titled the distinctive domain of entrepreneurship research, published by S. Venkataraman, in the year 2019, in the journal *Seminal ideas for the next twenty-five years* was found to be the most interesting paper and having the most citations, numbering 5360.

The study also found that the largest research network in this area identified with the help of the VOSviewer software consists of 3 authors: David Audretsch (Indiana University, Bloomington, USA), Martin Obschonka (Friedrich Schiller University, Jena, Germany), David Urbano (Universitat Autònoma de Barcelona, Spain), who have published papers on topics such as: entrepreneurial opportunities for economic growth, dynamics of innovative entrepreneurship and European perspectives on entrepreneurship.

The analysis identified 1072 keywords and a minimum threshold of 6 occurrences for each identified keyword. The top five most common keywords by number of occurrences are as follows: entrepreneurship education (121 occurrences), entrepreneurship research (91 occurrences), review (65 occurrences), country (44 occurrences) and factors (40 occurrences), these were mentioned between 2015 and 2017.

Future research opportunities in the field of entrepreneurship may also focus on the emergence of entrepreneurship, the need for entrepreneurship in society and the analysis of problems encountered in this field.

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