

Entrepreneurial resilience in times of crisis: A bibliometric analysis

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ABSTRACT

Objective: The study aims to map out and explore the body of knowledge related to the topic of entrepreneurial resilience in times of crisis.

Research Design & Methods: We conducted a bibliometric analysis of publications selected from Scopus. In all, we identified 291 articles concerning entrepreneurial resilience were identified, appearing in 156 journals and authored by 782 contributors affiliated with 160 institutions in 67 countries. The documents were analysed using VOSviewer software.

Findings: This study reveals an increasing trend in publications, with a notable surge from 2020 onward, likely driven by the COVID-19 pandemic's impact.

Implications & Recommendations: This study contributes to the understanding of entrepreneurial resilience during times of crisis, providing essential guidance to both researchers and practitioners. On the academic level, it highlights the distribution and current trends in research, providing a solid framework for exploring new future directions. From a practical standpoint, it offers valuable recommendations to managers and practitioners, enabling them to make informed decisions to strengthen the resilience of their businesses in a constantly evolving environment.

Contribution & Value Added: The study significantly contributes by offering a complete overview of the existing studies concerning entrepreneurial resilience, providing valuable insights and a clearer understanding of the current landscape and emerging trends.

Article type: literature review

Keywords: Resilience; entrepreneurship; crisis; innovation; COVID-19; bibliometric analysis

JEL codes: L26, L29, M10

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INTRODUCTION

A number of worldwide crises, like the Great Depression of the 1930s, the 2008 financial crisis, and most recently the global COVID-19 problem, have had a significant influence on businesses (Portuguez Castro & Gómez Zermeño, 2021). Faced with the proliferation of adverse events described as 'black swans' (new and unpredictable phenomena with high impact), organisations and individuals are faced with a multitude of unpredictable potential risks in all areas (Verma & Gustafsson, 2020). These disruptions have altered the strategic aims of organisations from profit maximisation to resilience enhancement (Hamel & Valikangas, 2004).

Entrepreneurs also face a multitude of challenges, including predictable or unpredictable risks, internal or external to their activities (Chalus-Sauvannet & Ewango-Chatelet, 2022). Entrepreneurial resilience, as defined by Awotoye and Singh (2017), refers to the capacity to surmount entrepreneurial obstacles and to persevere in the entrepreneurial process despite adverse situations and unexpected

results, which plays a crucial role in this dynamic. Considered an emotional and cognitive skill, entrepreneurial resilience provides considerable benefits to the entrepreneur, particularly when bouncing back from failures related to their entrepreneurial activities (Bernard & Barbosa, 2016).

Thus, to ensure the continuity, sustainability, and future success of their business, entrepreneurs must develop and cultivate their resilience (Martinelli *et al.*, 2018). The ability to face obstacles, adapt to changes and persevere in the face of adversity is essential to overcome the challenges encountered in the entrepreneurial journey. Therefore, understanding and building entrepreneurial resilience becomes a priority for entrepreneurs seeking to thrive in often turbulent and unpredictable business environments.

Generally, researchers define resilience as the ability of an element, system, organisation, or person to withstand disruptions (Ishak & Williams, 2018), absorb changes, and return to a stable state or previous form after a disturbance (Burnard & Bhamra, 2011). It also involves the ability to adapt positively in the face of adversity, uncertainty, or adverse events (Williams *et al.*, 2017). However, despite its popularity, the concept of resilience has been criticised for being vague and unclear (Ma *et al.*, 2018; Ruiz-Martin *et al.*, 2018), due to the lack of a clear and coherent definition (Conz & Magnani, 2020; Hillmann & Guenther, 2021), as well as confusion surrounding its relationship with related, but distinct, concepts such as robustness and anti-fragility (Munoz *et al.*, 2022), which has led to varied interpretations and fragmented definitions in the literature (Duchek, 2020).

For this reason, bibliometric analysis is an effective approach to structure and clarify a scattered field of study, which promotes a more coherent and comprehensive understanding of resilience in the scientific literature. In this sense, Doern *et al.* (2019), emphasise that understanding the concept of resilience is essential, as it allows the company to continue operating reliably during the crisis (Portuguez Castro & Gómez Zermeño, 2021; Williams *et al.*, 2017).

On the other hand, the number of studies related to the crisis in entrepreneurship has increased considerably in recent years. However, scientific literature that has analysed the relationship between resilience and entrepreneurship (*e.g.*, Doern *et al.*, 2019; Korber & McNaughton, 2018), has noted the lack of studies examining how entrepreneurs learn from adverse events and how they manage crises (Portuguez Castro & Gómez Zermeño, 2021). Consequently, researchers considering the topic of resilience may find themselves faced with unanswered questions, contributing to continued confusion in this stream of research (Supardi & Hadi, 2020).

To fill these gaps, a bibliometric study focused on the subject of entrepreneurial resilience in a time of crisis becomes necessary to analyse scientific literature, in order to allow researchers and managers to better understand the current state and frontiers of research on entrepreneurial resilience. Scholars widely use bibliometric analysis is widely used to highlight the most representative results from a set of bibliographic documents (Martinelli *et al.*, 2018; Silva-Santos & Mueller, 2022). Moreover, it offers data and indicators that allow for monitoring the progress of scientific production, identifying the most influential articles and assessing their impact on the research field (Garfield, 2004). The main objective of this article is to analyse in depth the scientific production on entrepreneurial resilience, identifying and integrating the knowledge produced among the key publications while proposing perspectives to guide future research.

Thus, this article complements the bibliometric research by Linnenluecke (2017) and Silva-Santos and Mueller (2022) on resilience in the field of business and management. It provides a visual representation of the field of studies on entrepreneurial resilience by bibliometrically analysing the publications indexed in the Scopus database using the VOSviewer software, which is an effective tool in the graphical representation of bibliometric maps (Van & Waltman, 2010). Therefore, the present study stands out as one of the few systematic reviews of resilience research, based on bibliometric analysis and visual representation.

The rest of the document is organised as follows. In section 2, we illustrate our research methodology. In section 3, we present the results of the literature review. We then discuss our findings and suggest some avenues for further research on resilience in section 4. As we move towards the conclusion (section 5), we highlight a set of implications and limitations of this research.

MATERIAL AND METHODS

Traditionally, scholars interpret research findings through two main approaches: qualitative literature reviews and quantitative meta-analyses (Schmidt, 2008). Systematic reviews provide a structured and objective conceptual analysis, while meta-analyses deal with quantitative data (Linnenluecke *et al.*, 2020; Buchanan & Bryman, 2009). However, a third method, bibliographic mapping, has emerged by combining bibliometric tools to represent the structure and evolution of scientific fields (Zupic & Cater, 2015). Unlike classical approaches, bibliometric analysis allows for the processing of large volumes of data, identifying trends, influential authors, and notable publications while providing a global perspective on the past developments and future directions of a research field (Singh *et al.*, 2024; Sarango-Lalangui *et al.*, 2018).

Bibliometric analysis is a timely approach to examining the evolution of research fields, including topics and authors, based on the social, intellectual, and conceptual structures of the disciplines (Verma & Gustafsson, 2020; Donthu *et al.*, 2020). It offers a comprehensive insight into scientific research in a particular field, by pinpointing key features including references, trends, citations, authors, research institutions, and keywords (Merigó & Yang, 2017). This research took place in three stages: the determination of the research questions, the systematic search process, and the bibliometric and visualisation analysis.

Determining Research Questions

We formulated the following five research questions relating to entrepreneurial resilience in times of crisis:

- RQ1:** How is the chronological development of publications characterised?
- RQ2:** What are the most relevant journals in this area of research?
- RQ3:** Who are the most influential authors on this research topic?
- RQ4:** Which countries are the most important in this area of research?
- RQ5:** What are the main keywords used in this research area?

We found multiple research publications that were temporally unrestricted and indexed in the Scopus database to address the research concerns of this study. We chose this database because of its popularity in the field of scientific research. It is recommended by some bibliometricians as having broader coverage than Web of Science (Zupic & Cater, 2015). Indeed, Scopus is the most widely used database in bibliometric analyses (Singh *et al.*, 2021; Zupic & Cater, 2015). It is one of the largest curated databases, covering scientific journals, books, and conference proceedings selected through a rigorous content selection process followed by continuous re-evaluation (Singh *et al.*, 2021). Unlike Web of Science, Scopus has a single citation index and covers 66.07% more unique journals than Web of Science (Singh *et al.*, 2021). This platform offers tools such as Search (literature and author searches), Discover (identification of collaborators and data exploration via indicators), and Analysis (citation tracking and evaluation of results by country, affiliation, or field) (Singh *et al.*, 2021).

Although Scopus may not have the comprehensiveness of Dimensions or the massive reach of Google Scholar, its rigorous indexing, robust analysis features, and content quality make it a valuable tool for accurate and reliable bibliometric analyses (Singh *et al.*, 2021; Zupic & Cater, 2015).

Indeed, Google Scholar includes a wider range of publications than Web of Science or Scopus. However, it lacks a user interface or API (application programming interface) to facilitate the export of a collection of documents with cited references, which is essential for bibliometric analysis (Zupic & Cater, 2015). Furthermore, even though Dimensions stands out for its comprehensiveness (covering 82.22% and 48.17% more unique journals than Web of Science and Scopus, respectively), Scopus remains preferred for research focused on high-quality publications (Singh *et al.*, 2021). Indeed, it offers rigorous data verification, powerful analysis tools, and a user-friendly interface, making it a tool particularly suitable for demanding scientific studies (Singh *et al.*, 2021; Zupic & Cater, 2015).

Therefore, the Scopus database offers the advantage of including bibliometric and citation tracking tools, thus facilitating the analysis of scientific production. We collected documents on this database on February 5, 2024.

Process of Systematic Research

To search for articles, we came up with keywords that we thought were important to the study. These were: entrepreneurship, resilience, crisis, and crisis management. We added the asterisk (*) to find all the publications that had the words 'resilience', 'resilient', 'entrepreneur', 'entrepreneurship', or 'entrepreneur'. This allowed us to efficiently exclude pieces unrelated to the entrepreneurship literature. To find even more, we employed the Boolean operators AND and OR. This method was similar to those used in other literature studies, such as those by Korber and McNaughton (2018) or Portuguese Castro and Gómez Zermeño (2021).

We searched for the terms in the titles, abstracts, and keywords. We refined the search to only include articles published in the following three areas: Business, Management, and Accounting; Economics, Econometrics and Finance; and Social Sciences, while excluding other categories. Then, we filtered only full articles published in journals, including documents such as journal articles, reviews and conference articles. We excluded other types of materials, such as book reviews, reprints, and editorial content, were excluded. Finally, the search process continued with the removal of articles that were not written in English. We applied these filters, which resulted in the retrieval of 291 articles, which we subsequently processed for bibliometric analysis. Figure 1 illustrates the systematic research process employed in this study.

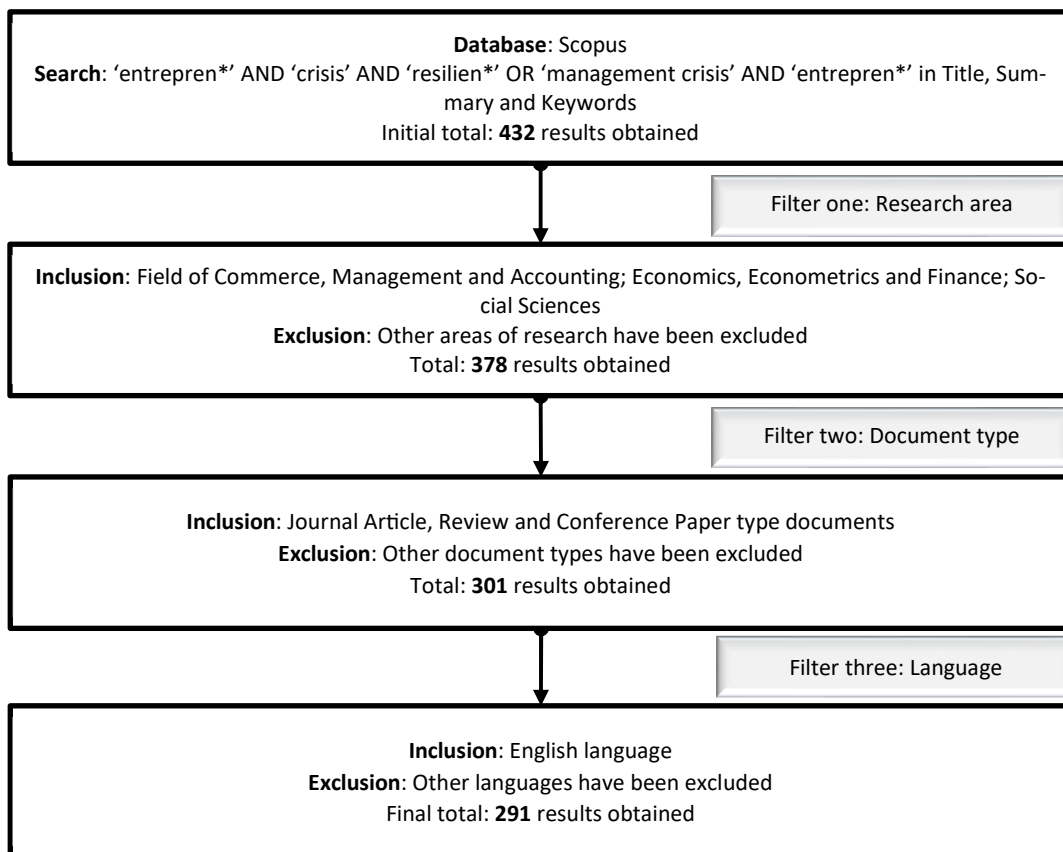


Figure 1. Summary of the systematic search process

Source: own elaboration.

Bibliometric Analysis and Visualisation

The bibliometric analysis approach proves beneficial to researchers by allowing them to grasp the scope of a topic, identify emerging trends, and observe its evolution over time (Singh *et al.*, 2020). This method provides a holistic perspective, offering more objective data than a traditional literature review, thereby reducing the subjectivity that may arise from the researcher's bias (Bhattacharyya & Verma, 2020).

Moreover, we processed the bibliographic data using the VOSviewer software (version 1.6.20). This software employs a technique called VOS (visualisation of similarities) to generate, explore, and display maps based on network data (Van & Waltman, 2010). VOSviewer software is designed primarily for bibliometric network analysis, it additionally enables the creation, visualisation, and exploration of maps for various types of network data (Van Eck & Waltman, 2023).

Although effective for visualising bibliometric maps, VOSviewer has some limitations (Van Eck & Waltman, 2023). Firstly, the complexity of the analysed data can make it difficult to capture nuances and relationships between publications, authors, or research fields. Furthermore, the interpretation of the maps is often subjective, which can lead to divergent conclusions among users. In addition, some advanced data analysis and manipulation features may be limited compared to other specialised software. Finally, the visualisation can sometimes oversimplify complex relationships, resulting in the loss of essential information. These limitations must be considered for the proper utilisation and interpretation of the findings generated by VOSviewer (Van & Waltman, 2010).

We used the VOSviewer software to create visualisation maps, exploiting bibliographic links and cartographic analyses of the keywords of the publications. These maps make it possible to highlight groupings of emerging topics linked to entrepreneurial resilience in times of crisis. We present the obtained results through tables and visual representations.

LITERATURE REVIEW

We discovered a total of 291 publications pertaining to entrepreneurial resilience in the Scopus database. These publications were disseminated in 156 periodicals and authored by 782 authors associated with 160 institutions across 67 nations. The following table shows an overview of the findings that we gathered.

Table 1. General research results

Elements	Number
Documents	291
Newspapers	156
Authors	782
Affiliation	160
Country	67

Source: own study.

Chronological Development of Publications

As shown in Figure 2, there is a notable upward trend in the number of publications produced between 1992 and 2023. During the initial period (1992-2011), the number of publications remained relatively constant, averaging one article per year. This suggests sustained but relatively limited interest within the research community. From 2011, we observed a slight increase with two publications, then peaking in 2014 with five publications. This might be a sign that interest in entrepreneurial resilience was beginning to develop.

The period from 2015 to 2019 shows a gradual increase in the number of publications, from five to 14. This suggests growing interest over time, perhaps in response to economic events or changes in the entrepreneurial landscape. The years 2020 to 2023 show a significant growth in the number of publications, going from 20 to 98. In 2024, 11 articles were published on the Scopus database until the date of this research on February 5, 2024. This marked increase suggests increased interest and recognition of the importance of entrepreneurial resilience, perhaps heightened by global events such as the COVID-19 pandemic.

Overall, research on entrepreneurial resilience demonstrates significant growth over time, with a marked increase in recent years, suggesting that this topic has become a dynamic and constantly evolving research area.

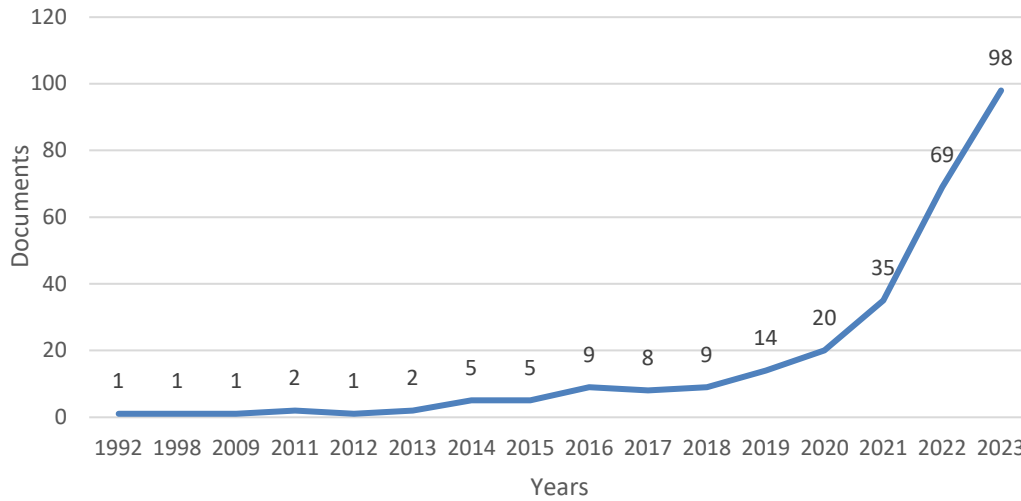


Figure 2. Chronological distribution of publications
Source: own elaboration.

Most Relevant Journals

The journal *Sustainability Switzerland* clearly stands out as a leader in the publication of articles on entrepreneurial resilience, with a significant number of 28 articles. It is followed by *Entrepreneurship and Regional Development*, which occupies the second position in terms of the number of articles published with 13 articles. The *International Journal of Entrepreneurial Behavior and Research* (10 articles) also contributes significantly to the literature on entrepreneurial resilience, although with a slightly lower number of articles.

The top three journals account for over 60% of the articles published in the top ten journals (83). These results highlight the significant contribution of these journals to the literature in general, with particular attention to research on entrepreneurial resilience. Their impact suggests that they act as journals of choice for researchers to explore and deepen this field, reflecting a growing interest in issues related to resilience in an entrepreneurial context.



Figure 3. Most relevant journals in entrepreneurial resilience research
Source: own elaboration.

The *Journal of Entrepreneurship in Emerging Economies* (seven articles) which focuses on emerging economies, provides unique perspectives on how entrepreneurial resilience manifests in these specific contexts. Although publishing fewer articles than previous journals (five articles), *Small Business Economics* remains a notable source in the field, suggesting a significant contribution to the understanding of entrepreneurial resilience in the context of small businesses. The remaining journals all contribute significantly to entrepreneurial resilience research, each with a similar number of publications (four articles each).

Table 2. Top 10 journals in entrepreneurial resilience research

Journal	TC	TP	CS 2023	Most cited article	NC	Editor
<i>Sustainability Switzerland</i>	362 944	54 697	6.6	'Green Closed-Loop Supply Chain Networks' Response to Various Carbon Policies during COVID-19'	82	Multidisciplinary Digital Publishing Institute (MDPI)
<i>Entrepreneurship and Regional Development</i>	1 267	166	7.6	'Contextualizing the knowledge spillover theory of entrepreneurship: the Chilean paradox'	6	Taylor & Francis
<i>International Journal of Entrepreneurial Behavior and Research</i>	3 850	388	9.9	'Artificial intelligence as an enabler for entrepreneurs: a systematic literature review and an agenda for future research'	26	Emerald Publishing
<i>Journal of Entrepreneurship in Emerging Economies</i>	1 578	217	7.3	'Entrepreneurial orientation and performance of SMEs: the roles of marketing capabilities and social media usage'	16	Emerald Publishing
<i>Small Business Economics</i>	8 511	626	13.6	'Mapping the venture capital and private equity research: a bibliometric review and future research agenda'	18	Springer Nature
<i>Entrepreneurship Theory and Practice</i>	3 983	215	18.5	'Happy Entrepreneurs? Everywhere? A Meta-Analysis of Entrepreneurship and Wellbeing'	37	Wiley-Blackwell
<i>International Journal of Gender and Entrepreneurship</i>	542	77	7.0	'Gender roles or gendered goals? Women's return to rural family business'	5	Emerald Publishing
<i>Journal of Enterprising Communities</i>	1 149	186	6.2	'The effects of COVID-19 on small and medium-sized enterprises: empirical evidence from Jordan'	14	Emerald Publishing
<i>Journal of Family Business Management</i>	943	180	5.2	'Family dynamics and relationships in female entrepreneurship: an exploratory study'	18	Emerald Publishing
<i>Journal of Small Business and Enterprise Development</i>	1 374	226	6.1	'Has COVID-19 pushed digitalization in SMEs? The role of entrepreneurial orientation'	17	Emerald Publishing

Source: Scopus.

As shown in Table 2, the most relevant journal in entrepreneurial resilience research, with total publications (TP) of 54 697 documents, a total citation (TC) of 362 944, and a citation score (CS) which amounts to 6.6 in 2023, is *Sustainability Switzerland* published by Multidisciplinary Digital Publishing Institute. The most cited article in this journal was 'Green Closed-Loop Supply Chain Networks' Response to Various Carbon Policies during COVID-19' with a number of citations (NC) of 82 in 2023. It was followed by *Entrepreneurship and Regional Development* published by Taylor & Francis, which had a total of 166 publications and 1 267 citations. Review 'Entrepreneurship Theory and Practice', with a

total of 215 publications and 3 983 citations, and a citation score that rises to 18.5 in 2023, was also very relevant in entrepreneurial resilience research.

Most Influential Authors

Franco Mário José Batista stands out as the most prolific author in this field, with a total of four published articles. His significant contribution suggests deep expertise and a strong interest in entrepreneurial resilience in crisis situations. Nick Williams joins Franco as the most productive author, also with four published articles. His work contributes significantly to the literature on entrepreneurial resilience, providing unique insights and substantial contributions to this area of research. Theodoraki Christina and Vorley Tim follow closely with three articles each. Their number of published articles demonstrates a notable involvement in research on entrepreneurial resilience and its impact in periods of adversity.

The other authors, such as Anderson Alistair, Apostolopoulos Nikolaos, Bishop Paul, Bosworth Gary, Bressan Alessandro and Cabras Ignazio, each contributed two articles. Although their number of articles is slightly lower than those of previous authors, their contribution remains significant, thus highlighting a diversity of expertise and perspectives in entrepreneurial resilience research.

These findings demonstrate the flexibility and receptiveness of global academics in tackling contemporary issues, including the effects of COVID-19 on enterprises. Moreover, the findings underscore that this discipline is developing and remains nascent, due to the lack of notable scholars (Verma & Gustafsson, 2020).

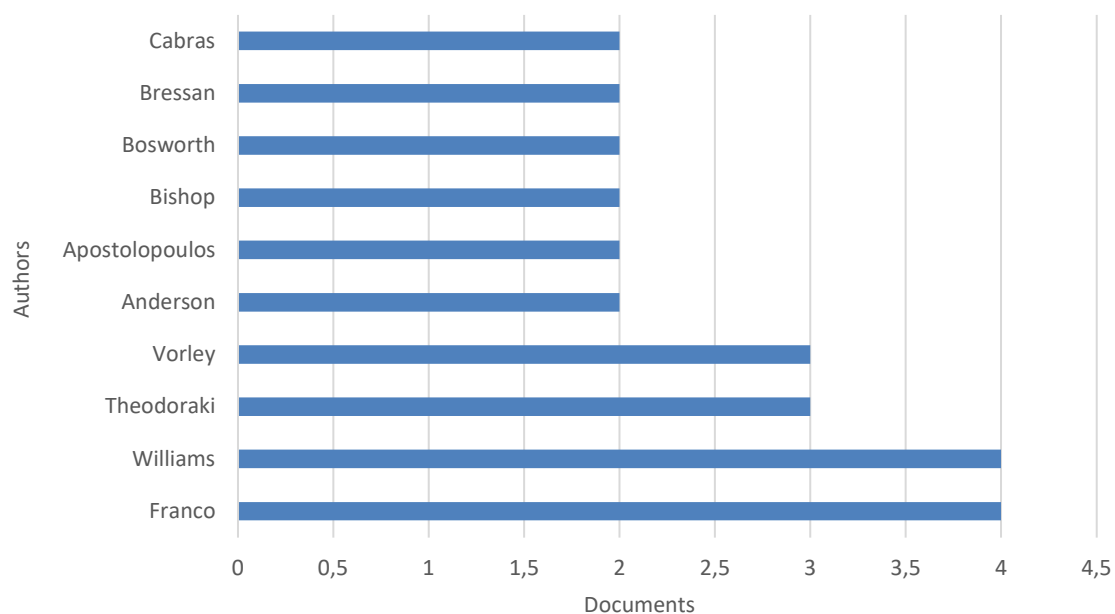


Figure 4. More productive authors in resilience research

Source: own elaboration.

As shown in Table 3, the most productive author was Franco Mário from Universidade da Beira Interior, Portugal, whose first publication in this field dates back to 2011 and which, at the time of the survey, had a total of 188 publications, 2 730 citations, an h-index of 30. The second most productive author in this area was Nick Williams, from the University of Leeds, United Kingdom, with a total of 49 publications, 1 678 citations and an h-index of 20. Among the top ten authors, Anderson Alistair, from the United Kingdom, had the highest total number of citations, at 9 158, and a total of 144 publications, with an h-index of 50.

Table 3. Top 10 authors in entrepreneurial resilience research

Author	Start of publication	TC	TP	h-index	Current Affiliation	Country
Franco, Mário José Batista	2011	2 730	188	30	Universidade da Beira Interior, Covilha	Portugal
Williams, Nick	2010	1 678	49	20	University of Leeds	United Kingdom
Theodoraki, Christina	2018	402	15	7	TBS Business School, Toulouse	France
Vorley, Tim	2010	2 019	83	23	University of Sheffield	United Kingdom
Anderson, Alistair R.	1999	9 158	144	50	Robert Gordon University, Aberdeen	United Kingdom
Apostolopoulos, Nikolaos	2017	471	38	12	Plymouth Business School, University of Plymouth	United Kingdom
Bishop, Paul	1995	816	49	15	University of Plymouth, Drake Circus, Plymouth	United Kingdom
Bosworth, Gary	2009	1 763	51	23	Northumbria University, Newcastle upon Tyne	United Kingdom
Bressan, Alessandro	2014	750	50	15	University of Western Sydney, Sydney	Australia
Cabras, Ignazio	2011	873	61	17	Northumbria University, Newcastle upon Tyne	United Kingdom

Source: own study.

Countries Most Involved in Entrepreneurial Resilience Research

Figure 5 illustrates a visualisation of the ten countries (out of a total of 67) that have most significantly contributed to the research on entrepreneurial resilience.

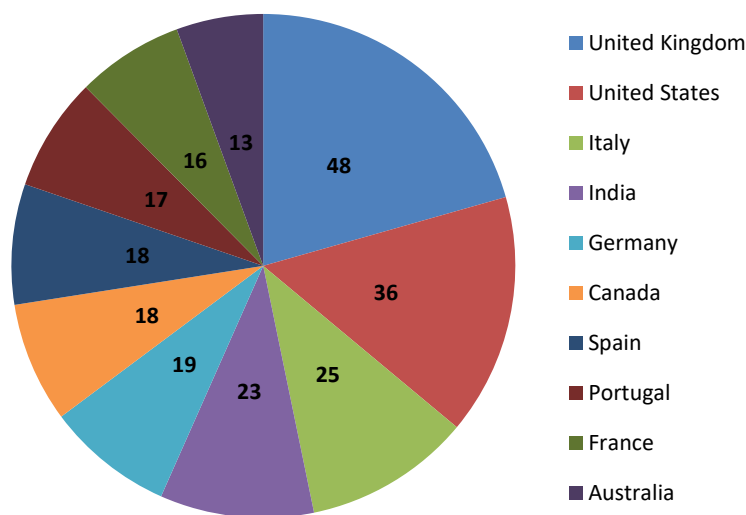


Figure 5. Top countries involved in entrepreneurial resilience research

Source: own elaboration.

Table 4 presents the ranking of these countries, according to the number of publications offered by the Scopus database, with their respective academic establishments.

The most important country in the field of entrepreneurial resilience research is the United Kingdom, with a total of 48 publications, the Goldsmiths University of London being the most significant research establishment in this field. It is followed by the United States, with a total of 36 publications, the ‘Northern Arizona University’ being the most significant institution. The country of Italy was ranked

third, with a total of 25 publications, and the ‘Bocconi University’ is its most important establishment in this area. The other most productive countries in this area of research are India with 23 publications, Germany with 19 publications, and Canada and Spain with 18 publications each.

Table 4. Top 10 countries in entrepreneurial resilience research

Rank	Country	TP	Largest academic institution
1	United Kingdom	48	Goldsmiths University of London
2	United States	36	Northern Arizona University, Flagstaff
3	Italy	25	Bocconi University, Milan
4	India	23	FLAME University, Maharashtra, Pune
5	Germany	19	Technical University Dresden, Dresden
6	Canada	18	University of Waterloo
7	Spain	18	Pablo de Olavide University, Seville
8	Portugal	17	Universidade Europeia, Lisbon
9	France	16	ICD Business School Paris, Paris
10	Australia	13	Macquarie University, North Ryde

Source: own study.

The United Kingdom and the United States dominate research on entrepreneurial resilience, with 48 and 36 publications respectively. Together, these two countries account for over 28% of the total selected articles (291), reflecting their substantial contribution to the enrichment of the academic literature in this research area. Their influence is explained by the presence of world-renowned research institutions, a strong academic tradition, and a growing interest in the issues and challenges related to business resilience to adverse events.

Keywords used in research on entrepreneurial resilience

We examined the co-occurrence of all keywords relating to the topic of entrepreneurial resilience in times of crisis. We filtered words using at least five occurrences (Oc), *i.e.*, each keyword was used by a minimum of five articles. VOSviewer calculated the total coexisting link strength (TLS) for each word. The visual representation of these words and their interrelations is shown in Figure 6. The keyword that had the highest co-occurrence (Oc) of 106 and a total link strength (TLS) of 242 was ‘resilience’, followed by ‘COVID-19’ (Oc = 83; TLS = 218). Other keywords with high co-occurrence include ‘entrepreneur’ with (Oc = 40 and TLS = 167), ‘entrepreneurship’ with (Oc = 59 and TLS = 160), ‘Crisis’ with (Oc = 39 and TLS = 82), ‘innovation’ with (Oc = 22 and TLS = 75) and ‘small and medium-sized enterprise’ with (Oc = 15 and TLS = 74).

We analysed keywords of 233 articles published from January 2020 to February 5, 2024, to discover central and developing topics in the latest publications. The terms were filtered based on a minimum of 10 occurrences (Oc). Consequently, we considered the terminology included in over ten articles, excluding the term ‘resilience’ to maintain the integrity of the results. Figure 7 shows the visual representation of these words and their interrelations. In this Figure, we may observe three sets of words, differentiated by colour: red (group 1), green (group 2), and blue (group 3). The third group is relatively small, and the keywords have fewer connections than in groups 1 and 2. The first two groups represent emerging research topics since 2020.

Group 1 (marked in red) predominantly encompasses themes pertaining to resilience during crises, featuring articles on crisis management and the ramifications of the COVID-19 pandemic (notable keywords include: COVID-19, crisis management). It also addresses resilience within the business sector and the explanatory factors influencing the resilience of small and medium-sized enterprises (keywords include innovation, SME, and sustainability). Group 2 (marked in green) contains terms often utilised in research pertaining to resilience in general (management). It includes studies that examine resilience within the framework of the COVID-19 pandemic crisis, resilience in entrepreneurship (entrepreneurial resilience), and resilience in organisations (organisational resilience).

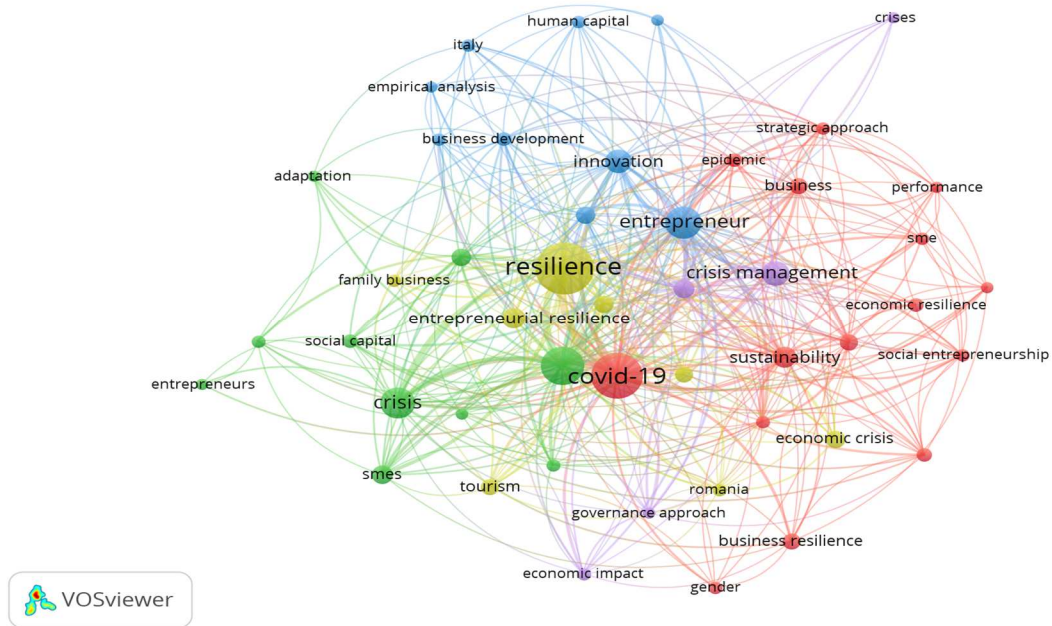


Figure 6. Co-occurrence network of all keywords
Source: VOSviewer Output.

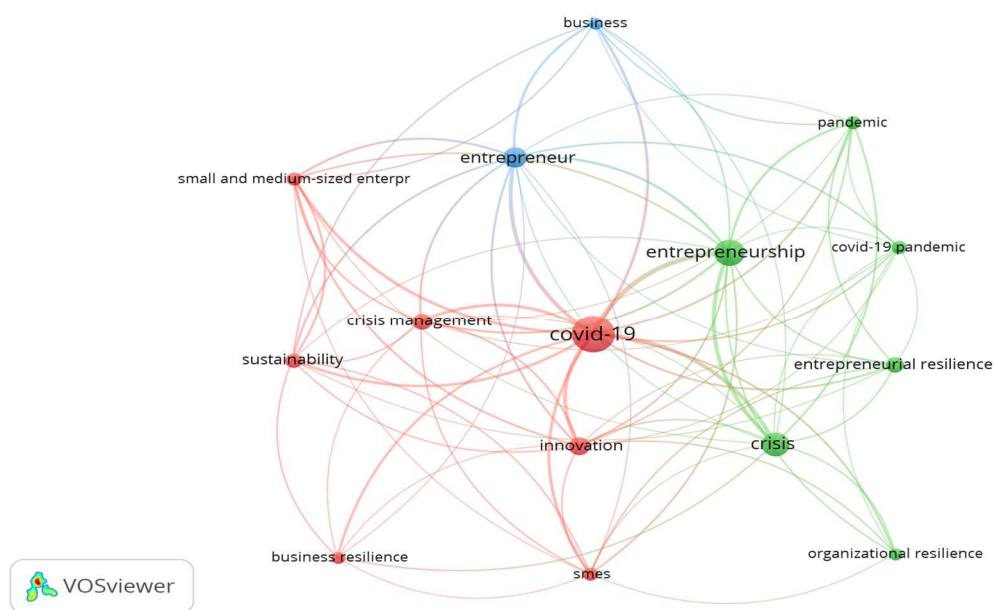


Figure 7. Keyword co-occurrence network
Source: VOSviewer Output.

DISCUSSION

Entrepreneurial resilience is frequently synonymous with individual resilience (Branicki *et al.*, 2018), regarded either as a personality characteristic of the entrepreneur (Bernard & Barbosa, 2016) or as a consequence of their experiences (De Vries & Shields, 2006). According to Doern (2016), entrepreneurs’ resilience is mostly derived from experience, positive thinking, emotion management, resource

mobilisation, and perseverance. However, entrepreneurial resilience is not limited to individual resilience but also encompasses organisational resilience (Branicki *et al.*, 2018). Although individual resilience contributes to entrepreneurial success (Ayala & Manzano, 2014), it is not sufficient to explain the ability of small and medium-sized enterprises (SMEs) to overcome crises (Branicki *et al.*, 2018).

Furthermore, despite the emergence of literature on entrepreneurial resilience, entrepreneurs and SMEs are often perceived as vulnerable, especially during recessions, despite playing a key role in economic renewal and employment (Branicki *et al.*, 2018). Nonetheless, their inadequate capacity to design strategy and react to emergencies is attributed to resource limitations, including restricted access to financial resources, technologies, and skilled personnel (Ingirige *et al.*, 2008). This scarcity of resources poses a major challenge to their resilience, especially since best practice models generally come from larger companies with greater resources (Herbane, 2010). To address this challenge, SMEs lacking experience in crisis management may find it more effective to opt for flexible and adaptive approaches, rather than following rigid methods in times of crisis (Brown & Rocha, 2020).

Compared to other bibliometric research conducted on resilience in the general business and management context (Linnenluecke, 2017; Silva-Santos & Mueller, 2022), our study focuses on entrepreneurial resilience in times of crisis. Its main objective is to enrich and complement previous research by highlighting current research trends in the field of entrepreneurial resilience. These trends are positively impacted by the effects of the COVID-19 crisis (Verma & Gustafsson, 2020). As such, the present study stands out as one of the few systematic reviews of research on entrepreneurial resilience, based on bibliometric analysis and visual representation.

Study Findings

We presented a bibliometric survey of the literature on the topic of entrepreneurial resilience during times of crisis. Thus, based on the results of an analysis of documents from the Scopus database, we successively addressed all the research questions.

The chronological evolution of publications on the subject of entrepreneurial resilience in times of crisis reflects an increasing trend. Indeed, from the year 2020, the number of articles published has experienced an exponential increase compared to the previous period, going from only 58 articles between 1992-2019 to 222 documents between 2020-2023. We could attribute this sharp increase in publications could to increased awareness of the importance of entrepreneurial resilience in the face of challenges brought about by the COVID-19 pandemic. Verma and Gustafsson (2020) confirm this finding by stating that the evolution of the literature on the COVID-19 pandemic in the business field shows a distinct trend in a very short time frame. For example, in just four and a half months, no less than 107 unique documents were published in Scopus and Web of Science from 71 different journals, 272 research institutions and 61 countries (Verma & Gustafsson, 2020).

Previous studies have corroborated this observation by noting that the proliferation of resilience publications increases significantly following the occurrence of major disturbances (Williams *et al.*, 2017). In this sense, Linnenluecke (2017) states that publications on resilience in the field of business and management increased exponentially after the terrorist attacks of September 11, 2001. Annarelli and Nonino (2016) observed that the topic of resilience aroused greater interest in the literature after the financial crisis of 2008, especially regarding the strategic and operational management of resilience. Furthermore, Su and Junge (2023) indicate that the COVID-19 pandemic and Russia's aggression against Ukraine exemplify unpleasant occurrences that have led to the rising trend of publications on resilience.

Moreover, the bibliometric analysis of publications shows that the three most important journals commonly consulted as reference sources in research on entrepreneurial resilience are *Sustainability Switzerland*, *Entrepreneurship and Regional Development*, and *the International Journal of Entrepreneurial Behavior and Research* with 51 documents. In this research, these three newspapers represent more than 60% of the articles published in the ten main journals (83) and approximately 18% of the total articles selected (291). These findings suggest that these journals substantially contribute to the body of literature generally and value research on entrepreneurial resilience in particular.

Moreover, this bibliometric study indicates that the most productive author in research on entrepreneurial resilience is Franco Mário from Universidade da Beira Interior, Portugal. This author's most

frequently cited article focuses on analysing the influence of failure factors on entrepreneurial resilience in micro, small, and medium enterprises (MSMEs). In it, the authors observe that entrepreneurs attribute the failure of their businesses to external financial and environmental elements, such as the economic crisis and national legislative developments. Despite this, these entrepreneurs are perceived as being resilient, because they demonstrate sufficient capacity to face the challenges of the national market and display pronounced optimism (Franco *et al.*, 2021).

This observation is consistent with the findings of Martinelli *et al.* (2018) who argued that the resilience of retail entrepreneurs leads them to the recovery and renewal of their business activities, both internally and externally, transforming adverse conditions into new opportunities (Martinelli *et al.*, 2018). Along the same lines, Portuguese Castro and Gómez Zermelo (2021) found elements contributing to resilient entrepreneurs, including their crisis response attitudes, firm and entrepreneur traits, institutional ties, human and social capital, and strategic management practices. According to these authors, the resilience features of entrepreneurs who have encountered previous crises can be utilised to navigate the current circumstances and enhance post-COVID-19 enterprise (Portuguez Castro & Gómez Zermelo, 2021).

The second most productive researcher on the subject of entrepreneurial resilience is Williams Nick, from the University of Leeds, UK. To comprehend the connection between entrepreneurship and crises, this author's most often cited work applies specific definitions, concepts, crisis typologies, the chronology of crisis events, techniques, and empirical contexts. It looks at the relationship between entrepreneurship and crises as well as how entrepreneurship impacts crises (Doern *et al.*, 2019). This study, which highlights the mutual influence between crisis and entrepreneurship, makes a substantial contribution to the research conducted by Williams Trenton and colleagues in 2017, which highlighted the link between crisis and resilience. Williams *et al.* (2017) showed that this relationship offers a more complete understanding of the interaction between the firm and adversity, as resilience is a key entrepreneurial response to unexpected events. Doern *et al.* (2019) enhance this viewpoint by illustrating that entrepreneurs' reactions to a crisis may be influenced by several aspects, including their experience, the developmental stage of their firm, the nature or phase of the crisis impacting their organisation, and the resources at their disposal.

The analysis also revealed that the most significant countries in entrepreneurial resilience research are the United Kingdom and the United States, with a total of 48 and 36 publications, respectively. These two countries represent more than 28% of the total number of selected articles and, therefore, play an important role in research on entrepreneurial resilience, thus contributing significantly to the advancement of knowledge in this area. This finding confirms the results obtained by other researchers, which indicate that the most productive countries in the field of resilience are primarily those with developed economies, particularly the institutions of European and American countries (Silva-Santos & Mueller, 2022; Zhang *et al.*, 2022). The significant contribution of these two countries to the enrichment of academic literature in this research domain is attributable to the presence of globally recognised research institutions, a robust academic tradition, and an increased interest in the issues and challenges related to corporate resilience in the face of adverse events.

Finally, the results provided by the VOSviewer software indicate that the main keywords frequently used in research on entrepreneurial resilience in times of crisis are 'resilience', 'COVID-19', 'entrepreneur', 'entrepreneurship', 'crisis', 'innovation' and 'small and medium-sized enterprise'. These terms have very high co-occurrence (Oc) and total link strength (TLS) compared to other keywords. An in-depth analysis of articles published between January 2020 and February 2024 allowed us to highlight central and emerging themes in the most recent publications on entrepreneurial resilience. These topics constitute avenues of research to be explored by future researchers, and we will discuss their detailed analysis in the following section.

Directions for Future Studies

The findings point to two areas for further investigation into the resilience of entrepreneurs during difficult times (refer to Figure 7). Firstly, recent years have produced research focused on examining entrepreneurial resilience in the context of coronavirus. These studies have offered researchers in developed countries

the opportunity to explore certain factors that contribute to strengthening the resilience of SME entrepreneur owners (e.g., innovation) to bounce back from challenges and changes in their environment impacted by the COVID-19 pandemic. However, the resilience of small and medium-sized enterprises (SMEs) in developing nations (DCs) must receive more focus from scholars in the future. These businesses are of vital importance in the global economy, particularly in DCs, and it is, therefore, crucial to take a closer look at how entrepreneurs and SME managers learned from the COVID-19 crisis and how they managed this crisis to ensure the survival of their businesses (Saad *et al.*, 2021; Supardi & Hadi, 2020).

Furthermore, it is important to note that entrepreneurs in SMEs in DCs often face contexts where resources are scarce and limited (Linna, 2013). In such situations, these entrepreneurs must demonstrate creativity and flexibility in combining available resources to deal with unforeseen and often surprising circumstances (Janssen *et al.*, 2018). The literature often describes this phenomenon as 'entrepreneurial bricolage', a process where entrepreneurs use innovative and adaptive solutions to solve problems encountered in their business environment (Senyard *et al.*, 2014). This practice of entrepreneurial bricolage has emerged as a promising research topic for the study of management strategies in less developed economic contexts.

The works of Baker and Nelson (2005) as well as Fisher (2012) have shed light on the importance of entrepreneurial bricolage, highlighting how entrepreneurs overcome resource constraints through their ingenuity and capacity for improvisation. Therefore, the topic offers an interesting opportunity for future research to understand how entrepreneurs in developing countries navigate challenging economic environments and how their bricolage practices impact their long-term success and sustainability (Baier-Fuentes *et al.*, 2023; Stenholm & Renko, 2016).

In this context, the results of the bibliometric analysis reveal a rise in the themes related to crisis management caused by the COVID-19 pandemic. For example, Park and Seo (2024) indicate that during this period of economic disruption, SMEs adopted various crisis management approaches, including bricolage strategies, to strengthen their resilience. Roloff (2023) focused on the reactions of SMEs to the crisis, highlighting bricolage as a key element of their ability to overcome difficulties. For their part, Kuckertz *et al.* (2020) studied how innovative startups faced the challenges posed by the pandemic, highlighting the strategic importance of bricolage in strengthening entrepreneurial resilience.

Indeed, several studies have explored the link between bricolage and resilience from various perspectives, but without fully establishing their causal relationship (Lee & Yeh, 2024). For example, Coutu (2002) noted the etymological link between bricolage and resilience but did not examine the causal relationship between these factors. Weick (1993) qualitatively showed that bricolage promotes resilience, while Park and Seo (2024) quantitatively demonstrated that SMEs adopting bricolage are more resilient, although their study was limited to developed countries. However, the relationship between entrepreneurial bricolage and resilience in poor nations remains unexplored (Aaouid *et al.*, 2024).

Next, the results of this bibliometric analysis indicate that other research has focused on topics related to resilience generally in the field of business and management, including entrepreneurial resilience and organisational resilience. Despite the advances made in understanding resilience in this stream of research, substantial opportunities remain to conduct in-depth theoretical studies, and importantly, longitudinal empirical research. This work could aim to deepen the conceptualisation and measurement of resilience itself, as highlighted by researchers such as Linnenluecke (2017) or Hillmann and Guenther (2021). Moreover, given the lack of consensus on the definition of resilience, the term is often used to encompass various related concepts, such as robustness, adaptability, agility, flexibility, suppleness, and anti-fragility (Munoz *et al.*, 2022; Ruiz-Martin *et al.*, 2018; Ma *et al.*, 2018). These authors propose to clarify what resilience does not represent in order to better understand its true nature. Therefore, future research should shed light on this distinction in order to allow for a more nuanced understanding of these concepts.

Furthermore, there is a crucial need to deepen the understanding of the antecedents of resilience, an under-explored aspect in the current literature, as mentioned by Su and Junge (2023). Further exploration of these antecedents could shed more light on the factors that contribute to resilience capacity in different contexts. Moreover, assessing resilience impacts and outcomes remains a key area requiring increased attention. Research such as that of Silva-Santos and Mueller

(2022) and Ma *et al.* (2018) highlights the importance of comprehensively analysing how resilience impacts individual and organisational outcomes, thereby enabling us to better understand its true impact in varied and difficult situations.

Theoretical and Managerial Implications

Our bibliometric analysis of studies on entrepreneurial resilience in periods of crisis generates valuable information for both researchers and managers that will help them understand research trends, assess the impact of existing work and identify opportunities to build resilience.

From an academic perspective, this bibliometric study holds significant importance in allowing researchers to explore current research trends in the field of entrepreneurial resilience. By identifying the most researched topics, gaps in the literature, and emerging areas, it provides an in-depth understanding of the dynamics of this ever-evolving field of study. Furthermore, this study makes it possible to assess the impact and influence of different publications, authors, institutions and countries in the field of entrepreneurial resilience. This assessment allows researchers to distinguish the most influential works and key contributors to research, providing valuable benchmarks for future explorations and collaborations.

Furthermore, visualising the relationships between different concepts and research themes is another crucial dimension of this study. By mapping knowledge in the field of entrepreneurial resilience, it helps researchers understand the links between different concepts and identify new research perspectives. This visualisation also promotes better communication and interdisciplinary collaboration by allowing researchers to see how ideas and fields overlap and interact.

From the perspective of managerial implications, the results of this bibliometric analysis are of considerable importance in providing entrepreneurs and managers with valuable information to make informed decisions and better prepare their companies to face unforeseen challenges. By identifying the most relevant research trends in the area of entrepreneurial resilience, these findings provide business leaders with the opportunity to learn about the most effective practices to strengthen the resilience of their organisations. They can therefore rely on the most cited and influential research to guide their management strategies and decision-making.

Furthermore, this bibliometric study allows business managers to stay abreast of the most recent and relevant developments in the field of entrepreneurial resilience. By mapping current research trends, it provides entrepreneurs with the opportunity to ensure their strategies and practices are aligned with the latest advances, which is essential to remaining competitive in the market and anticipating future challenges. This knowledge of emerging trends can also help entrepreneurs identify new opportunities and adjust their approach based on changes in the business environment.

According to a systematic review of the literature on empirical studies concerning entrepreneurship, resilience, and crises, Portuguez Castro and Gómez Zermeño (2021) identified the main elements of resilience for entrepreneurs in crises. These elements include the attitudes adopted in the face of the crisis, the characteristics of the business and the entrepreneur, interactions with institutions, human and social capital, as well as strategic management. The two authors suggest that these elements can be taken into account when designing training programs aimed at strengthening entrepreneurs' resilience and preparing them to face potential crises (Portuguez Castro & Gómez Zermeño, 2021).

Along the same lines, Park and Seo (2024) point out that entrepreneurs and SMEs with little experience in crisis management may benefit more from a flexible, spontaneous, and adaptive approach, rather than rigid methods that are often unsuitable in a crisis context (Brown & Rocha, 2020). This strategy involves an agile reconfiguration of internal resources, the integration of external resources, as well as the adjustment of operational procedures that are usually effective in normal times (Kuckertz *et al.*, 2020).

The results of this study can also guide public policies by identifying the specific needs of entrepreneurs according to the different phases of crisis, by strengthening their access to resources, innovation and networks, and by adapting regulatory frameworks to facilitate their adaptation. They highlight the importance of targeted support, particularly for vulnerable start-ups and small businesses, and encourage initiatives that promote diversification and the entrepreneurial ecosystem.

Based on the findings of this bibliometric analysis, policymakers can develop tailored interventions to help entrepreneurs overcome crises and emerge stronger.

For example, the COVID-19 pandemic has highlighted the challenges faced by entrepreneurs and SMEs, thereby underscoring their critical dependence on external support to ensure their resilience (Juergensen *et al.*, 2020). In this context, the policy measures implemented by the government play an essential role in safeguarding economies during times of crisis, particularly by providing support to SMEs facing financial and operational difficulties (Juergensen *et al.*, 2020). These measures primarily aim to ensure access to the resources needed to ensure their survival and economic contribution (Park & Seo, 2024).

Furthermore, Kuckertz *et al.* (2020) highlighted the speed of government interventions, including immediate institutional arrangements to counter falling revenues and rising costs. These measures include financial support (interest rate cuts, easier access to loans, wage subsidies, direct payments) and operational support (tax relief, repayment deferrals, reduced operating costs). An OECD (2020) analysis reveals that the majority of governments combined these approaches, offering subsidies, wage subsidies, and social security contribution deferrals in order to lessen the blow that the crisis has dealt on SMEs (Park & Seo, 2024).

Study Limitations

Despite the valuable information on research trends in entrepreneurial resilience during times of crisis provided by this bibliometric analysis, it is important to note the methodological limitations that could restrict the generalisability of its conclusions.

First, the data used in this article come from the Scopus database, recognised for its high reliability and academic authority (Singh *et al.*, 2021). However, the exclusivity of this source may result in a limitation in terms of coverage of the relevant literature, as some key publications may be located in alternative databases, including Web of Science, Elsevier, ScienceDirect or EBSCOhost. By combining multiple databases, it would be possible to broaden the scope of the search and reduce the risk of omitting important works, especially in varied disciplines where relevant sources are dispersed.

Therefore, restriction to a single database, even though Scopus is known for its broad coverage, may introduce selection bias. Some relevant publications may be missed if not listed in this particular database. Important perspectives on entrepreneurial resilience may not be fully represented in the analysis.

Second, the decision to limit the study to certain fields, notably business and management, economics and social sciences, as well as to certain types of documents, such as journal articles and conference articles, constitutes a significant limitation. This approach could result in a partial view of entrepreneurial resilience by neglecting insights and advances from other disciplines and publication types, such as books, reports, or journal articles in related fields.

Finally, the restriction to a single language, in this case English, may limit the representativeness of the articles used in the study. Significant research conducted in other languages has been excluded, which could lead to a distortion of the overall understanding of the concept of entrepreneurial resilience. It is therefore important to recognise that this analysis may not fully reflect the diversity of perspectives and knowledge available in different languages.

Overall, the future integration of multiple databases, combined with research conducted in different languages and across distinct disciplines, could thus offer more complete and nuanced coverage of the available studies on entrepreneurial resilience.

CONCLUSIONS

This article offers a bibliometric analysis of 291 articles addressing the theme of entrepreneurial resilience in crisis contexts. These articles were selected without temporal constraints from the Scopus database. The analysis was conducted using the VOSviewer software, and the results of this study revealed several significant findings.

Firstly, there is a significant increase in the volume of publications on entrepreneurial resilience, indicating the rising acknowledgement of the significance of this topic. This rapidly increasing trend

since 2020, with 233 publications recorded as of February 2024, suggests a continued expansion of research in this crucial area. Secondly, the results highlight that a large proportion of the relevant journals were published by Emerald Publishing, which thus made a substantial contribution to the domain of entrepreneurial resilience research. Furthermore, the most productive author to date is Franco Mário, affiliated with the Universidade da Beira Interior in Portugal, with an impressive total of 2 730 citations and an h-index of 30 since his first publication in this field in 2011.

Thirdly, the nations exhibiting the highest levels of entrepreneurial resilience are predominantly those with advanced economies, such as the United States and the United Kingdom. They are responsible for more than a quarter of the total number of documents selected for this study (84 articles). This finding highlights their key role in promoting understanding and practices related to entrepreneurial resilience nationally and globally. Fourth, the most frequent keywords in recent publications are 'COVID-19', 'entrepreneurship', 'crisis', 'innovation' and 'small and medium-sized enterprise'. These keywords reflect the main themes addressed in research on entrepreneurial resilience in adverse times. Bibliometric analysis enabled the generation of keyword co-occurrence networks, thereby providing insight into dominant trends and emerging research avenues in this vital area.

These findings make significant contributions to both academic research and managerial practice. Academically, this bibliometric analysis offers researchers the opportunity to identify research trends, gaps, and emerging areas, thereby facilitating a better understanding of the field's evolution. In this context, our findings highlight the need for further research on entrepreneurial resilience, emphasising the crucial role of longitudinal empirical studies in less developed economic contexts, intending to deepen the study of the elements that promote this capacity for resilience.

From a managerial perspective, this study provides entrepreneurs and managers with essential information to adapt their strategies to market developments and unforeseen challenges, thus ensuring better preparation for future crises. In this sense, our findings highlight the important role of innovation, creative problem-solving, and the development of improvisational and entrepreneurial bricolage skills as necessary entrepreneurial skills during periods of crisis.

Moreover, the results of this bibliometric analysis also provide valuable guidance for public policies by identifying entrepreneurs' needs according to crisis phases. They highlight the importance of targeted support, particularly for startups and small businesses, by facilitating access to resources and networks. Based on these findings, policymakers can develop tailored interventions to help entrepreneurs overcome crises and strengthen their resilience.

Ultimately, this study's findings elucidate the distribution of literature and factors on entrepreneurial resilience, offering academic insights to identify current research gaps and explore future paths. Furthermore, this work is notable as one of the few systematic evaluations of entrepreneurial resilience studies, utilising bibliometric analysis and visualisation.

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Conflict of Interest

The authors declare that the research was conducted in the absence of any commercial or financial relationships that could be construed as a potential conflict of interest.

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