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Sustainable Corporate Entrepreneurship: Mapping the Scientific Coverage and Future Research Agenda

Sufia Mohand-Amar | Pilar Soler-Torres

University of Granada, Granada, Spain

Correspondence: Sufia Mohand-Amar (smohand@ugr.es)

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ABSTRACT

The present study provides a detailed bibliometric analysis of the intersection between corporate entrepreneurship and sustainability. It highlights the growing importance of integrating sustainability considerations into corporate innovation and focuses in particular on how established companies can develop new sustainable products, services and processes. Based on 106 studies indexed in the Web of Science database, the analysis reveals a sharp increase in research in this field from 2006 to 2022, peaking in 2022. The main contributors to this research area are the United States, China and Europe. Key topics addressed include innovation, corporate social responsibility (CSR), sustainability and eco-innovation. The latter, moreover, is identified as an emerging field. In conclusion, we consider possible directions for future research, such as exploring the impact of sustainable practices on business performance and how CSR concerns can foster eco-innovation. Overall, this study provides a roadmap for further research into sustainable entrepreneurship within corporations, with significant implications for business strategies and environmental management.

1 | Introduction

In many countries, environmental and social issues are of major importance in corporate investment decisions (Baiocco et al. 2023), given the risks posed by unsustainable growth, including climate change and environmental disaster. In consequence, companies and policymakers are urged to pay close attention to corporate sustainability (Schönwälder and Weber 2023; Adamowicz 2022).

Researchers have highlighted the crucial role played by entrepreneurship in developing countries, where new ventures are often the primary source of job creation and economic advance (Segal et al. 2005; Birch 1987). Moreover, it has been suggested that sustainable entrepreneurship is an essential means of combating universal problems such as global warming, poverty and hunger (Dean and McMullen 2007). Sustainable entrepreneurs incorporate economic, environmental and social concerns into their business activities and, therefore, are considered agents of change (Vuorio et al. 2018; Sardianou et al. 2016). According to Shepherd and Patzelt (2011), the main aim of sustainable entrepreneurship is to '*preserve nature, life support, and community in the pursuit of perceived opportunities to bring into existence future products, processes, and services for gain, where gain is broadly construed to include economic and non-economic gains to individuals, the economy, and society*'.

In recent years, corporate sustainability initiatives have become increasingly common (Hörisch et al. 2020; Ritala et al. 2018), and in many cases, corporate entrepreneurship activities contribute to this end (Schönwälder and Weber 2023). The term 'corporate entrepreneurship' refers to the business

activity that occurs within an already established company, when funds are allocated to new business activities (Guth and Ginsberg 1990). This form of entrepreneurial behaviour normally takes place within established medium-to-large organisations (Morris et al. 2011) and is aimed at generating new business or fostering innovation (Urbano et al. 2022; Soltanifar et al. 2023). Through corporate entrepreneurship, companies can generate new knowledge and use it to innovate, thus obtaining a competitive advantage (Jonathan 2015). The term sustainable entrepreneurship usually applies to newly created companies, while sustainable corporate entrepreneurship (SCE) evolves within existing business entities (Provasnek et al. 2017). This topic is the focus of a new generation of research, in which the concept of entrepreneurship is expanded into the realm of sustainable development (Dean and McMullen 2007; Kuratko et al. 2015b).

Because corporate entrepreneurship can generate growth within the company through product, service and/or process innovation, managers are paying increasing attention to questions of sustainability and corporate social responsibility (CSR) (Miles et al. 2009). In consequence, these issues may be integrated into the framework of corporate entrepreneurship, facilitating the identification and exploitation of new opportunities that are more environmentally sustainable (Hernández-Perlines et al. 2022).

Managers must balance a range of economic, social and environmental objectives. However, these are sometimes incompatible, which provokes tensions (Cesinger et al. 2022; Fischer et al. 2020). On the other hand, if this balance is achieved, the company will be able to satisfy the needs of its stakeholders and thereby enhance its reputation (Di Vaio et al. 2022). In this respect, Kuzey et al. (2024) suggested that corporate social and environmental commitment enhances the firm's reputation. Moreover, many consumers are concerned about possible noncompliance with environmental regulations and human rights standards, which spurs companies to implement CSR initiatives to improve their image and generate value (Mubushar et al. 2025).

In short, SCE leverages the innovation of products, processes and/or services to exploit more sustainable economic opportunities (Miles et al. 2009). In this field, research is still in a nascent stage (Provasnek et al. 2017); however, recent studies have begun to highlight key factors in promoting SCE. These include the importance of the firm's internal social capital in promoting its SCE (Chang et al. 2024), the role played by collaborative processes in fostering SCE (Schönwälder and Weber 2023), the contribution of corporate entrepreneurship to the transition towards sustainability (Tandon et al. 2024) and the degree to which organisational learning and corporate entrepreneurship can promote the company's sustainability (Brandi and Thomassen 2021).

In a recent paper, Gerlich et al. (2025) provided a systematic literature review, seeking to overcome the prior lack of an integrated framework regarding these questions. However, to our knowledge, no bibliometric analysis has yet been conducted to identify the main research topics addressed in the literature or the emerging topics that could guide future research. Previous studies have demonstrated the value of bibliometric analysis in identifying patterns and knowledge networks in various areas of management and sustainability (Rao and Shukla 2023; Farrukh et al. 2020), but its application to the field of SCE remains a gap in the literature.

The present study was performed to fill this gap. It consists of a bibliometric analysis of 106 articles drawn from the Web of Science database, providing a mapping of the present state of scientific coverage of corporate entrepreneurship and sustainability. Our main aim in this study is to provide a roadmap for future research on SCE, a question that has significant implications for business strategy and environmental management. To this end, we propose the following research questions, which will be addressed throughout this paper and can serve as an index for the present study:

- RQ1: What trends are apparent in the scientific articles that have been published on sustainability and corporate entrepreneurship?
- RQ2: Which journals have published the most on these topics?
- RQ3: Which academic institutions have published the most on these topics, and in which countries?
- RQ4: In terms of co-citations, which are the most influential papers on this topic?
- RQ5: What are the most commonly studied topics within the field of corporate entrepreneurship and sustainability?
- RQ6: What new topics are emerging on the subject?
- RQ7: Which research papers have had the greatest impact within this field of study?

Our study contributes to the literature on SCE in various ways. First, it provides a comprehensive overview of the evolution of the field from 2006, when it was first identified and characterised, to the present, highlighting the main performance indicators of journals, countries and institutions involved. Second, through graphic mapping, we illustrate the main topics that have been studied to date, highlighting emerging areas of interest. We also discuss how the relative importance of these topics has evolved over the last 5 years and identify the most influential networks of co-citations in the field. Finally, based on the analysis conducted, we propose some interesting directions for future research, including relevant research questions. The research findings presented are useful for both novice and senior researchers, providing information on the origin, evolution, current state and new trends in this field of research.

2 | Bibliometric Methodology

To identify the past evolution and present trends of SCE, we conducted a bibliometric analysis, following the methodology used in recent studies in this area (Wu et al. 2021; Terán-Yépez et al. 2020). Unlike systematic reviews, bibliometric analysis employs a quantitative approach, enabling the researcher to detect patterns, collaboration networks and thematic evolution. This method has been widely used in previous research

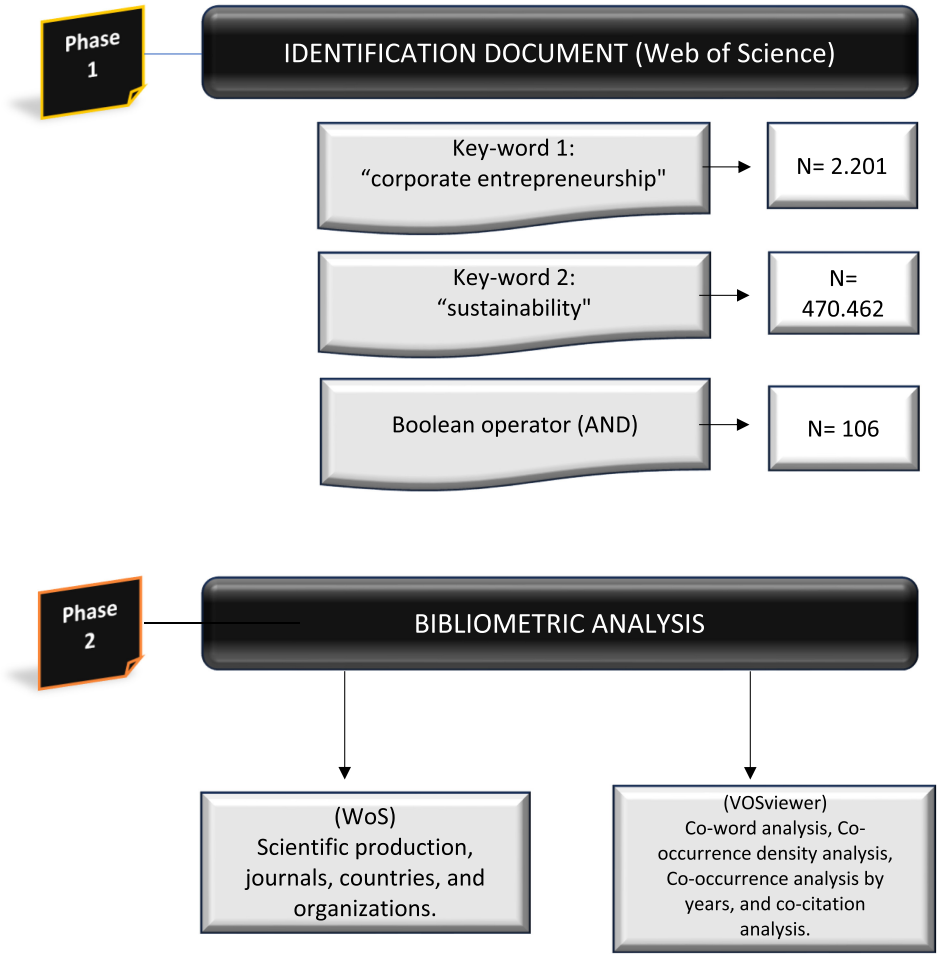

FIGURE 1 | Process applied in the literature search.

on sustainability and business strategy (Rao and Shukla 2023; Farrukh et al. 2020) but has not been specifically applied to the field of SCE. Our analysis took place in three phases (Figure 1). In the first phase, we identified and extracted the most relevant articles on SCE. In line with previous studies in the field of management and entrepreneurship, such as Soltanifar et al. (2023), the source used was the Web of Science Core Collection database by Clarivate Analytics. The keywords in this search were 'sustainability' (Ertz and Leblanc-Proulx 2018; Ellili 2024) and 'corporate entrepreneurship' (Ghura et al. 2022). This process obtained 470,462 documents in the first case and 2201 in the second. The search was then filtered using the Boolean operator 'AND' to combine both keywords, reducing the total to 106 documents. Following Urbano et al. (2022), the search focused on the title, abstract, keywords and text of the articles considered, without specifying any time period.

Figure 1 shows the process applied in the literature search.

The Web of Science database was chosen for this analysis because it contains a large quantity of high-impact papers in diverse academic fields and is widely recognised as an invaluable repository of bibliometric studies (Dabić et al. 2020), with papers dating from 1900 to the present (Ye et al. 2020). The information considered in our analysis was obtained from the Social Science Citation Index, the Science Citation Index Expanded and the Emerging Source Citation Index (Fernandes et al. 2022).

In the second phase, the results obtained from the Web of Science were used to reflect the evolution of scientific production in this field, to identify the most representative journals and to determine the countries, academic institutions and authors that have contributed most to research in this field.

Finally, VosViewer software was used to perform a co-occurrence analysis by means of cluster maps (Van Eck and Waltman 2007). The co-word analysis provided by this software is a valuable means of mapping and visualising relationships between terms in scientific research (Syed et al. 2024). VosViewer allows users to create co-word maps that illustrate how different concepts are interconnected within a corpus of scientific literature (Van Eck and Waltman 2010a). This type of analysis is crucial for identifying emerging trends and research areas in a specific field, as it reveals hidden patterns and associations between keywords that may not be evident through other bibliometric analysis methods (Van Eck and Waltman 2010b). Additionally, VosViewer's capability to handle large volumes of data and generate intuitive visual representations facilitates understanding and communication of the thematic structure of research, promoting greater clarity in interpreting the evolution of knowledge (Waltman and Van Eck 2012). In summary, co-word analysis with VosViewer provides valuable insights into

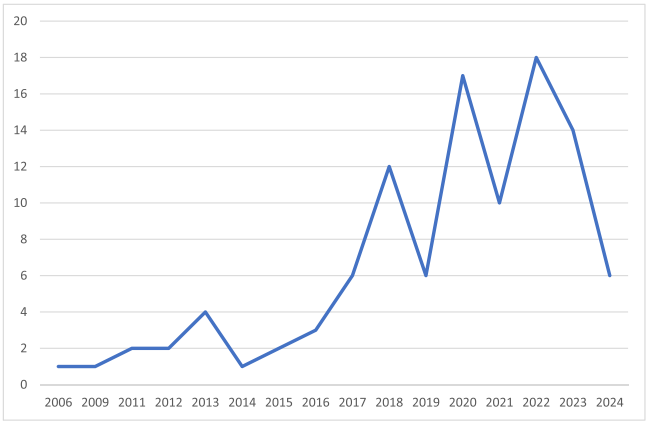

FIGURE 2 | Annual scientific production.

the dynamics of scientific research and is essential for identifying new directions and collaborations in the field.

3 | Analysis and Results

3.1 | Descriptive Analysis

Figure 2 shows that there has been a significant increase in publications on entrepreneurship over the years, peaking in 2022 with 18 publications. However, papers on corporate entrepreneurship with regard to sustainability did not begin to appear until 2006, and from then until 2016, there were no more than five publications per year. However, in 2017, there were six, and in the succeeding years, the number rose sharply, to 12 in 2018 and reaching 18 in 2022. Overall, this indicates a growing interest in this research topic.

Table 1 details the journals that have published most papers in this area. The list is headed by '*Sustainability*' with 25, '*Journal of the Knowledge Economy*' with four, '*Business Strategy and the Environment*', '*Cogent Business Management*', '*Corporate Social Responsibility and Environmental Management*', '*International Entrepreneurship and Management Journal*', '*Journal of Asian Finance Economics and Business*' and '*Journal of Business Research*' with three each and '*Frontiers in Psychology*', '*International Journal of Entrepreneurship and Innovation*' and '*Organization Environment*' with two each. The remaining journals, '*British Journal of Management*', '*Industrial Marketing Management*', '*Journal of Management*', '*Journal of Social Entrepreneurship*', '*Management Decision*', '*Review of Managerial Science*', '*Green Finance*' and '*International Journal of Management Education*', among others, only published one paper each.

In the analysis of publications by country, Table 2 shows that economically developed countries account for the largest numbers of publications. The United States heads the list, with 12 publications, followed by China with 11 and the United Kingdom, Spain and Germany with eight each. Pakistan produced six papers, while Iran, Malaysia and South Africa accounted for five each. Finland, Italy, India, Canada and Brazil had four each, and Romania, the Netherlands, Indonesia and Greece each had three.

TABLE 1 | Top 20 journals.

Journal	Documents
Sustainability	25
Journal of the Knowledge Economy	4
Business Strategy and the Environment	3
Cogent Business Management	3
Corporate Social Responsibility and Environmental Management	3
International Entrepreneurship and Management Journal	3
Journal of Asian Finance Economics and Business	3
Journal of Business Research	3
Frontiers in Psychology	2
International Journal of Entrepreneurship and Innovation	2
Organization Environment	2
British Journal of Management	1
Green Finance	1
Industrial Marketing Management	1
International Journal of Management Education	1
Journal of Management	1
Journal of Social Entrepreneurship	1
Management Decision	1
Review of Managerial Science	1

Table 3 lists the top 20 academic institutions that have contributed to the topic. Among them, the universities of Bucharest, Maastricht, Granada, Tehran and Valencia each contributed three papers on corporate entrepreneurship and sustainability, while those of Bahria, California State, Chongqing, Leuphana Lüneburg, National Chung Hsing, Tongji, Alcalá, Castilla-La Mancha and Fortaleza, together with the Indian Institute of Management, the Indian Institute of Technology and the University of Electronic Science and Technology of China, each contributed two publications. Finally, Aalto and Aarhus universities accounted for one publication each.

Finally, Table 4 shows the most cited articles among those extracted from the database. This list is headed by Zhai et al. (2018), whose paper 'An empirical study on entrepreneurial orientation, absorptive capacity, and SMEs' innovation performance: a sustainable perspective' has been cited 118 times, followed by Cheema et al. (2020), whose 'How employee's perceived corporate social responsibility affects employee's pro-environmental behaviour? The influence of organizational identification, corporate entrepreneurship, and environmental consciousness' has had 88 citations, and Provasnek et al. (2017) who have had 66 citations for

TABLE 2 | Top 20 countries.

Rank	Country	Documents
1	United States	12
2	China	11
3	England	8
4	Germany	8
5	Spain	8
6	Australia	7
7	Pakistan	6
8	Iran	5
9	Malasya	5
10	South Africa	5
11	Brazil	4
12	Canada	4
13	Finland	4
14	India	4
15	Italy	4
16	Taiwan	4
17	Greece	3
18	Indonesia	3
19	Netherlands	3
20	Romania	3

TABLE 3 | Top 20 academic institutions.

Organisation	Documents
Bucharest University of Economic Studies	3
Maastricht University	3
University of Granada	3
University of Tehran	3
University of Valencia	3
Bahria Univesity	2
California State University System	2
Chongqing University	2
Indian Institute of Management Iim System	2
Indian Institute Oo Technology System Iit System	2
Leuphana University Luneburg	2
National Chung Hsing University	2
Tongji University	2
University of Alcalá	2
Universidad of Castilla La Mancha	2
Universidade Fortaleza	2
University of Electronic Science Technology of China	2
University of Regina	2
Aalto University	1
Aarhus University	1

'Sustainable corporate entrepreneurship: performance and strategies toward innovation'.

3.2 | Bibliometric Analysis

3.2.1 | Co-Word Analysis

Co-word analysis is a content analysis technique that maps the strength of the association between keywords, facilitating the detection and grouping of closely related concepts within a set of records (Callon et al. 1991). It is a powerful tool with which the researcher can identify, describe and make a visual representation of interactions between keywords in a scientific field (Muñoz-Leiva et al. 2012). Specifically, co-word analysis examines the frequency with which two keywords co-occur, that is, the number of documents in which these words appear together (Rojas-Lamorena et al. 2022). This approach shows how closely related the terms are conceptually (Galletta et al. 2022).

The colour grouping and the density indicated by the size of a circle represent the importance of a topic. In the present case, the main words identified are corporate entrepreneurship, sustainability, innovation, performance and management. Figure 3 illustrates five main clusters:

Table 5 provides an overview of the clusters obtained, with their respective keywords, encompassing various research topics:

3.2.2 | Co-Occurrence Density Analysis

A co-occurrence density map enables us to visualise the most commonly studied research topics and the strength of the connections between them (Callon et al. 1991). Identifying areas of high and low density can guide our understanding of the state of the art and highlight opportunities for future research. For example, areas with cooler colours and less brightness may indicate topics that have received little research attention to date. Figure 4 reflects the nodes based on co-occurrence density. The most prominent is 'corporate entrepreneurship' with 83 co-occurrences, followed by 'performance' with 40 co-occurrences, reflecting the close relationship between these two concepts. The importance of sustainability management is evidenced by the 29 co-occurrences in the 'sustainability' node and the 26 for 'management'.

The more intense colour density (yellow) near the term 'Corporate entrepreneurship' indicates that this topic is the most often co-cited or mentioned in the documents considered. The terms with colours ranging from green to blue are less often co-cited or mentioned but still have a significant presence. Figure 4 shows that the

TABLE 4 | Highly cited articles—most influential papers.

	Authors	Article title	Journal	Year of publication	Number of cites
1	Zhai et al. (2018)	An Empirical Study on Entrepreneurial Orientation, Absorptive Capacity and SMEs' Innovation Performance: A Sustainable Perspective	Sustainability	2018	118
2	Cheema et al. (2020)	How Employee's Perceived Corporate Social Responsibility Affects Employee's Pro-Environmental Behaviour? The Influence of Organizational Identification, Corporate Entrepreneurship, and Environmental Consciousness	Corporate Social Responsibility and Environmental Management	2020	88
3	Provasnek et al. (2017)	Sustainable Corporate Entrepreneurship: Performance and Strategies Toward Innovation	Business Strategy and The Environment	2017	66
4	De Silva et al. (2021)	Business Model Innovation by International Social Purpose Organizations: The Role of Dynamic Capabilities	Journal of Business Research	2021	65
5	Criado-Gomis et al. (2018)	Sustainable Entrepreneurial Orientation Within an Intrapreneurial Context: Effects on Business Performance	International Entrepreneurship and Management Journal	2018	49
6	Yang and Yan (2020)	The Corporate Shared Value for Sustainable Development: An Ecosystem Perspective	Sustainability	2020	48
7	Hossain (2017)	Business Model Innovation: Past Research, Current Debates, and Future Directions	Journal of Strategy and Management	2017	46
8	Bouguerra et al. (2023)	Linking Entrepreneurial Orientation to Environmental Collaboration: A Stakeholder Theory and Evidence From Multinational Companies in an Emerging Market	British Journal of Management	2023	45
9	Niemann et al. (2020)	The Interplay of Corporate Entrepreneurship, Environmental Orientation and Performance in Clean-Tech Firms—A Doubled-Edged Sword	Business Strategy and The Environment	2020	41
10	Spitzeck et al. (2013)	Sustainability as a Driver for Innovation Towards a Model of Corporate Social Entrepreneurship at Odebrecht in Brazil	Corporate Governance—The International Journal of Business In Society	2013	38
11	Hernández-Perlines et al. (2022)	Intrapreneurship Research: A Comprehensive Literature Review	Journal of Business Research	2022	36
12	Al Omoush et al. (2018)	The Degree of E-Business Entrepreneurship and Long-Term Sustainability: An Institutional Perspective	Information Systems and E-Business Management	2018	36
13	Salamzadeh et al. (2022)	Sustainability-Oriented Innovation Foresight in International New Technology–Based Firms	Sustainability	2022	29

(Continues)

TABLE 4 | (Continued)

	Authors	Article title	Journal	Year of publication	Number of cites
14	Moro-Piekarski et al. (2013)	Life Cycle Assessment as Entrepreneurial Tool for Business Management and Green Innovations	Journal of Technology Management and Innovation	2013	28
15	Lee and Kim (2019)	The Effects of Career Orientations on Entrepreneurial Satisfaction and Business Sustainability	Journal of Asian Finance Economics And Business	2019	27
16	Khan et al. (2023)	Corporate Sustainability Entrepreneurship: The Role of Green Entrepreneurial Orientation and Organizational Resilience Capacity for Green Innovation	Journal of Business Research	2023	26
17	Abid et al. (2024)	Attaining Sustainable Business Performance Under Resource Constraints: Insights From an Emerging Economy	Sustainable Development	2024	25
18	Neessen et al. (2021)	How and When Do Purchasers Successfully Contribute to the Implementation of Circular Purchasing: A Comparative Case Study	Journal of Purchasing and Supply Management	2021	25
19	Morris et al. (2009)	Properties of Balance: A Pendulum Effect in Corporate Entrepreneurship	Business Horizons	2009	25
20	Isensee et al. (2023)	Success Factors of Organizational Resilience: A Qualitative Investigation of Four Types of Sustainable Digital Entrepreneurs	Management Decision	2023	24

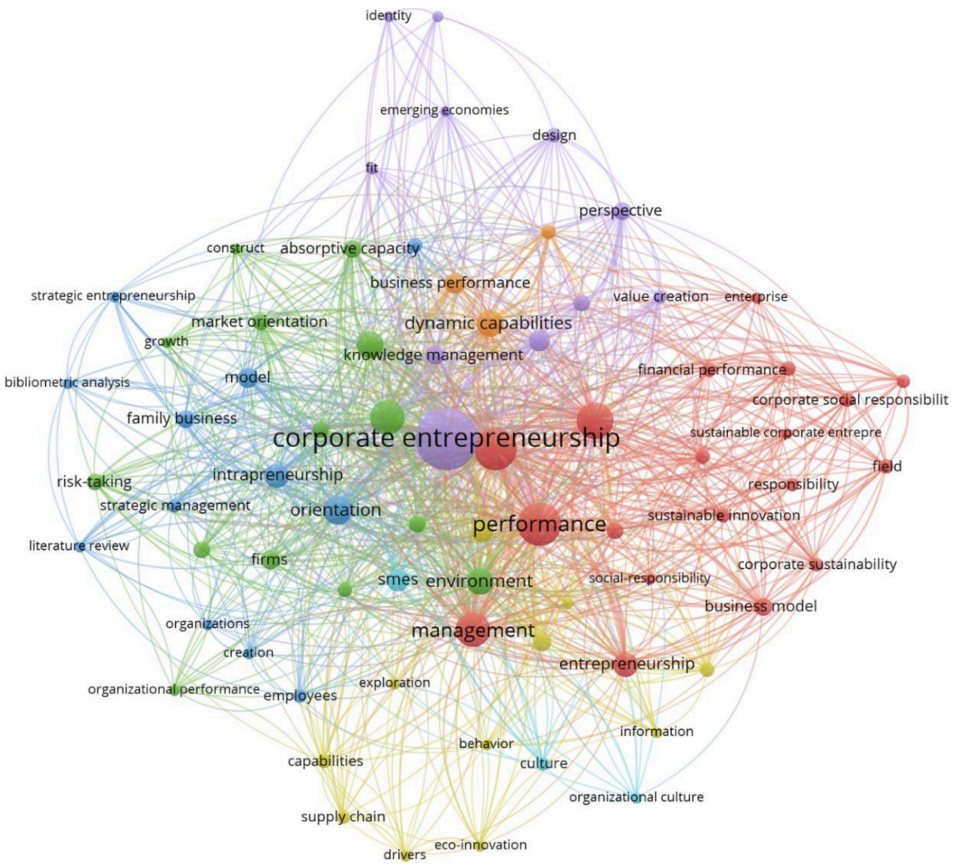

FIGURE 3 | Network visualisation of the co-occurrence of keywords.

TABLE 5 | Clusters of keywords.

Cluster	Topic	Keywords
Cluster 1 (purple cluster)	Innovation and Knowledge Management	Knowledge management, strategy and dynamic capabilities
Cluster 2 (red cluster)	Sustainability and Corporate Social Responsibility	Sustainability, sustainable innovation, corporate social responsibility, corporate sustainability and social responsibility
Cluster 3 (green cluster)	Business Environment	Orientation, market orientation, risk-taking, environment and growth
Cluster 4 (blue cluster)	Strategic Approach	Intrapreneurship, organizations, creation, competitive advantage, employees and strategic entrepreneurship
Cluster 5 (yellow cluster)	Tools and Capabilities	Capabilities, drivers, exploration, technology, information and framework

words 'Performance' and 'Management' have a high density and are close to the central node. In the literature, many studies have analysed the impact of corporate entrepreneurship on business performance; in some of these, Zahra (1993, 1991, 1995) concluded that corporate entrepreneurship has a favourable impact on performance. More recently, Ahmed et al. (2020) argued that this influence is mainly due to the commitment acquired by employees, which acts as a mediating variable.

Other topics identified in our analysis include 'Knowledge management' and 'Dynamic capabilities', which correspond to Cluster 1 in Figure 3. In this respect, Guadamillas et al. (2008) affirmed that the development of organisational knowledge can impact company growth through corporate entrepreneurship. Moreover, Jonathan (2015) argued that a company's dynamic capabilities, such as its innovation potential, favour corporate entrepreneurship. On the other hand, Cluster 3 highlights 'Orientation', 'Absorptive capacity' and 'Risk taking' as major topics, which underscores the importance of customer/learning orientation (Liu et al. 2002) and risk taking (Sebora and Theerapatvong 2010) in fostering corporate entrepreneurship. Additionally, García-Morales et al. (2014) confirmed that

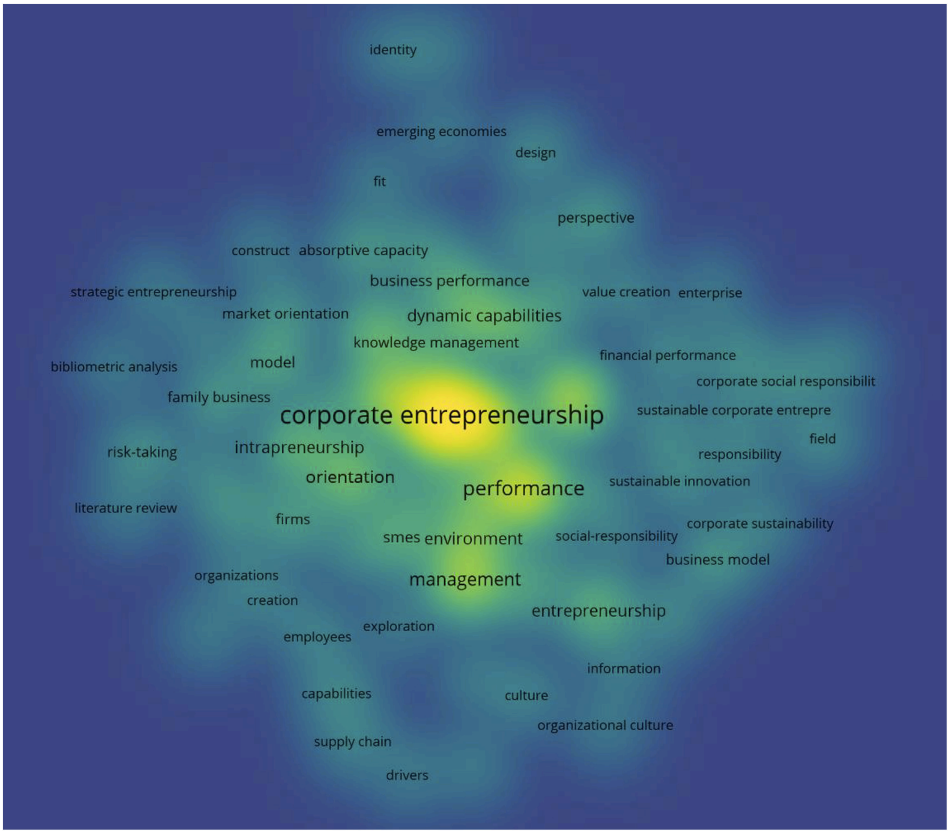

FIGURE 4 | Density-based visualisation of the research topics of interest.

absorptive capacity impacts company technology through corporate entrepreneurship, which also aligns with the terms in Cluster 5, including 'Capabilities', 'Drivers' and 'Supply chain'. Finally, Cluster 4 predominantly features topics such as 'Employees', 'Competitive advantage' and 'Strategic entrepreneurship'. In this regard, it has been argued that corporate entrepreneurship increases employee commitment (Kassa and Raju 2015) and enhances competitive advantage (Covin and Miles 1999). In this respect, too, Barringer and Bluedorn (1999) examined the relationship between corporate entrepreneurship and strategic management.

The terms that are more dispersed from the central node and which present a medium level of density correspond to Cluster 3 in the co-word analysis (Figure 3). These terms are 'Sustainable corporate entrepreneurship' (Chang et al. 2024; Miles et al. 2009; Atiq and Karatas-Ozkan 2013; Provasnek et al. 2017; Kelley 2011; Schönwälder and Weber 2023), 'Corporate social responsibility' (Cheema et al. 2020) and 'Sustainable innovation' (Larson 2000; Schaltegger and Wagner 2011). These topics refer to more specific aspects of the field and underscore the importance of integrating sustainable and responsible practices into the core of corporate strategies. In this respect, Provasnek et al. (2017) studied the impact of SCE on business innovation, Cheema et al. (2020) examined its effect on employees' environmental behaviour, and Schaltegger and Wagner (2011) provide a framework for positioning the relationship between sustainable innovation and sustainable entrepreneurship.

3.2.3 | Co-Occurrence by Year (2019–2023)

Figure 5 displays the keywords associated with the highest number of publications for the period 2019–2022, offering insights into how key terms have evolved over time. This provides a clear visualisation of the shifting research landscape, distinguishing between foundational topics that have remained relevant and emerging concepts that indicate new directions for research. Additionally, it highlights the connections between different key terms, helping us understand how research findings and areas of knowledge are structured.

Figure 5 shows three clusters, where 'corporate entrepreneurship' remains the main node, highlighting its continuing relevance over the years, together with 'performance' and 'management', as reported, too, in previous literature (Ziyae and Sadeghi 2020; Ahmed et al. 2020; Bierwerth et al. 2015). Among these clusters, the following trends can be observed. In the dark blue cluster (2018–2019), the main focus is on business performance. Thus, in 2019, the most prominent terms were business performance (Chienwattanasook et al. 2019), financial performance (Ocak and Ozturk 2018), market orientation (Tang et al. 2019) and risk taking (Astrini et al. 2020).

The second cluster (2020–2021) is coloured light blue to green. Here, the main themes concern the relationship between sustainability and innovation, and the new ones emerging are CSR, corporate sustainability (Cheema et al. 2020) and sustainable innovation (Lüdeke-Freund 2020). However, these topics remain

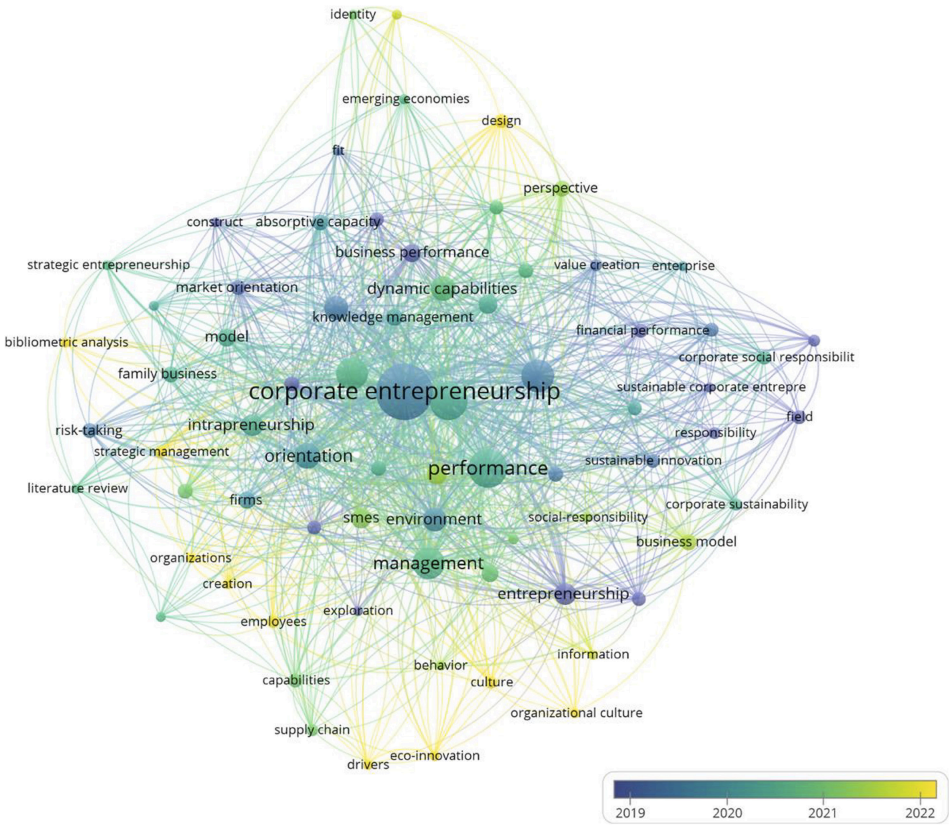

FIGURE 5 | Network visualisation of co-occurrences in the period 2019–2023.

peripheral compared to others such as family business (Minola et al. 2021) and dynamic capabilities (Rehman et al. 2020).

The third cluster (2022 onwards) is shown in yellow and identifies the terms that have gained prominence more recently. In comparison with the content of the other clusters, this network is less dense but presents more interconnected connections through intermediate terms. An interesting feature here is the rise of eco-innovation, which does not appear in the density map shown in Figure 4. During this period, Kiefer et al. (2024) examined how corporate environmental culture may support eco-innovation within companies, while Akram et al. (2023) explored the relationship between eco-innovation, green entrepreneurship and business growth, and Paduraru (2023) studied eco-innovation in the context of corporate sustainability. The recent emergence of this term in the literature on SCE suggests that companies are increasingly focused on sustainable practices and innovating in new products, services and/or processes with environmental considerations.

3.2.4 | Co-Citation Analysis

Co-citation refers to the thematic similarity between two documents that are cited together in a third document (Small 1973). This method is fundamental for understanding the structure and evolution of academic fields (Marie et al. 2024). The co-citation map is a powerful tool in bibliometric analysis that enables us to visualise the structure and dynamics of knowledge in a field of study, to identify key publications, to analyse the evolution of research topics, to detect emerging trends and to guide future research. Moreover, a co-citation map helps us identify the most influential works within an area of study (Ferreira 2018). Publications with many co-citations are understood to have made a great impact on the literature in the field. Through these visualisations, scholars can gain a deeper, more strategic understanding of their research area. Furthermore, the citation map shows the different connections between recent and older works, making it possible to identify emerging topics and areas of growing interest within the field (Chen 2006). In short, citation maps provide a visualisation of citation and collaboration networks, showing how different lines of research may be interconnected (Börner et al. 2003).

As can be seen in Figure 6, the size of the node is associated with its number of citations. Here, the study most commonly referred to, with 70 co-citations, is by Cheema et al. (2020), regarding how CSR affects employees' pro-environmental behaviour. This is followed by the 47 co-citations for Provasnek et al. (2017), who examined SCE and its impact on innovation, and by Niemann et al. (2020), with 32 co-citations, who explored the relationship between corporate entrepreneurship, environmental orientation and performance. Among the citations by year, the oldest are those of Morris et al. (2011) with 16 citations, studying corporate innovation and entrepreneurship, and Atiq and Karatas-Ozkan (2013) with 13 co-citations, examining SCE and CSR. In the more recent period from 2021 to 2023, the most notable are Brandi and Thomassen (2021) with 11 co-citations for their study of organisational sustainable learning and corporate entrepreneurship, Schönwälder and Weber (2023) with 10 citations, who considered how established companies implement SCE processes, and Hübel et al. (2022) with eight co-citations,

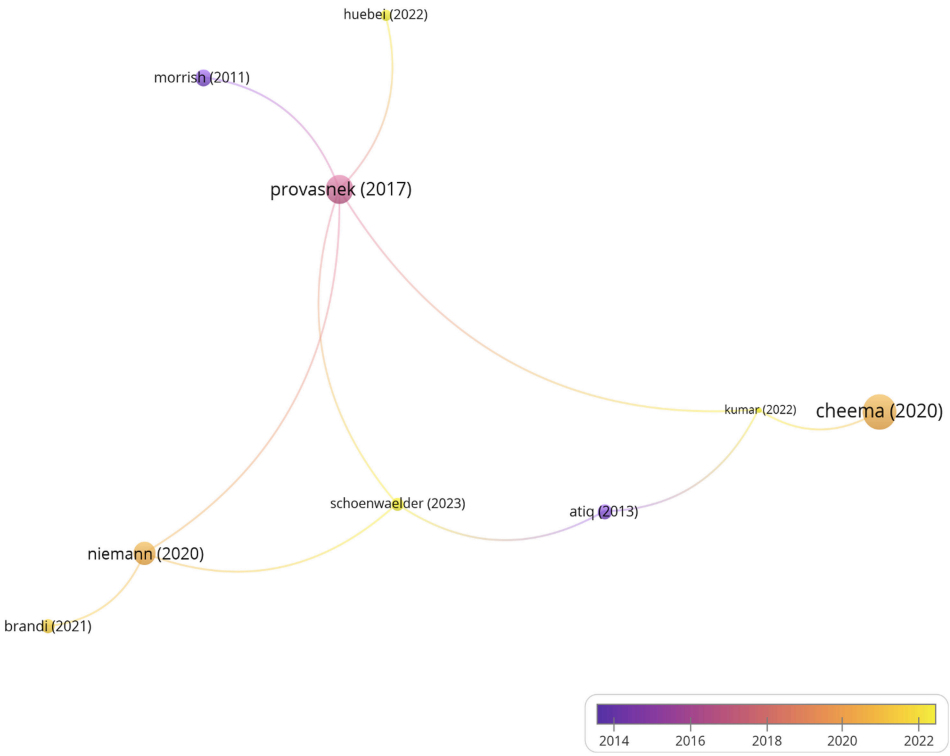

FIGURE 6 | Co-citation network of documents.

who explored strategic alliances for fostering sustainable corporate innovation.

Table 6 lists the papers most commonly co-cited in this field.

4 | Conclusions and Future Research Agenda

This paper fills a perceived research gap by mapping the scientific coverage of corporate entrepreneurship and sustainability. To clarify and guide future research, we conducted a bibliometric analysis to assess the state of research in this field, identifying both the main topics addressed and those that are emerging. This analysis shows that there was a sharp increase in research activity in this area from 2006 to 2022, peaking in 2022, which highlights the growing importance of sustainability topics in the design of products, services and/or processes within corporations. This evolution may reflect the fact that companies are increasingly sensitive to questions such as climate change (Adamowicz 2022). Thus, in making their investment decisions, companies are paying close attention to the potential risks of unsustainable growth (Schönwälder and Weber 2023).

According to our bibliometric analysis, the main topics studied in this context are 'Corporate Social Responsibility' and 'Sustainable Innovation'. Thus, Figure 3 highlights the importance of integrating these concepts within strategies aimed at promoting corporate entrepreneurship. However, the density map presented in Figure 4 shows that these terms are dispersed and less often cited, indicating that the relationship between them has received relatively little attention in the literature. Nevertheless, and as observed by Mubushar et al. (2025), consumers are increasingly concerned about CSR and the need to protect environmental standards and human rights. Accordingly, the question of sustainable innovation within companies is viewed as one of increasing importance (Cillo et al. 2019), not only because of ethical concerns but also because of its positive effect on business competitiveness (Hermundsdottir and Aspelund 2021). Figures 3 and 4 also reveal the strong connection between 'Corporate Entrepreneurship' and 'Performance' (Zahra 1993; Zahra 1991; Zahra 1995). However, they also indicate theoretical gaps regarding how CSR can foster the development of new, more environmentally sustainable products, services and/or processes, which might enhance business performance.

The following research questions are of interest and might be addressed in future research:

- How does CSR enhance the development of new, more environmentally sustainable products, services and/or processes?
- Does the development of more environmentally sustainable products, services and/or processes positively influence business performance?
- Does the development of environmentally sustainable products, services and/or processes mediate the relationship between CSR and business performance?
- How does sustainable innovation mediate the relationship between CSR and business performance?

The analysis conducted in the present study identifies 'Eco-innovation' as an emerging topic in the field of SCE. According

TABLE 6 | Bibliographic coupling analysis.

Author/s	Title	Journal	Total link Strength
Cheema et al. (2020)	Retracted: How Employee's Perceived Corporate Social Responsibility Affects Employee's Pro-Environmental Behaviour? The Influence of Organizational Identification, Corporate Entrepreneurship, and Environmental Consciousness	Corporate Social Responsibility and Environmental Management	70
Provasnek et al. (2017)	Sustainable Corporate Entrepreneurship: Performance and Strategies Toward Innovation	Business Strategy and the Environment	47
Niemann et al. (2020)	The Interplay of Corporate Entrepreneurship, Environmental Orientation, and Performance in Clean-Tech Firms: A Double-Edged Sword	Business Strategy and the Environment	32
Atiq and Karatas-Ozkan (2013)	Sustainable Corporate Entrepreneurship From a Strategic Corporate Social Responsibility Perspective: Current Research and Future Opportunities	The International Journal of Entrepreneurship and Innovation	13
Brandi and Thomassen (2021)	Sustainable Organizational Learning and Corporate Entrepreneurship: A Conceptual Model of Sustainability Practices in Organizations	Journal of Workplace Learning	11
Schönwälder and Weber (2023)	Maturity Levels of Sustainable Corporate Entrepreneurship: The Role of Collaboration Between a Firm's Corporate Venture and Corporate Sustainability Departments	Business Strategy and the Environment	10
Hübel et al. (2022)	Strategic Alliances for Corporate Sustainability Innovation: The 'how' and 'when' of Learning Processes	Long Range Planning	8

to Pan et al. (2021), CSR fosters eco-innovation, which is believed to have a positive impact on the economic (Wu et al. 2023) and financial performance of companies (López-Pérez et al. 2024). Nevertheless, and as shown in Figure 4, eco-innovation is still sparsely related to other topics such as CSR, corporate sustainability and corporate entrepreneurship, and few studies have addressed the relationship between CSR, eco-innovation and business performance. Therefore, for future work, we propose the following research questions:

- How does CSR enhance eco-innovation in a firm?
- How does eco-innovation mediate the relationship between CSR and business performance?

Furthermore, Figure 4 highlights the importance of risk taking, orientation and market orientation in promoting corporate entrepreneurship. Other research questions that could be explored include the following:

- How do orientation (entrepreneurial, learning and market), proactivity and/or risk taking foster CSR, and how does this, in turn, support the development of new, more environmentally sustainable products, services and/or processes?
- How do orientation (entrepreneurial, learning and market), proactivity and/or risk taking foster eco-innovation?

5 | Practical and Theoretical Implications

From a practical perspective, this paper shows that increasing research attention has been paid to the question of SCE in recent years (Hörisch et al. 2020). Environmental and/or social

sustainable activities can be highly beneficial to the companies concerned, as a smart business strategy that heightens loyalty and trust among their customers (Mubushar et al. 2025). Furthermore, research has shown that CSR fosters environmentally friendly behaviour by company employees (Cheema et al. 2020) and that the adoption of sustainable practices can drive eco-innovation within the firm (Kiefer et al. 2024). Therefore, promoting public policies that emphasise the importance of sustainable entrepreneurship is crucially important as a means of strengthening business competitiveness and fostering innovation through responsible practices to achieve a more sustainable economy (Lüdeke-Freund 2020). However, as Watson et al. (2023) point out, to date, insufficient research has been carried out to determine how public policies can support sustainable entrepreneurship. Indeed, institutional conditions often obstruct this process.

From a theoretical perspective, our analysis contributes to the literature on SCE, a field of study that is still at an early stage (Provasnek et al. 2017). Our bibliometric analysis provides a comprehensive overview of the current state of the literature, identifies emerging topics and new research trends in this area and highlights gaps that need to be addressed. These findings may be useful for both novice and experienced researchers, providing practical guidelines to guide future research in this field. Additionally, the theoretical gaps we identify and the results of this review can help practitioners decide which topics to investigate, whether in the development of a doctoral thesis or in the application for a research project. Moreover, addressing these theoretical gaps can provide useful tools and knowledge to entrepreneurs, encouraging them to become more environmentally sustainable and to prioritise CSR.

6 | Limitations

The main limitation of this research concerns the review protocol used, as the results obtained are always limited by the criteria selected by the researchers. Furthermore, the choice of database may exclude certain works that are representative (Gerlich et al. 2025). As Szalkowski and Johansen (2024) note, although we strive to be as inclusive as possible, the choice of keywords limits the search results obtained, thereby narrowing the scope of the review. Clearly, the sample of studies extracted for analysis is influenced by the decisions incorporated in the search protocol, and some relevant studies may have been inadvertently excluded. Nevertheless, we believe that the present study constitutes a valuable bibliometric review and provides a useful roadmap for future research on SCE, with significant implications for business strategies and environmental management.

Conflicts of Interest

The authors declare no conflicts of interest.

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