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REVIEW ARTICLE

Exploring Environmental, Social and Governance research in the wake of COVID-19: A bibliometric analysis of current trends and recommendations for future research

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Abstract

This study offers a systematic review of the evolution and characteristics of research on corporate Environmental, Social, and Governance (ESG) performance, with a particular focus on changes influenced by the COVID-19 pandemic. Using bibliometric analysis, this research examines 340 scholarly articles on ESG performance published between 2006 and January 2023, documenting the expansion of ESG research in the post-COVID-19 era. Our findings identify key ESG themes, including social responsibility, sustainability reporting, corporate strategy, financial performance, and environmental performance. The study introduces a theoretical framework rooted in the resource-based view, legitimacy, institutional, and stakeholder theories to explore the financial impacts of ESG implementations during and after the COVID-19 pandemic. It highlights the essential roles played by influential journals, authors, and countries such as China, the USA, and Italy, demonstrating the interdisciplinary growth of ESG studies. Additionally, the research underscores the pandemic's impact on ESG practices, stressing the necessity for standardized ESG metrics and the crucial role of regulatory frameworks. The study recommends adapting ESG frameworks to align with post-pandemic realities and calls for the inclusion of both qualitative research and a global perspective in future ESG research.

KEYWORDS

bibliometric analysis, COVID-19 pandemic, ESG governance, ESG performance, ESG strategies

1 | INTRODUCTION

This study examines how Environmental, Social, and Governance (ESG) principles are integrated into corporate strategies, focusing on the growing commitment to sustainable development and climate action (Chen, Han, et al., 2023; Chen, Li, et al., 2023; Galletta et al., 2022; Lokuwaduge & Heenetigala, 2017). It highlights the necessity for financial regulators to adopt sustainable finance frameworks underpinned by ESG criteria (Friede et al., 2015; Galletta

et al., 2022; Tan et al., 2022). Although there is evidence supporting the beneficial impacts of strong ESG practices on organizational performance and risk mitigation (Chen, Han, et al., 2023; Chen, Li, et al., 2023; Friede et al., 2015; Moskovics et al., 2024; Shakil, 2021), opinions remain divided about the actual benefits associated with ESG compliance. Previous research has variously demonstrated the positive correlation between ESG and stock price stability, as well as reduced crisis risk (Broadstock et al., 2021; Miralles-Quirós, Miralles-Quirós, & Redondo Hernández, 2019; Miralles-Quirós, Miralles-

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Quirós, & Redondo-Hernández, 2019). However, some studies have questioned the consistency of these advantages, especially in terms of financial returns and risk reduction (Atan et al., 2018; Landi et al., 2022).

Responding to these debates, our research reevaluates the impact of ESG investment before and after the COVID-19 pandemic. In recent literature, we have identified a growing emphasis on ESG driven by a global shift towards sustainability. Nevertheless, there is a significant gap in focused bibliometric studies on ESG performance trends (Fusco & Ricci, 2018; Gao et al., 2021; Ye et al., 2020). Our bibliometric analysis aims to map the intellectual development of ESG research, highlighting key themes, influential publications, author contributions, and collaborations during these periods (De Bakker et al., 2005; De Falco et al., 2024; Galletta et al., 2022).

The urgency to understand the transformation in ESG practices, particularly due to the COVID-19 pandemic, motivates this research. By examining scenarios before and after the pandemic, this study adds to the ongoing discussion on the effectiveness and implementation of ESG strategies. It offers practical insights for policymakers, financial market regulators, and businesses by identifying key trends and challenges in ESG performance. The significance of this study lies in its comprehensive review of ESG research development, providing critical insights into the dynamic landscape of sustainability practices and their impact on financial markets.

Utilizing a bibliometric approach, we document a notable increase in ESG research post-COVID-19, identifying prevalent themes such as social responsibility, corporate strategy, financial performance, and environmental economics. We spotlight influential journals and prominent contributors, with significant involvement from countries like China, the USA, and Italy, emphasizing the interdisciplinary and expansive nature of this research field (Koseoglu, 2016). Our findings not only trace the evolution of ESG studies but also suggest strategic directions for future research in this evolving area.

The pandemic's impact on ESG practices prompted us to develop a theoretical framework based on resource-based, legitimacy, institutional, and stakeholder theories to analyze the financial implications of ESG practices (AlAmosh & Khatib, 2023). This study broadens the dialog beyond traditional finance and accounting to explore global variations in ESG impacts and compare approaches in developed and developing countries. We identify the absence of standardized ESG metrics as a major challenge, advocating for future research to create detailed indicators that consider governmental policies, investment trends, and corporate collaboration. Additionally, our study emphasizes the importance of understanding regulatory impacts on ESG practices during crises and suggests refining ESG frameworks to better reflect post-pandemic realities, with a focus on qualitative research methods. Future research should investigate the regulatory effects on ESG innovation and utilize longitudinal and social network analyses to gain a comprehensive understanding of ESG dynamics. This review aims to guide future ESG studies by promoting a holistic approach that incorporates diverse global perspectives in the post-pandemic era.

The remainder of this paper is organized as follows: Section 2 reviews relevant ESG literature. Section 3 outlines the research methodology. Section 4 presents the analysis and findings. Section 5

explores future avenues for ESG research. Section 6 discusses the overall findings. Section 7 concludes the study, and Section 8 outlines the main implications of our results.

2 | LITERATURE REVIEW

As shown by Table 1, our review of ESG literature emphasizes the increasing significance of ESG investment strategies, especially highlighted by the COVID-19 pandemic's effect on global markets and corporate financial stability (Hu & Zhang, 2021; Steblianska et al., 2022). The crisis has sharpened the focus on ESG as a key element in navigating financial uncertainties, with ESG-driven investments rising beyond US\$30 trillion during and beyond the pandemic, highlighting ESG's role in assessing company strength and investment appeal (Broadstock et al., 2021; Zhang et al., 2023).

Despite extensive studies on ESG as a resilience mechanism during the pandemic, consensus is lacking on its efficacy in shielding stock markets and contributing to sustainable development goals (SDGs) (AlAmosh & Khatib, 2023; Demers et al., 2021). Studies also present mixed views on how ESG correlates with corporate sustainability and survivability (Serafeim & Yoon, 2022a), suggesting a need for deeper insight into ESG's impact and strategies after COVID-19. To do so, we employ a bibliometric analysis to reveal the intellectual evolution and framework of ESG research, helping scholars identify gaps in the literature and propose areas for future study (Aria & Cuccurullo, 2017).

The Bibliometric review approach is a key method for identifying trends and guiding future research in ESG studies (Bilal, Gerged, et al., 2023). By mapping the ESG research landscape, bibliometric analyses help pinpoint key authors, foundational studies, and emerging themes (Dwivedi et al., 2024). For example, Zupic and Čater (2015) emphasize how bibliometric methods map out the ESG field's methodological and thematic development, providing a roadmap for future research. By analyzing citation data, keyword trends, and collaboration networks, bibliometric reviews offer insights into the ESG field's trajectory, supporting the pursuit of well-informed and targeted future studies (Aria & Cuccurullo, 2017). This approach ensures upcoming research is built on a solid understanding of the current field, fostering meaningful contributions to discussions on corporate sustainability and responsibility.

Current bibliometric research on ESG spans from overarching themes to sector-specific and forward-looking investigations, differing in their scope and approaches (Galletta et al., 2022; Jain & Tripathi, 2023; Khan, 2022; Senadheera et al., 2022; Singh et al., 2023). However, to our knowledge, no study has specifically addressed ESG within the context of the pandemic through an in-depth bibliometric review and content analysis.

Therefore, our research bridges this gap by reviewing 340 Scopus articles, using VOSviewer and R to assess post-pandemic ESG research trends and dynamics. This approach offers fresh insights not provided by earlier studies, aiding future research and policy formulation by highlighting new trends and elucidating ESG research's internal dynamics.

TABLE 1 A comparison of our study and similar research on ESG performance pre and post-COVID-19 pandemic.

Author	Main objective	Sample	Source	Methodology	Main finding
Steblianskaia et al. (2022)	The primary objectives of the paper are to analyze ESG terminology from various sources and discover the relationship between tokens and the papers' ESG presentation sequence	100 documents from January 2002 to August 2022	Web of Science (WOS) and SCOPUS database	They used "Naive" textual analysis. The calculations were done in the Python program. The authors use the following libraries: NLTK and Gensim.	The results show that the most vital link is between the words "ESG" and "firms" and "stock", "value", "social". "environmental", and "risk". It also found a strong connection with tokens "investment decisions" and "performance", "significant company" and "effect". With the increasing interconnections, links between the "ESGvalue- environmental-significant- influence".
Wan et al. (2023)	The objective of this study was to present the development of ESG and to discuss research related to ESG.	755 papers from 2004 to 2021	Web of Science Collection database	A bibliometric analysis	They found the research on the influencing factors and economic consequences of ESG in the context of emerging markets, mechanism analysis of the impact of ESG on the capital market, and further research on ESG information disclosure and ESG ratings. Furthermore, three research trends are identified: research on the influencing factors and economic consequences of ESG in the context of emerging markets, mechanism analysis of ESG's impact on the capital market, and further research on ESG information disclosure and ESG ratings.
Galletta et al. (2022)	This research aims to raise awareness of the changes that affect the financial sector by describing state-of-the-art issues of ESG performance in the banking industry by mapping currently accessible studies.	271 publications over the 1986–2021 period.	The Web of Science database	A bibliometric analysis	Scholars have mainly focused on CSR, specifically, the social dimension of ESG and the creation of value for a company with only a timid interest in environmental issues.
Senadheera et al. (2022)	Discover present and future research directions of ESG and corporate performance and trends while focusing on the environmental pillar.	981 articles from 2001 to 2021	Scopus database	Quantitative bibliometric analysis	They found that the USA, Canada, and many research institutions from European countries are leading the field of ESG research. At the same time, institutes from the Asia-Pacific region have recently begun to show interest. This analysis reveals a positive correlation between disclosing a company's ESG information and better performance.
Singh et al. (2023)	The objective of this study was to present the development of ESG and to discuss future research related to ESG.	693 papers from 1991 to 2020	The Scopus and Web of Science databases	Bibliometric and Network Analysis	The research identifies how ESG reporting affects many variables, such as financial performance, social performance, environmental performance, and sustainability score.
Jain and Tripathi (2023).	Discover present and future research directions of ESG	867 and 388 papers from Scopus and Web of Science data, respectively	Scopus and WoS data	Bibliometric analysis	They found the top two journals regarding productivity are the Journal of Sustainable Finance and Investment and Business Strategy and the Environment. The highest number of publications are from the United States and George. Further, the result of cluster analysis of bibliographic coupling reveals four intellectual themes: (1) ESG investing, (2) ESG disclosures and Integrated Reporting, (3) ESG performance and firm value, and (4) Corporate Governance and ESG performance.
Wang, Lin, et al. (2023), Wang, Pan, et al. (2023), Wang, Raza, et al. (2023)	The purpose of this paper is to clarify the impact mechanisms and weighting factors of ESG practices on corporate value	432 published articles from 2010 to 23 February 2022	Web of Science core collection	Bibliometric analysis and literature review method	They found three significant results. First, an in-depth analysis of the mechanisms that mediate the impact of corporate ESG responsibility on corporate value is needed, as well as an exploration of the key factors beyond the cost of financing and R&D innovation. Second, it is necessary to deeply analyze the episodic events and dynamic components that change the

(Continues)

TABLE 1 (Continued)

Author	Main objective	Sample	Source	Methodology	Main finding
					relationships between ESG practices and corporate value creation in a phase where companies face an increasingly complex internal and external environment. Finally, most existing literature does not strictly distinguish between ESG performance and ESG disclosure, ignoring the comprehensiveness of corporate ESG practices and deviating from the essential meaning of ESG performance and ESG disclosure.
Khan (2022)	This study attempts to synthesize literature on ESG performance and its impact on performance.	199 papers published from 2012 to 2020	Scopus database	Bibliometric analysis and meta-analysis	This study presents three research findings: Firstly, the literature on ESG performance is predominantly biased towards larger firms, which signifies a gap in future research to sample SMEs. Secondly, ESG risk is influenced by market capitalization. Finally, financial performance and risk reported a bidirectional relationship with ESG performance.
Gao et al. (2021a), Gao et al. (2021b)	This paper aims to analyze the overall trend of ESG research	690 articles from 1980 to 2020.	Scopus database.	Bibliometric analysis	They found that the United States, the United Kingdom, and France are among the top three contributing countries. The top three journals most interested in ESG topics are: Journal of Sustainable Finance and Investment, Business Strategy and the Environment, and Journal of Business Ethics. The literature analysis shows that keywords such as sustainable development, investment, management methods, and environmental economy are current ESG hot issues. ESG disclosure is one of the current study hotspots in ESG.
Li et al. (2021)	This paper systematically examined and summarized the research on ESG through a combination of bibliometric analysis and a literature review.	793 documents from January 1985 to December 2020	Web of Science database	Bibliometric analysis	this paper further refines the characteristics of ESG research, reveals the shortcomings of ESG research, and proposes a focus for ESG research in the future to provide a reference for academic research and the practice of ESG.
Our study	This research study aimed to assess the intellectual growth, author characteristics, and manuscripts relating to firms' ESG performance before and after the COVID-19 pandemic and offers direction for future research agendas.	Only 340 ESG performance-related articles were published in a period spanning from 2006 to January 2023.	Scopus database.	Bibliometric analysis	The empirical outcomes of this article identified influential aspects of ESG research, including the top journals and authors, the most cited papers, keyword distribution, co-authorship, and collaborations. The critical appraisal of our results highlights that the literature after COVID-19 does not reflect corporate bonds, climate change, social welfare, poverty reduction, equal rights, economic recession, and green real estate. Moreover, most publications after COVID-19 focused on environmental practices. Therefore, the previous directions taken by scholars that primarily investigated the social or governance dimensions because the companies were not considered to be involved in the issue of climate change and green real estate had been reversed by the new research directions. Also, our bibliometric review shows the rising stages of this research area and the emerging lines of inquiry that may be investigated in more depth post-COVID-19 period.

3 | RESEARCH DESIGN

3.1 | Data sources and sample characteristics

We extracted literature on ESG performance, spanning the period before and after the COVID-19 pandemic, from the Scopus database. Recognized for its comprehensive and high-quality academic sources, Scopus serves as an excellent resource for scholarly research (Galletta et al., 2022). Table 2 outlines the selection criteria, providing a basis for our study's rationale. The literature search, conducted up to January 2023, included research from 2006 to 2023. From this search, we selected 392 records, with an average citation count of 15.73 per document, highlighting the field's significance. Despite ESG performance being a relatively new area within financial research, our study seeks to address the shortcomings of previous bibliometric analyses. By using a thorough set of keywords and utilizing Scopus, we aim to explore unknown bibliometric aspects of ESG research pre- and post-COVID-19, including key ESG themes, emerging trends, citation analysis, institutional affiliations, author collaborations, and geographic distribution of ESG research.

3.2 | Methodology

To employ the most current methods for analyzing literature, we chose bibliometric analysis for its benefits in reducing selection bias and offering a more objective approach than traditional reviews (Bahoo et al., 2020a; Bahoo et al., 2020b; Choiijil et al., 2022; Galletta et al., 2022; Paltrinieri et al., 2023; Pattnaik et al., 2020). This method combines quantitative and qualitative data, analyzing a larger dataset to explore trends in ESG research and suggest new avenues for potential research (Bilal, Gerged, et al., 2023; Galletta et al., 2022; Naciti et al., 2022).

We mapped our data using the “unified approach” for bibliometric networks, facilitating the analysis and visualization of the data (Galletta et al., 2022; Waltman et al., 2010). To analyze ESG performance research before and after COVID-19, we used VosViewer and R programming, aiming to identify key themes and their relationships within the ESG literature. Keywords' importance is gauged by their frequency in the publications (Galletta et al., 2022).

Our analysis applies a mathematical formula to evaluate the connections between keywords, focusing on their strength and proximity to identify clusters. This approach allows us to discern patterns and cluster networks within the research field (Galletta et al., 2022; Naciti et al., 2021; Van Eck & Waltman, 2007). Our unified strategy can be specified in mathematical formulas as follows:

$$V(x_1, \dots, x_n) = \sum_{i < j} s_{ij} d_{ij}^2 - \sum_{i < j} d_{ij} \quad (1)$$

where s_{ij} denotes how strongly keyword i and keyword j are linked, and d_{ij} represents:

TABLE 2 Sample criterion.

Rationale and objective	The research examines how ESG performance studies have spread before and after COVID-19. The purpose of the paper is to look into how recent papers after COVID-19 are approaching the topic of environmental sustainability and, in particular, ESG performance, which is still under-discussed in emerging nations despite the fact that sustainability and climate change issues have significantly increased in economic and social significance over the past few years (Arvidsson & Dumay, 2022; Galletta et al., 2022).
Study design	The research uses bibliometric analysis to summarize the available data from the literature based on a thorough procedure.
Eligibility criteria	We applied the codes established by the authors to published papers in the Scopus electronic database and examined them for qualifying requirements; we then mapped and clustered bibliometric data.
Publication time frame	2006–January 2023
Language	English
Search strategy	For our source database search, we used the following codes: TS = (“ESG performance” AND “COVID-19”) TS = (“Environmental, Social and Governance performance” AND “COVID-19”) TS = “ESG performance.” TS = “Environmental, Social and Governance performance.” TS = (“financial institution” AND “ESG performance” AND “COVID-19”) TS = (“financial institution” AND “Environmental, Social and Governance performance” AND “COVID-19”) TS = (“financial institution” AND “ESG performance”) TS = (“financial institution” AND “Environmental, Social and Governance performance”) In the identification and screening steps, codes were individually searched on each record's title, abstract, and keywords portions. Indexes = SCI-EXPANDED, SSCI, A&HCI, CPCI-S, CPCI-SSH, BKCI-S, BKCI-SSH, ESCI, CCR-EXPANDED, IC. Timespan = 2006–Jan 2023' is the database's source, while TS stands for the publication's “topic.”
Sample	Results found: 392 The sum of the Times Cited: 5572 Average Citations per Item: 15.73 H-index: 32

$$d_{ij} = \begin{cases} 0 & \text{if } x_i = x_j \\ \frac{1}{\gamma} & \text{if } x_i \neq x_j \end{cases} \quad (2)$$

where γ is an arbitrary positive integer that serves as the resolution parameter and controls how many clusters will be produced.

We also conducted a chronological analysis of keywords to see how their frequency has changed over time, calculating the average year each keyword appeared based on its occurrence over the years. The average year of occurrence for a keyword i is calculated by:

$$y_i = \frac{\sum_t (n_{it}t)}{\sum_t n_{it}} \quad (3)$$

where n_{it} is the number of items wherever keyword i appears in year t ($t = 2006, 2010, 2015 \dots, 2023$).

Finally, we explored the co-occurrence network of the most cited articles, journals, and countries to understand the distribution and impact of research on ESG performance, pre- and post-COVID-19 pandemic, using similar mathematical methods to group citations within the literature (Figure 1).

4 | RESULTS

4.1 | Descriptive analysis

Between 2006 and January 2023, a total of 392 articles on ESG performance were published, as detailed in Figure 2, with 340 being research papers. This surge in publications, particularly research papers, reflects the growing academic interest in ESG issues (Galletta et al., 2022). Following research papers, conference papers (17), and book chapters (19) constitute the other forms of ESG publications. Our analysis primarily focuses on journal articles, with proceedings and book chapters playing a secondary role.

Figure 3 highlights the publication trends over the same period, showcasing a notable increase in ESG research post-COVID-19. Initial interest in ESG, particularly from 2006 to 2017, was minimal. However, following the enhancement of the Global Reporting Initiative's environmental efficiency indicators in 2011 (United Nations, 2017),

interest grew, peaking between 2021 and 2023 due to regulatory changes post-pandemic (Savio et al., 2023).

The peak in annual ESG research publications in 2022, shown in Figure 4, correlates with a significant increase in publications since 2020, attributed to the COVID-19 pandemic's impact on ESG aspects.

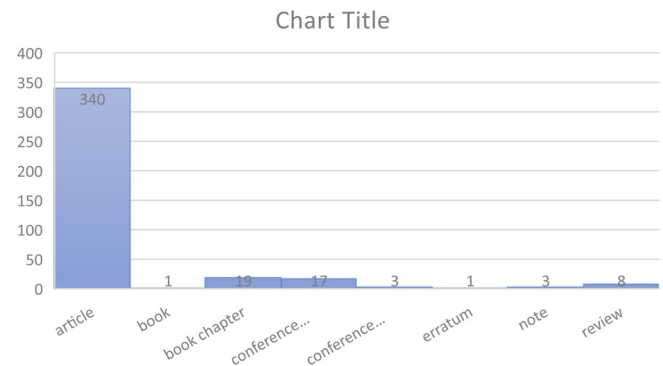


FIGURE 2 Type of documents.

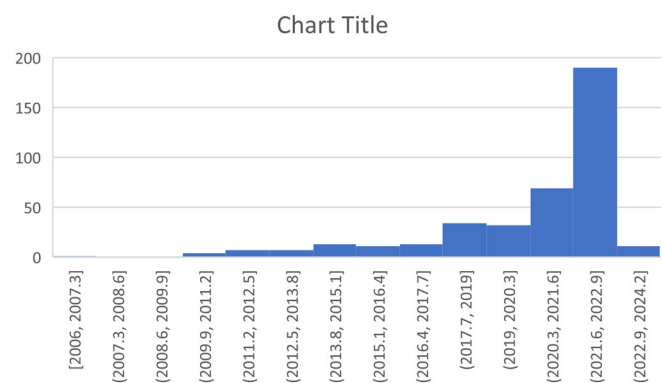


FIGURE 3 Number of papers published over the years.

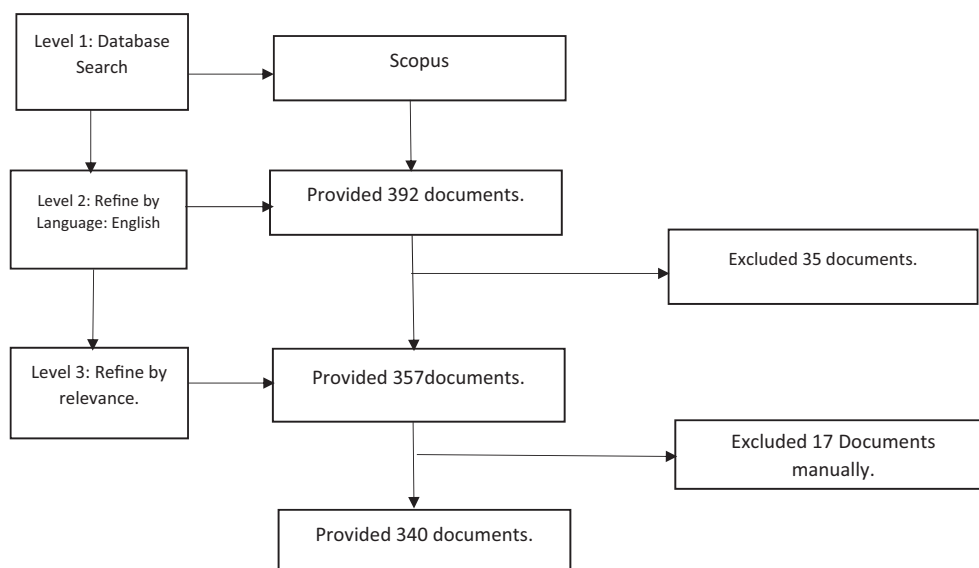
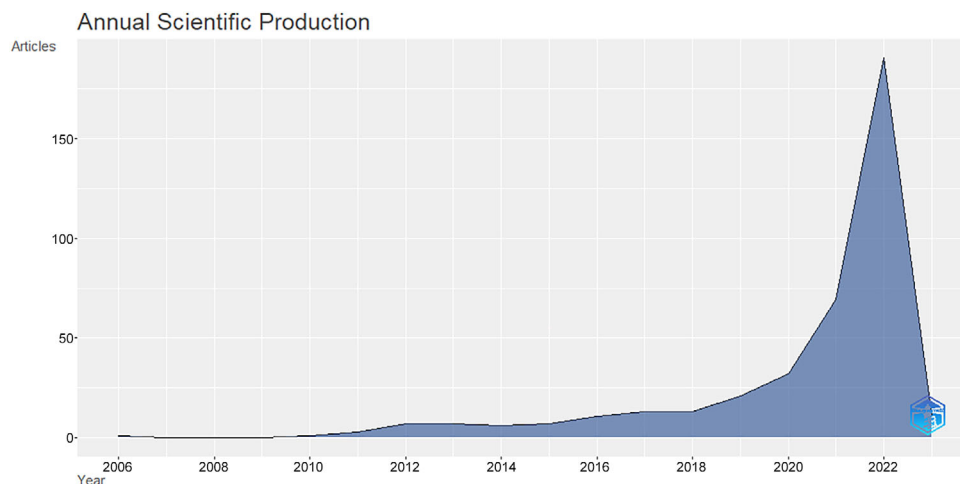


FIGURE 1 Process applied for delimiting literature.

FIGURE 4 Annual scientific production.**TABLE 3** Top ten countries.

Country	Documents	Citations
China	78	326
United States	41	696
Italy	29	342
Germany	25	934
United Kingdom	25	531
Australia	24	518
Spain	24	685
France	20	428
Canada	19	383
Malaysia	17	211

This upward trend suggests a growing appeal of ESG research among academics, practitioners, and regulators post-pandemic (Atkins et al., 2023).

Table 3 lists the top 10 countries by publication count, with China (78), the USA (41), and Italy (29) leading. This reflects the heightened focus on ESG issues in these countries, particularly in China, where ESG compliance is mandatory post-COVID-19 (Hsiao et al., 2022). Other countries listed contribute less, such as the UK, Canada, and Australia, possibly due to the voluntary nature of ESG compliance.

Table 4 presents the top 10 research institutes by publication count, emphasizing a focus on ESG performance issues in Europe and Asia, as well as in the USA. Notably, in Europe, ESG research is greatly affiliated with universities, such as Mendel University in Brno and Brno University of Technology in the Czech Republic, the University of Foggia in Italy, and the University of Extremadura in Spain. In Asia, significant contributions come from Hanyang University in South Korea, the Indian Institute of Technology Madras, and the ABV-Indian Institute of Information Technology and Management in India. In the USA, Pepperdine University is highlighted. These institutions collectively account for 6.12% of the total publications and 13% of the citations, indicating a focused yet substantial contribution to

TABLE 4 Top ten organizations.

Organization	Documents	Citations
Mendelova Univerzita V Brně (Czech Republic)	3	86
Brno University of Technology (Czech Republic)	3	5
University of Foggia (Italy)	2	154
University of Extremadura (Spain)	2	144
Hanyang University (South Korea)	2	106
Indian Institute of Technology Madras (India)	2	59
Abv-Indian Institute of Information Technology and Management (India)	2	59
Pepperdine University (United States)	2	38
University of Macedonia (Greece)	2	28
Macquarie University (Australia)	2	23
Capital University of Economics and Business (China)	2	21

ESG research, motivated by regulatory demands for sustainable development post-COVID-19 (Nair et al., 2021).

Table 5 reveals that only 20 authors have published three or more papers on ESG performance following the COVID-19 outbreak, signifying a fragmentation in research continuity. This observation implies that the remaining contributors in our review have authored no more than two papers from 2020 to 2023. Therefore, this study emphasizes the need for interdisciplinary collaboration to support the growth and influence of ESG research internationally.

Table 6 reveals that the top three journals associated with ESG publications are 'Business Strategy and the Environment,' with 15 papers cited 506 times; 'Corporate Social Responsibility and Environmental Management,' with 14 papers cited by 134 authors; and 'Finance Research Letters,' with 13 papers cited in 230 scholarly works. Overall, Table 6 demonstrates that 38.53% of ESG articles were published in the top 10 journals, accounting for 50.29% of the

TABLE 5 Authors with a minimum of three items.

Author	Documents	Citations
Trenz O.	5	101
Stencl M.	5	101
Al-hiyari A.	4	13
Gholami A.	4	10
Huang W.	4	5
Hřebíček J.	4	62
Kocmanova A.	4	22
Kolsi M.C.	4	13
Sands J.	4	10
Zhang D.	4	30
Zhang J.	4	20
Diaye M.-A.	3	81
Li C.	3	1
Miralles-Quirós J.L.	3	189
Miralles-Quirós M.M.	3	189
Nemecek P.	3	5
Ortas E.	3	163
Oueghlissi R.	3	81
Soukopová J.	3	70
Alvarez I.	3	163

citations. This highlights the critical role of peer-reviewed journals in disseminating ESG research.

4.2 | Network analysis

In this investigation, we utilized VOSviewer software to perform network analyses. This software is capable of creating author and journal maps, as well as keyword distribution maps (Dolhey, 2019; Galletta et al., 2022; Van Eck & Waltman, 2010). To generate a cluster map, the program employs the VOS mapping technique in line with previous bibliometric review studies (Barth et al., 2014; Dolhey, 2019; Galletta et al., 2022; Qiu et al., 2014; Van Eck & Waltman, 2007, 2010; Waaijer et al., 2011; Zanjirchi et al., 2019).

4.2.1 | Keyword co-occurrence

Keyword co-occurrence network analysis, facilitated by the VOSviewer tool, reveals central themes in scholarly work by examining the frequency and proximity of keywords across articles. This approach shows how closely related terms are conceptually linked (Galletta et al., 2022; Laudano et al., 2018). The relatedness of keywords is primarily measured by their co-occurrence within texts (Van Eck & Waltman, 2010). The network map, presented in Figure 5 and detailed in Table 7, illustrates a web of keywords, highlighting 'ESG performance'

as a significant focus, especially regarding the post-COVID-19 era and environmental issues in China.

'ESG performance' stands out in the analysis leading to an in-depth exploration of ESG metrics across six thematic areas: social environmental financial disclosure practices and COVID-19 as shown in Figure 5. The largest nodes particularly within the green and yellow clusters include 'ESG performance' and 'sustainability' indicating their research dominance (Alsayegh et al., 2020; Tarmuji et al., 2016; Velte, 2017; Linnenluecke, 2022; Uyar et al., 2023; Baraibar-Diez et al., 2019; Gillan et al., 2021; Rossi et al., 2021).

These clusters link environmental and CSR efforts with ESG performance, focusing on their financial and economic impacts. The analysis connects sustainable development and stakeholder engagement with sustainability reporting and financial outcomes. It also explores environmental management in commercial banking, suggesting an expansion of focus to include investment and private banking within ESG assessments.

The shift in keyword emphasis from 2006 to January 2023, depicted in Figure 6, mirrors the changing dialog on ESG performance after COVID-19. Earlier studies focused on the Global Reporting Initiative (GRI) for sustainability reporting (Moneva et al., 2006), while more recent research examines the relationship between ESG and financial performance, sustainable development, and environmental challenges (Broadstock et al., 2021; Naciti, 2019).

This analysis not only identifies dominant themes in ESG research but also underscores underexplored areas, calling for further investigation, particularly in response to COVID-19 and ongoing environmental concerns.

This study also contributes to the understanding of ESG performance by highlighting the impact of the COVID-19 pandemic on the theoretical foundations of ESG studies based on reviewing the theoretical choices of the sampled studies. In doing so, we introduce a multi-theoretical framework that integrates key concepts from the resource-based view (RBV) (Barney, 1991), legitimacy theory (Suchman, 1995), institutional theory (DiMaggio & Powell, 1983), and stakeholder theory (Freeman, 1984). These theoretical perspectives are instrumental in comprehending the multifaceted effects of the pandemic on ESG initiatives and their financial implications. Integrating these theories sheds light on the complex interplay between corporate strategy and ESG performance in the wake of the pandemic, as indicated by AlAmosh and Khatib (2023). It offers a comprehensive understanding of how organizations navigate the challenges and opportunities presented by COVID-19, utilizing ESG as a strategic tool for resilience and sustainability.

4.2.2 | Citation analysis

In the fields of accounting and business management, the relevance and impact of research are often assessed through citation analysis, which quantifies the influence of academic papers (De Villiers & Hsiao, 2018; Galletta et al., 2022). A study's high citation count

4.2.3 | Bibliographic coupling analysis

Bibliographic coupling analysis, which assesses the similarity between two documents based on their common references, shows that documents with more shared citations are more closely related (Galletta et al., 2022; Rojas-Lamorena et al., 2022). This relationship is depicted in Figure 8, illustrating the citation networks and highlighting the differences in theoretical approaches to ESG performance before and after COVID-19. The node size in Figure 8 reflects the number of citations, indicating the strength of bibliographic coupling. For instance, articles that are close together in this network share a significant number of references, suggesting a strong thematic relationship (Galletta et al., 2022; Marchiori & Franco, 2020). This analysis focuses on papers cited at least six times.

Table 8 lists the five most-cited studies, showing their bibliographic connectivity. Specifically, Fatemi et al.'s (2018) work, found in Figure 8's yellow cluster, is noted for its strong connections. This study, analyzing data from 11,000 companies across 63 countries, demonstrates that positive ESG performance boosts firm value, whereas

negative performance reduces it. It also highlights the role of ESG disclosure in enhancing positive impacts and lessening negative ones.

Furthermore, Zhao (2018) examined how ESG performance relates to financial success in 365 companies from Brazil, Russia, India, China, and South Africa between 2010 and 2012. It confirms that companies in environmentally sensitive sectors often perform better environmentally and that ESG disclosure affects the link between financial and ESG performance, promoting sustainability management in emerging markets.

Duque-Grisales and Aguilera-Caracuel (2021) analyzed 104 multinational corporations in Latin America from 2011 to 2015, finding a complex relationship between ESG scores and financial performance. Broadstock et al. (2021), in Figure 8's green cluster, investigated how the COVID-19 pandemic impacted ESG performance using China's CSI300 index data, showing that high-ESG portfolios performed better during this time and reduced financial risk.

Velte (2017), located in the purple cluster, studied German firms from 2010 to 2014, finding a positive relationship between ESG performance and firm value as measured by Return on Assets (ROA), though not with market-based valuation indicated by Tobin's Q. This study also suggested that governance is the most influential ESG factor in financial performance, offering crucial insights for businesses, regulators, and scholars on the ESG-financial performance nexus.

TABLE 7 Top ten keywords occurrence.

Rank	Keywords	Occurrences
1	ESG performance	112
2	ESG	94
3	Corporate social responsibility	59
4	Sustainability	58
5	Sustainable development	47
6	Environmental	43
7	Corporate governance	38
8	Financial performance	36
9	Performance assessment	25
10	China	22

4.2.4 | Co-authorship analysis—Country

The examination of the global co-authorship network highlighted a distinct collaboration pattern, mainly among authors from developed nations. Specifically, the United States, China, the United Kingdom, Germany, and France were prominent for their high rate of cross-national co-authorship, suggesting a concentrated authorship within these countries, as demonstrated in Figure 9. This network included authors from 14 different countries.

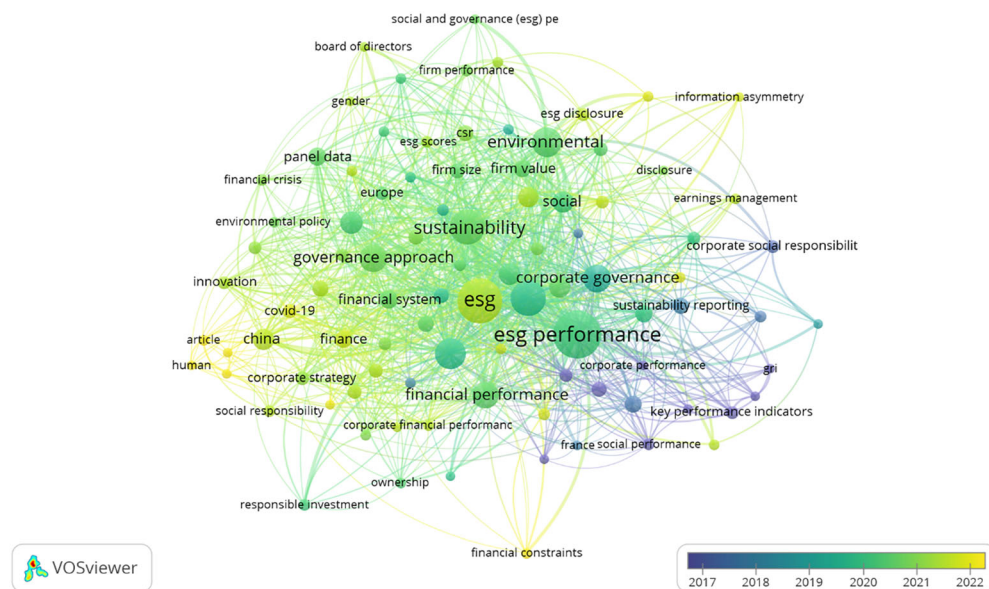
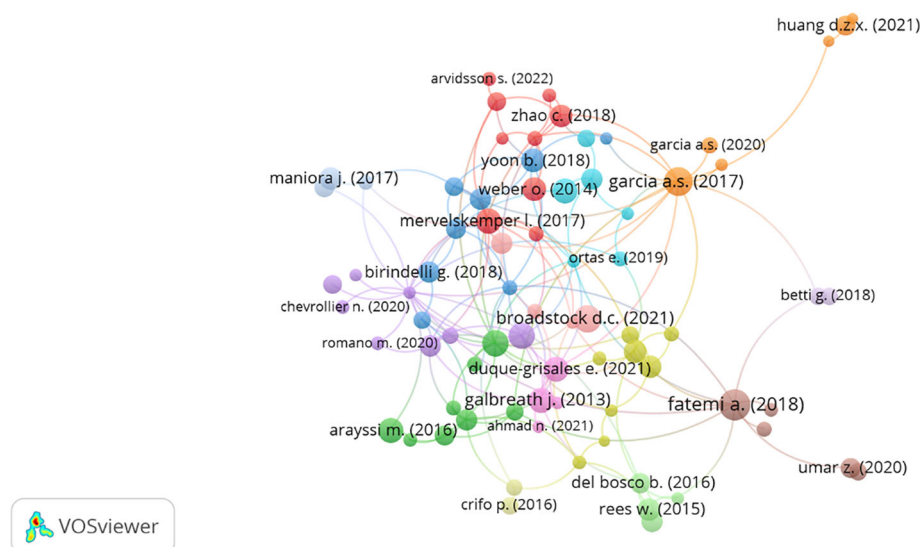


FIGURE 6 Overlay visualization for chronological analysis of keyword search.

TABLE 8 Top five cited articles.

Title	Authors	Citation	Year
ESG performance and firm value: The moderating role of disclosure	Fatemi, A., Glaum, M., & Kaiser, S.	241	2018
Sensitive industries produce better ESG performance: Evidence from emerging markets.	Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J.	184	2017
The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China	Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X.	172	2021
Integrating environmental, social and governance (ESG) disclosure for sustainable development: An Australian study	Lokuwaduge, C. S. D. S., & Heenetigala, K.	139	2017
Does ESG performance have an impact on financial performance? Evidence from Germany	Velte p.	136	2017

FIGURE 7 Citation analysis map.

Conversely, the involvement in international collaborations was notably lower among other developed and developing countries, with Malaysia, the Czech Republic, and South Korea showing reduced participation. This indicates a significant disparity in co-authorship trends between developed and developing countries.

The analysis also indicated that the increasing collaborations between developed and developing countries could be driven by socio-political factors, particularly the global emphasis on environmental issues and sustainable development, heightened by the post-COVID-19 era (Nair et al., 2021). The growing commitment to ESG policies worldwide likely encourages cross-national studies to assess the effectiveness of ESG strategies in enhancing performance and reducing environmental impact (Gerged et al., 2023).

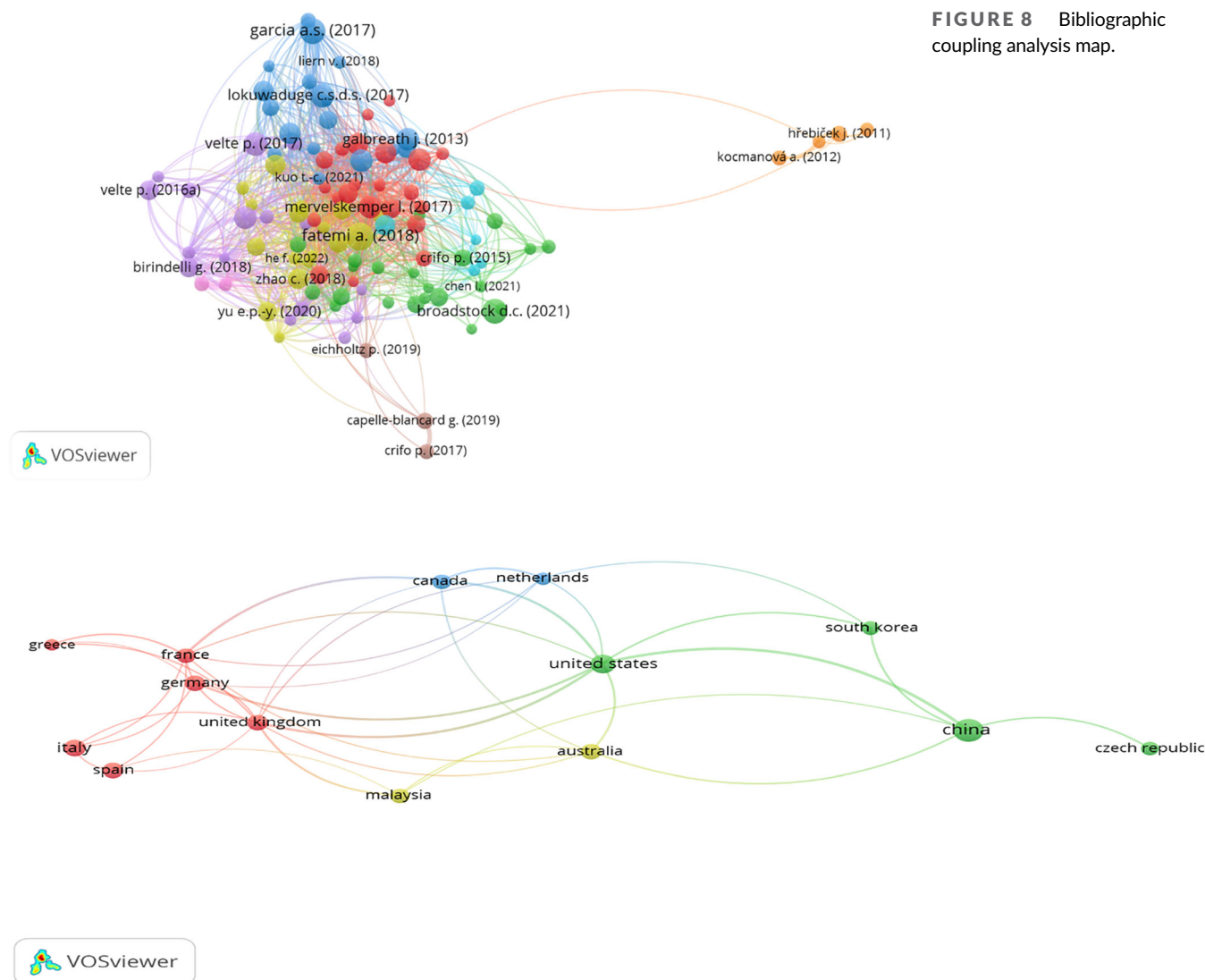
4.2.5 | Co-citations analysis

Co-citation, as Small (1973) introduced, signifies the topical similarity between two documents cited together within a third document. This approach, especially through reference co-citation analysis, plays a crucial role in deciphering the structure and development of academic

fields, as Galletta et al. (2022) discussed. Feng et al. (2017) and Paltrinieri et al. (2023) noted that co-citation analysis reveals patterns in author relationships via their jointly cited works, linking authors in relevant research areas even without direct collaboration.

Figure 10 showcases a co-citation analysis map, organizing works into three color-coded clusters (red, green, and blue) that represent different thematic areas and their interconnections. The blue cluster focuses on seminal research in socially responsible business, featuring studies on firm valuation, investment strategies, and sustainable finance by authors, such as El Ghouli et al. (2011), Scholtens (2014), and Liang and Renneboog (2020). The green cluster covers financial performance and sustainable development, with key contributions by Bassen et al. (2006), Busch et al. (2016), and Brammer et al. (2021). The red cluster, meanwhile, explores contemporary issues, such as firm risk and corporate sustainability reporting, highlighted by Jo and Na (2012) and Ioannou and Serafeim (2017).

Table 9 lists the most-cited papers from the co-citation analysis, illustrating the growing focus on ESG performance, especially post-COVID-19. Foundational studies by Margolis and Walsh (2003) and Orlitzky et al. (2003) linked CSR to financial performance, suggesting CSR enhances a firm's competitive edge. Ioannou and Serafeim (2012)

FIGURE 8 Bibliographic coupling analysis map.**FIGURE 9** Co-authorship analysis—Country.

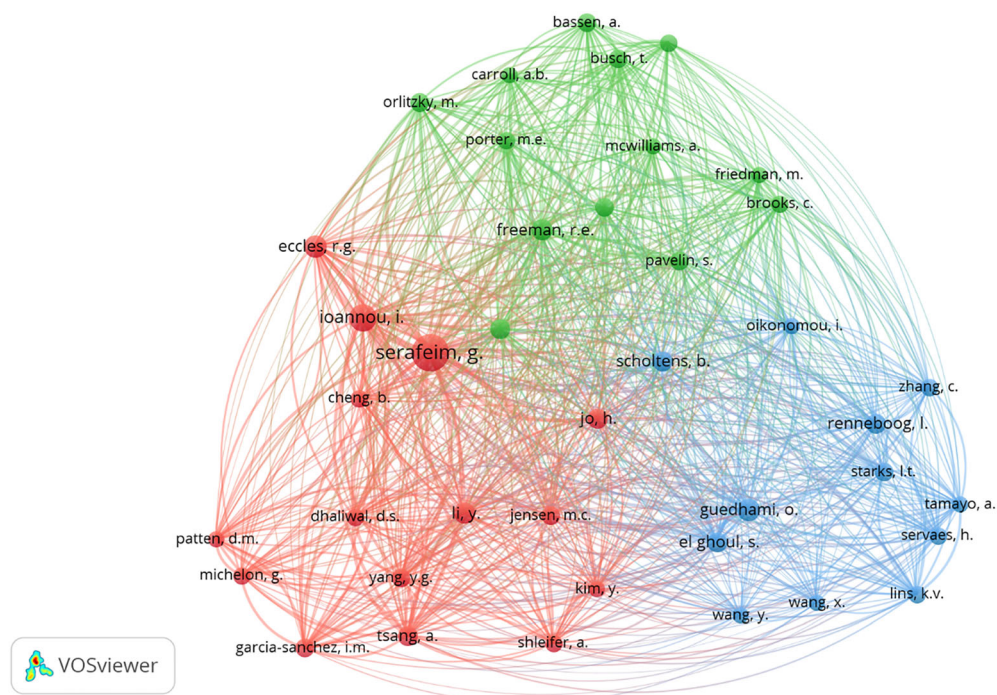
furthered this by analyzing the impact of a corporate social performance (CSP) index on firms across different countries (Table 10).

Cheng et al. (2014) found that favorable CSR performance reduces capital constraints, underlining the value of stakeholder engagement and transparency. Eccles et al. (2014) showed that firms dedicated to sustainability are likely to adopt governance structures that support sustainable practices and disclose more non-financial information, correlating with better long-term market and financial performance. Fatemi et al. (2018) underscored the importance of social and environmental aspects in CSR.

Figure 11 provides a three-field map illustrating the connections among research areas based on authors, keywords, and countries. It highlights significant contributions from institutions in China, the Czech Republic, Australia, and the USA to studying ESG issues. This visual underscores the global scope of academic work in the ESG field, focusing on ESG performance, key performance indicators, sustainability reporting, CSR, corporate governance, environmental performance, and stakeholders theory.

5 | FUTURE ESG RESEARCH AGENDA

The COVID-19 pandemic has unveiled numerous research opportunities, detailed in Table 11. This study outlines a roadmap for future inquiries, suggesting a balanced use of qualitative and quantitative methods, informed by recent post-pandemic ESG research. Future research could explore various dimensions such as shifts in consumer behavior and market trends affecting ESG outcomes (Arvidsson & Dumay, 2022), the effectiveness of ESG regulations (Naeem et al., 2023), the use of social network analysis to pinpoint key influencers in ESG information dissemination (Liu et al., 2023), the impact of digital technologies on ESG metrics (Fang et al., 2023), regional differences in ESG progress (Wang, Lin, et al., 2023; Wang, Pan, et al., 2023; Wang, Raza, et al., 2023), the long-term benefits of ESG investments (Chen, Han, et al., 2023; Chen, Li, et al., 2023), and the connection between female empowerment in stock markets and ESG performance (Aono & Okimoto, 2023). Additionally, this study highlights the importance of investigating the expertise of board members

FIGURE 10 Co-citations
analysis map.**TABLE 9** Bibliographic coupling analysis.

Rank	Document	Total link strength	Direction
1	Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. <i>Global Finance Journal</i> , 38, 45–64.	89	ESG activities and their disclosure on firm value
2	Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. <i>Journal of Cleaner Production</i> , 150, 135–147.	72	Examining environmental, social, and governance on financial performance
3	Duque-Grisales, E., & Aguilera-Caracuel, J. (2021). Environmental, social and governance (ESG) scores and financial performance of multinationals: Moderating effects of geographic international diversification and financial slack. <i>Journal of Business Ethics</i> , 168(2), 315–334.	66	Causality relationship between ESG dimensions and firms' financial performance
4	Broadstock, D. C., Chan, K., Cheng, L. T., & Wang, X. (2021). The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China. <i>Finance research letters</i> , 38, 101,716.	63	Role of ESG performance in the COVID-19 pandemic
5	Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. <i>Journal of Global Responsibility</i> .	62	New CSR indicators for financial performance are required.

in ESG, integrating ESG principles into corporate strategies, and evaluating the influence of ESG engagement on international investments and firms' global strategies.

Crucially, the research directions presented in Table 11 offer critical insights into the evolving field of ESG performance and its implications for various stakeholders. These suggestions aim to bridge significant gaps in our current understanding and respond to possible future trends and challenges that have emerged in the post-pandemic era. For instance, exploring how shifts in consumer preferences and capital market distributions affect ESG performance (Arvidsson & Dumay, 2022) could provide valuable guidance for businesses adapting to changing market conditions. Further, studying the standards

and effectiveness of ESG performance markets (Naeem et al., 2023) could assist policymakers and regulators in crafting more robust regulatory frameworks that enhance ESG reporting transparency and accountability.

The proposed use of social network analysis to identify key influencers and examine patterns of ESG information spread (Liu et al., 2023) underlines the importance of understanding how ESG information influences decision-making. Investigating the relationship between ESG adoption and corporate digitization (Fang et al., 2023) draws attention to how ESG factors are intertwined with broader technological trends that impact business operations. Additionally, exploring how disparities in regional development influence ESG

outcomes (Wang, Lin, et al., 2023, Wang, Pan, et al., 2023, Wang, Raza, et al., 2023) necessitates a thorough examination of the socio-economic factors that dictate ESG performance across various regions.

Collectively, these research pathways are vital for businesses, policymakers, investors, and other stakeholders. They provide deeper insights into the complex interplays between ESG factors, business strategies, and financial outcomes. By advancing these research topics, scholars can contribute to the development of holistic frameworks and strategies that bolster organizational resilience and sustainability amid evolving social, environmental, and regulatory landscapes.

6 | DISCUSSION

The analysis of ESG performance research spanning from 2006 to January 2023 reveals key trends and insights that underscore the growing importance of ESG factors in academic and practical contexts. During this period, 392 articles focused on ESG performance were published, 340 of which were research papers. This reflects a significant increase in academic interest, particularly post-COVID-19, as illustrated in Figures 2 and 3. The sharp rise in publications since 2020, peaking in 2022, highlights the pandemic's impact on ESG considerations and its growing recognition among academics, practitioners, and regulators (Atkins et al., 2023; Savio et al., 2023).

Geographically, the distribution of ESG research (Table 3) identifies China, the USA, and Italy as leaders in ESG publications, reflecting China's mandatory ESG compliance post-COVID-19 and strong academic and regulatory focus in the USA and Italy (Hsiao

et al., 2022). In contrast, countries like the UK, Canada, and Australia have less publication output, likely due to their voluntary ESG compliance frameworks.

Table 4 emphasizes the significant roles of universities in Europe, Asia, and the USA in advancing ESG research. Institutions like Mendel University in Brno, Hanyang University, and Pepperdine University are notable for their contributions to ESG publications and citations, driven by regulatory demands for sustainable development (Nair et al., 2021). However, authorship analysis (Table 5) indicates a fragmentation in research continuity, with only 20 authors publishing three or more papers on ESG performance since the onset of COVID-19. This suggests a need for enhanced interdisciplinary collaboration to bolster the global influence and growth of ESG research.

The role of key journals in disseminating ESG research is highlighted in Table 6. Journals such as 'Business Strategy and the Environment,' 'Corporate Social Responsibility and Environmental Management,' and 'Finance Research Letters' are crucial, publishing a significant percentage of ESG articles and receiving many citations. Network analysis (Section 4.2) identifies central themes and influential papers through keyword co-occurrence (Figure 5, Table 7) and citation analysis (Figure 6, Table 8). Keywords like 'ESG performance' and 'sustainability' are prevalent, particularly in discussions on post-COVID-19 environmental issues in China (Alsayegh et al., 2020; Sheehan et al., 2022). This analysis underscores the integration of environmental management, stakeholder engagement, and financial performance in ESG research.

Citation analysis emphasizes the impact of highly cited works by Fatemi et al. (2018) and Broadstock et al. (2021), exploring ESG performance's influence on firm value and resilience during economic

TABLE 10 Top ten co-cited references.

Id	Cited reference	No. citations	Cluster	Dimension
1	Cheng, B., Ioannou, I., & Serafeim, G. (2014). Corporate social responsibility and access to finance. <i>Strategic Management Journal</i> , 35(1), 1–23.	18	Red	Social Financial
2	Friede, G., Busch, T., & Bassen, A. (2015). ESG and financial performance: aggregated evidence from more than 2000 empirical studies. <i>Journal of sustainable finance & investment</i> , 5(4), 210–233.	14	Green	Social Financial
3	Ioannou, I., & Serafeim, G. (2012). What drives corporate social performance? The role of nation-level institutions. <i>Journal of International Business Studies</i> , 43(9), 834–864.	14	Red	Corporate social performance
4	Velte, P. (2017). Does ESG performance have an impact on financial performance? Evidence from Germany. <i>Journal of Global Responsibility</i> .	13	Red	Environmental Financial
5	Eccles, R. G., Ioannou, I., & Serafeim, G. (2014). The impact of corporate sustainability on organizational processes and performance. <i>Management Science</i> , 60 (11), 2835–2857.	12	Blue	Sustainable development
6	Fatemi, A., Glaum, M., & Kaiser, S. (2018). ESG performance and firm value: The moderating role of disclosure. <i>Global Finance Journal</i> , 38, 45–64.	12	Green	Financial value
7	Margolis, J. D., & Walsh, J. P. (2003). Misery loves companies: Rethinking social initiatives by business. <i>Administrative Science Quarterly</i> , 48(2), 268–305.	12	Red	Social
8	Garcia, A. S., Mendes-Da-Silva, W., & Orsato, R. J. (2017). Sensitive industries produce better ESG performance: Evidence from emerging markets. <i>Journal of Cleaner Production</i> , 150, 135–147.	11	Green	Environmental Financial
9	Jensen, M. C., & Meckling, W. H. (2019). Theory of the firm: Managerial behavior, agency costs, and ownership structure. In <i>Corporate Governance</i> (pp. 77–132).	11	Blue	Governance
10	Orlitzky, M., Schmidt, F. L., & Rynes, S. L. (2003). Corporate social and financial performance: A meta-analysis. <i>Organization Studies</i> , 24(3), 403–441.	11	Red	Social Financial

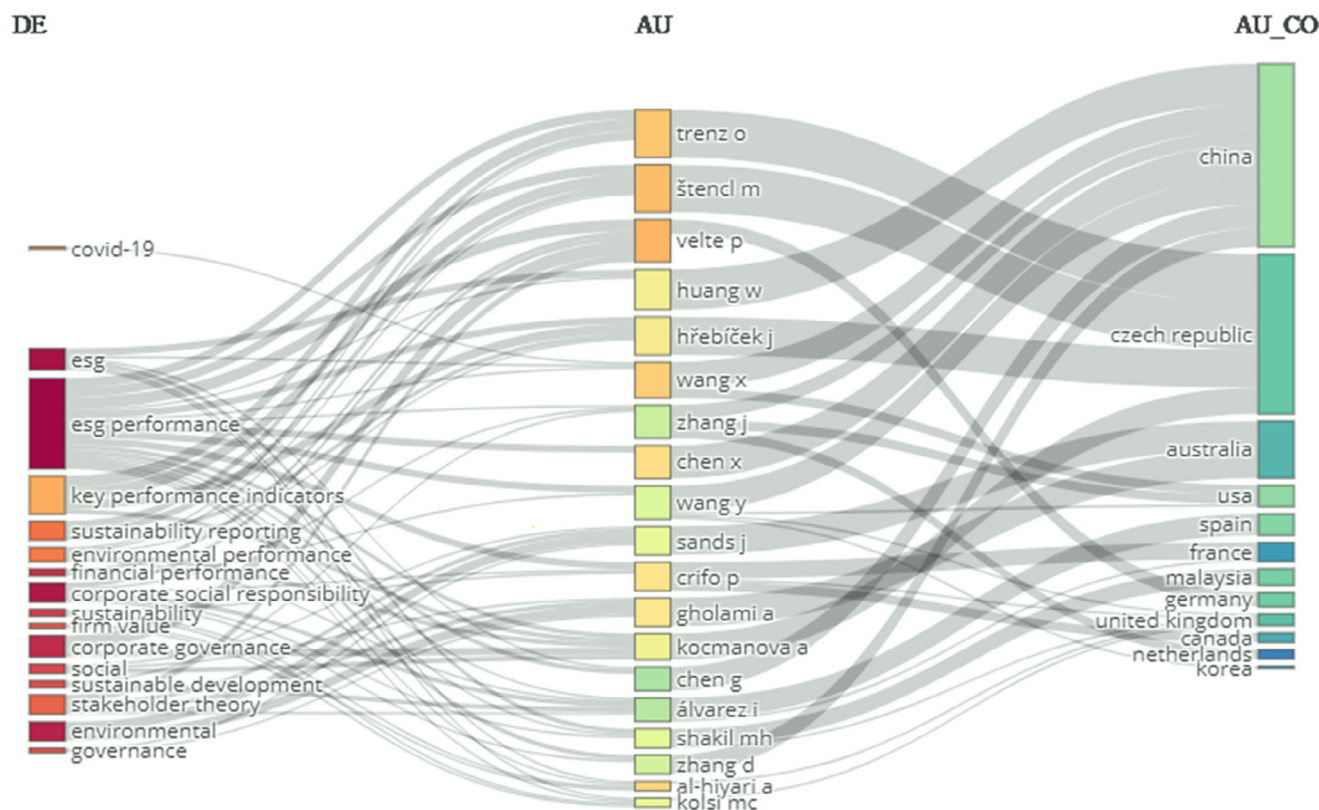


FIGURE 11 Bibliometric analysis of 340 data records—three-fields plot.

downturns. Bibliographic coupling analysis (Figure 8, Table 9) and co-authorship analysis (Figure 9) further illustrate the relationships between key studies and the global collaboration patterns, driven by a focus on sustainable development (Nair et al., 2021). Finally, co-citation analysis (Figure 10, Table 9) and the three-field map (Figure 11) show thematic clusters and connections among authors, keywords, and countries, highlighting the diversity and global scope of ESG research.

This comprehensive analysis presents ESG research as a rapidly evolving field gaining significant traction from global socio-economic changes, especially the COVID-19 pandemic. The increasing volume and geographic diversity of research underscore ESG factors' critical role in shaping sustainable business practices and regulatory frameworks. The considerable contributions from specific countries and institutions reveal diverse approaches within ESG research, while the need for greater interdisciplinary collaboration points to opportunities for further expansion and enrichment of the field. This analysis highlights the significance of ESG considerations in ensuring corporate resilience and sustainability, providing valuable insights for academics, practitioners, and policymakers in navigating post-pandemic challenges and opportunities.

7 | CONCLUSION

Following COVID-19, the interest in ESG performance within academic research has significantly increased. This study applies

bibliometric analysis, using VOSviewer and R, to examine journal articles on ESG performance before and after the pandemic, aiming to deepen understanding of ESG during crises. Through co-authorship, citation analysis, keyword co-occurrence, bibliographic coupling, and co-citation mapping of 340 articles, we dissected the current trends in ESG literature (Friede et al., 2015; Garcia et al., 2017; Lokuwaduge & Heenetigala, 2017; Velte, 2017) and suggested avenues for future ESG research (Aono & Okimoto, 2023; Fang et al., 2023; Liu et al., 2023; Naem et al., 2023; Wang, Lin, et al., 2023; Wang, Pan, et al., 2023; Wang, Raza, et al., 2023).

Our analysis highlighted leading authors, sources, and keywords, suggesting the need for more research on ESG's implications for sustainable development and financial stability. The growing focus on ESG by governments and businesses, particularly in CSR and sustainable development, is evident.

A critical research question emerged: how can companies with minimal governance compliance better incorporate environmental and social factors into their CSR and sustainability efforts? This indicates a gap in theoretical and empirical research on the relationship between ESG policies and firm risk. Network cluster analysis revealed a gap in understanding the risks of not adopting ESG-focused management decisions, especially post-COVID-19 (Chen, Han, et al., 2023; Chen, Li, et al., 2023; He et al., 2022).

Over time, the research shifted from an early focus on environmental performance to a post-pandemic emphasis on innovative ESG strategies. A co-citation analysis traced the field's intellectual heritage, highlighting foundational theories such as the resource-based view,

TABLE 11 Future Research Questions.

Future research questions	Author (s)/year
How do changing consumer preferences drive improvements in ESG performance?	(Arvidsson & Dumay, 2022)
How do changing capital market allocations affect ESG performance?	(Arvidsson & Dumay, 2022)
What will the new dimensions of ESG performance be, including the environmental and social dimensions?	Author's review
What implications does the adoption of ESG performance by firms have on obtaining government credit rationing facilities?	Author's review
What skills will board members need to apply to ESG performance?	Author's review
What will impact firms' business models of ESG performance adoption mandatory?	Author's review
How does changing Foreign Investment affect ESG performance?	Author's review
What are the standards of ESG performance markets to assess the efficiency dynamics of the ESG performance market?	(Naeem et al., 2023)
How can we adopt social network analysis to identify opinion leaders and examine the patterns of ESG-related information diffusion?	(Liu et al., 2023)
What will the impact of ESG performance adoption be on company digitization?	(Fang et al., 2023)
What is the effect of differences in regional development on ESG performance?	(Wang, Lin, et al., 2023, Wang, Pan, et al., 2023, Wang, Raza, et al., 2023)
What are the reasons for the sustainable impact of ESG investment?	(Chen, Han, et al., 2023, Chen, Li, et al., 2023)
How can we examine the stock premiums and ESG performance of companies actively promoting women's activities in stock markets?	(Aono & Okimoto, 2023)

legitimacy, institutional theory, and stakeholder theory, which have informed the study of the pandemic's effect on financial performance (AlAmosh & Khatib, 2023).

The analysis summarized research across corporate sustainability, environmental and social issues, financial performance, company value, governance, and stakeholder engagement, underscoring the influence of management theories on post-pandemic ESG research. It also noted a post-COVID shift in journal publications towards more

ESG-focused studies in management and business, extending the conversation beyond traditional finance and accounting spheres.

The literature is now experiencing a ‘new revolution’, integrating green finance, ESG performance, and green innovation, thereby linking environmental sustainability with financial outcomes. This comparative study of pre- and post-COVID-19 ESG performance enriches the academic discussion and offers practical insights for leaders and policymakers on key ESG indicators for the future. Thus, it paves the way for new interdisciplinary research avenues, reflecting the evolving nature of ESG discourse in academia.

8 | IMPLICATIONS

A major challenge identified by this review study is the need for unified ESG performance metrics, given the current diversity in databases, sources, and methodologies. The study calls for future research to address multidimensional ESG performance measurements, considering factors like government incentives, investment preferences, and inter-firm cooperation. Additionally, it stresses the importance of exploring the impact of regulatory policies and awareness levels on ESG practices, especially during crises.

Likewise, this review sheds light on the implementation of ESG practices in different economic contexts, identifying facilitators and barriers to achieving sustainable development goals. It emphasizes the critical need to adapt ESG models and metrics to reflect post-pandemic realities. The study promotes increased collaboration between researchers from developed and developing nations to thoroughly tackle ESG challenges. Furthermore, it advocates for an enhanced integration of qualitative research alongside quantitative methods, providing more profound insights into ESG performance practices.

Future research should also consider local and international regulatory environments, as these significantly influence innovation and ESG practices (Gerged et al., 2023). The study suggests developing longitudinal and network interaction measurement approaches to better understand the dynamics of ESG implementation and its contribution to sustainable development, particularly in response to crises. Similarly, this study recommends further research covering specific aspects of ESG criteria, such as the determinants and consequences of corporate anti-bribery and corruption commitments (Ghazwani et al., 2024; Salem et al., 2023). Overall, this comprehensive review provides a foundation for future inquiries into ESG performance, encouraging a balanced approach that integrates both developed and emerging economies' perspectives in the post-pandemic era.

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