RESEARCH ARTICLE

Exploring the dynamic landscape of environmental, social, and governance literature by using bibliometric analysis

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Abstract
The incorporation of Environmental, Social and Governance considerations into investment decisions has experienced substantial acceleration in the dynamic landscape of modern finance. In this study, the author explores the dynamic landscape of ESG literature using bibliometric analysis. In conducting the bibliometric analysis of 764 articles for this study, RStudio& VOSviewer software were employed. The authors started by reviewing the ESG domain from 2013 to 2023. Following a thorough review of concerned literature, this paper pinpointed the most influential authors, journals, documents, and countries. Our data revealed a progressive growth in publications for the field of study. Most of the publications are from the United States. The current research focuses on three main aspects: ESG aspects, performance analysis, and science mapping analysis. Further, word cloud analysis of 723 research articles published in the last four years was conducted, for providing future insights.

Keywords: Environmental Social and Governance, ESG indices, Conventional stock market indices, ESG investing, ESG rating, ESG score, financial performance, and bibliometric analysis.

Introduction

The incorporation of Environmental, Social, and Governance (ESG) considerations into investment decisions has accelerated significantly in the dynamic world of modern finance. ESG, which stands for Environmental, Social and Governance, encompasses the essential factors used to assess the sustainability and societal impact of investments in a company or business (Caporale *et al.*, 2022). It is undeniable that the world is affected by numerous problems. There are more opportunities than ever before to invest those benefits to both corporate and private investors. Now it is a trend to invest in those companies which are more responsible toward ESG factors. It began in the United States during the colonial era because of some religious groups refused to invest in the slave trade. Furthermore,

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evangelical protestants were the first to reject to invest in corporate involved gambling, tobacco, or alcohol in the early twentieth century(Tripathi and Kaur, 2020). Later, in 1960s, a new concept known as Socially Responsible Investment (SRI) gained hold and attracted investors. SRI involves evaluating investments not only in context of financial gains but also with a focus on their ethical impact (Ur Rehman *et al.*, 2016). SRI investment places a strong emphasis on selecting firms and industries based on ethical principles. As a result, many stocks and industries are no longer eligible for SRI investment. Consequently, the quantity of assets available for selection may be drastically reduced and limits institutions' ability to optimise return. This limited approach has led to the emergence of ESG, which, unlike traditional investment practise, captures information concerning ESG issues. ESG factors such as carbon emissions, toxic waste treatment, labour conditions, employee relations, corporate governance and energy efficiency affects a company's financial indicators and reputation (Murè*et al.*, 2021). The principle of responsible investment (PRI) provides organizations with a framework to ESG criteria seamlessly into their investment strategies (Rehman *et al.*, 2021). Increasingly, institutional investors, asset managers, financial institutions, and other stakeholders are turning to ESG reports and indices to evaluate and gauge company performance over time in comparison to their peers (Huber *et al.*, 2017). The available evidence indicates a substantial

and expanding market interest in the transparency of companies' ESG performance and practices (Eccles *et al*., 2011). The increasing embrace of ESG investing has resulted in a heightened demand for ESG indices. These indices function as benchmark measures for investors, enabling them to track their investments performance(Huber *et al*., 2017). Many studies thorough light on "The performance of ESG indices against the conventional stock indices". The transmission of information and volatility spillover between ESG and traditional stock market index returns is observed across various stock markets (Balcilar *et al*., 2017). A noteworthy integration was identified in the returns of ESG indices and conventional indices, signifying an exchange of information between these investment options (Dai, 2021; Jain *et al*., 2019; Roy, 2019; Sudha, 2015; Tripathi & Kaur, 2020). Jain *et al*., (2019) provide support for the notion that ESG indices exhibit superior risk-adjusted return performance compared to conventional stock market indices.

Numerous literature reviews have compiled the results in light of the subject's growing importance in investigating the intricate dynamics between ESG indices and conventional stock market indices. A cluster of studies like (Balcilar *et al*., 2017; Jain *et al*., 2019; Sahoo & Kumar, 2022)delves into the exploration of volatility spillover and the transmission of information between ESG and conventional stock market indices returns across diverse stock markets. Balcilar *et al*., (2017) reveals a significant one-way transmission of volatility from conventional indices to ESG equity indices across various regions like North America, Europe, and Asia-Pacific. A notable integration was detected between returns of ESG indices and conventional indices, indicating an exchange of information between these investment options.While some other, (Antonakakis *et al*., 2013; GC, 2016; Liu & Pan, 1997; Luqman *et al*., 2020; Nath Mukherjee & Mishra, 2010; Sarwar & Khan, 2019), study delves into the exploration of volatility spillover and the transmission of information across the global stock markets. Mean returns and volatility spillover originating from the U.S. and Japanese markets to various Asian markets, underscoring the substantial influence of these pivotal markets explored by (Liu & Pan, 1997). Tripathi & Kaur, (2020) undertake a comprehensive comparative assessment of risk-adjusted measures and conditional volatility for SRI and conventional indices within BRICS countries, yielding illuminating insights into their performance amidst varying market circumstances. Out of several studies, (Dai, 2021; Roy, 2019; Sudha, 2015; Tripathi & Kaur, 2020) support that ESG indices have better risk adjusted return performance than conventional stock market indices whereas (Hook, 2022; Plastun*et al*., 2021; Schröder, 2007), exhibit no significant difference between ESG indices and conventional stock market indices in context of risk and return adjusted performance.(Agustin, 2022; Jain *et al*., 2019; Rehman *et al*., 2021; Sahoo & Kumar, 2022; Caporale *et*

al. 2022), studies analyze whether there is a co-integration persist between ESG indices returns and conventional stock market returns. Significant integration found between ESG indices return and Conventional stock market return (Jain *et al*., 2019; Rehman *et al*., 2021)Whereas (Caporale *et al*., 2022; Sahoo & Kumar, 2022) revealed no ESG indices return is co-integrated with Conventional stock market indices return.

This study is distinct from the existing research in the various ways:

(1) the study conducts an extensive review of literature on ESG indices performance against Benchmark indices performance.ESG serves as a yard stick against which we can measure benchmark indices.

(2) Instead of conducting a Conventional literature review, as was done in earlier studies, we employed citation and keyword analysis to comprehensively survey the existing literature, ensuring a thorough exploration of the subject matter. The systematic review identified ESG indices performed better than Benchmark indices, which is discussed in the study.

(3) Furthermore, very less research had done earlier at global level where both developed and developing countries take in to consideration. Research done earlier either takes only developing countries or developed countries.

The existing literature made an effort to analyze the ESG indices performance against the conventional stock market indices. Even though bibliometric research on ESG indices has only been studied in a few cases (Ellili, 2022; Galletta *et al*., 2022; Khan, 2022; Liao *et al*., 2021; Senadheera *et al*., 2022; Yadav and Saini, 2023), this study must give readers a thorough understanding of the ESG indices from the perspectives of Investors and Companies, particularly in ESG investing, ESG rating, and ESG score.

This study makes an effort to summarize the key points of previous research on various aspects of ESG. We conducted a bibliometric citation analysis to encapsulate the progress and research trends of the literature, along with a systematic review to discern the major aspects explaining ESG. Further, the synthesis of the literature performed apprises to acknowledge the following research questions (Figure 1):

RQ1: What has been the pattern of publication and contribution in the area of ESG?

RQ2: To find the most influential Journals in the domain, along with the most influential authors and countries.

RQ3: How is the current ESG literature organized intellectually and mapped?

RQ4: What is the ESG fields' upcoming and promising topics, and where future research might go?

The remaining paper is marshaled as follows: Section 2 explains the data search, data extraction, and analysis methodology, section 3 presents the key findings of bibliometric analysis based on publication trends and citation analysis, and section 4 covers the science mapping

analysis ("co-citation analysis, co-author analysis, and co-occurrence analysis"), section 5 suggests a future research direction based on the review, and section 6 brings the investigation to a close.

Research Methodology

Data collection

First, we selected the most popular academic database, Scopus, for data collection to compile an overview of the state of the ESG research field at the moment. According to (Norris &Oppenheim, 2007), Scopus, which has a 60 percent greater coverage than the Web of Science, is the largest database of academic articles (Comerio& Strozzi, 2019). As a result, we chose to use Scopus for this study. Second, a variety of keyword combinations are used in a literature search. The primary search terms consist of "Environmental, Social and Governance" OR "ESG indices" OR "ESG investing" OR "ESG ratings" OR "ESG score" was placed. These search terms were put together using the "or" notation. From the initial search, we attained 2,885 documents. After applying the first operation of the year by the selection we took the documents from the year 2013 to 2023 and got 2,825 documents. This study limited to "business, management & accounting, Economics, Econometrics and Finance", we reached 1,935 documents. The document was also restricted to articles only, we received 1,598 documents. Thereafter we apply Keyword criteria and include following keywords in our search string process: ESG, ESG performance, ESG investing, ESG rating, ESG score, ESG discloser, Sustainable reporting, Sustainable investing, Environmental, Social and Governance, ESG investments then, we reached to 780 documents. We include only Journal articles and found 778 documents. Only English language articles were selected. The articles in the press were not involved in the study, i.e., only final papers are selected, and finally, we reached 764 documents. We investigate the subject of ESG using bibliometric analysis. Bibliometric analysis is the process of using numerical tools to analyze bibliographic data (Broadus, 1987). This bibliometric analysis thoroughly covers all previous ESG research. The resources are mapped and clustered using bibliometric data using an analysis tool called "VOSviewer." "VOS" is an acronym for "visualization of similarities." Due to this, the majority of bibliometric studies have used VOSviewer to create maps that show relationships between related search documents visually.

The bibliometric study is based on systematic bibliographical analysis, following a sequence of five steps as shown in Flowchart 1.

Methods and tools of Analysis

To attain answer to the four research questions, we had employed various tools and techniques.

Firstly, to know the development of ESG publications and their contribution to sustainable finance and corporate
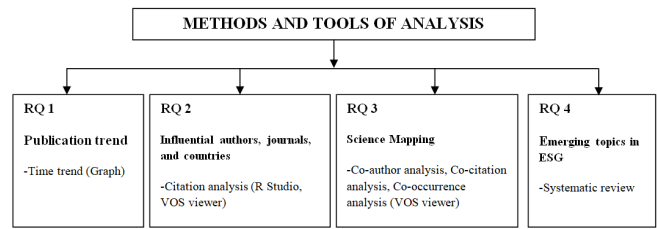
Figure 1: Methods and tools used for analysis
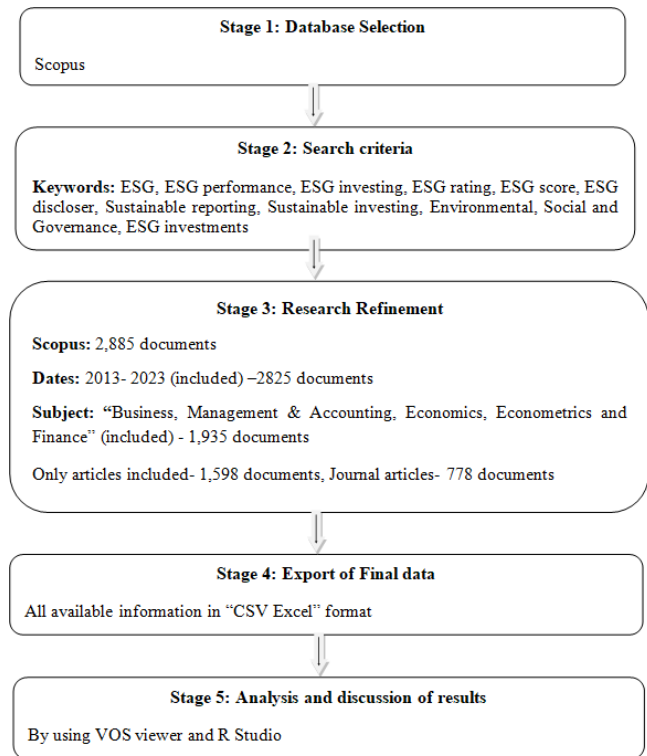
Flowchart 1: Systematic bibliographical analysis

practices, publication trend will be formed. By applying citation analysis, RQ2 will be able to identify the most influential authors, journals, documents, and countries. To know the intellectual structure of ESG, science mapping analysis will be performed by using VOSviewer. RStudio will be used to know for the emerging topics related to ESG.

Results and Discussion

To achieve the goal, we used the adaptable R programming language and the bibliometric method, which is suitable for this study because it can handle large amounts of bibliographic data (Ramos & Hassan, 2021). For this dataset, we specifically employed the Bibliometric package for R (Aria & Cuccurullo, 2017). We also created the networks and their clusters using the well-known network drawing program VOSviewer (Van Eck & Waltman, 2010).

Performance Analysis

The performance analysis looks at the contributions made to a certain research field by different individuals, organizations,

Table 1: of Publications from 2013-2023, its citation and authorship pattern

Year	N	TC	SA Article	CA Article	NCA	H index	G index
2013	2	61	0	2	4	2	2
2014	3	57	1	2	6	3	3
2015	9	449	3	6	20	6	9
2016	10	794	3	7	24	9	10
2017	6	852	2	4	11	6	6
2018	17	1378	3	14	38	12	17
2019	25	1282	8	17	58	19	25
2020	57	2400	10	47	159	29	48
2021	94	3585	11	83	260	30	58
2022	221	2666	26	195	615	28	42
2023	326	859	33	293	969	14	20

Figure 2: Trend chart of total citation and year wise publication

journals, and countries. Performance evaluation is used to identify the most influential publications, countries, authors and journals as well as to identify the broad patterns in the growth of the discipline.

(a) Publication pattern in the field of ESG

The focus of our first research question (RQ1) is to ascertain the development of ESG publications and their contribution to sustainable finance and corporate practices. The ESG field's yearly publication trend is shown in Table 1, which demonstrates that publication on the topic has grown steadily over time. The subject has become more relevant as it offers an abundance of prospects for investments that yield advantages for both corporate entities and individual investors. The table displays the trend in ESG publication, structure of citations, and pattern of authorship (number of contributing authors, articles with a single author, and articles with multiple authors) for articles published between 2013 and 2023.

- *Publication trend, citation structure, authorship pattern*

In the aforementioned Table 1, N stands for Number of Publications or Total Article in a specific year, TC for Total Citations, SA for Sole Authorship, CA for Co-Authorship and NCA for Number of Contributing Authors in various years.

Figure 2, shows the growth of published articles from 2013-2023. The graph shows an upward trend in the total number of citations and cumulative publications each year.

(b) Citation analysis

- *Most influential authors*

We can better understand specific researchers who have made a significant contribution to the field of ESG by studying the most influential authors in the field. The most influential author who have contributed to "ESG" are listed in Table 2. The most influential author in the field is Buallay, A. who has 10 publications and 262 citations to his work. Out of his 10 articles, 8 articles have received 10 citations each, and his total of 10 articles has been cited at least 100 times. Since 2017, **Buallay, A.** has been publishing articles but he started working on ESG after 2019. His first article related to ESG was published in "Management Of Environmental
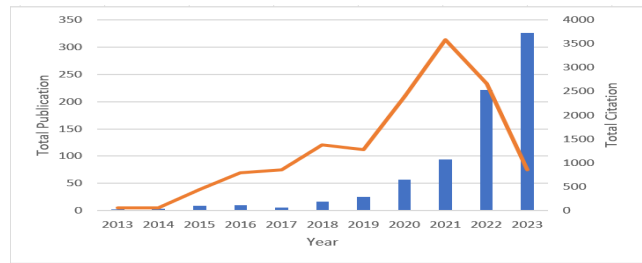
Table 2: Most influential authors

Author	Prev. year start	TC	N	H index	G index	M index
Buallaya, A.	2019	265	10	8	10	1.600
Hussainey, K.	2022	119	5	4	5	2.000
Karaman, A.S.	2020	165	5	3	5	0.750
Uyar, A.	2020	165	5	3	5	0.750
EL Khoury, R.	2021	103	6	5	6	1.667
Nasrallah, N.	2022	82	5	4	5	2.000
Barros, V.	2022	41	5	3	5	1.500
Khatib, S.F.A.	2022	40	7	3	6	1.500
AL. Amosh, H.	2022	32	6	2	5	1.000
Li, Y.	2022	12	5	2	3	1.000

Table 3: Most influential journals

Source	Pub. Year	TC	N	H	G	M	CS	SJR	SNIP	IF	Q-Score
Business Strategy and the Environment	2016	1874	45	20	43	2.500	21.1	2.870	2.754	10.801	1
Journal of Business Ethics	2016	1321	15	10	15	1.250	10.8	2.590	2.976	6.331	1
Corporate Social Responsibility and Environmental Management	2018	979	46	15	31	2.500	15.4	2.134	2.393	8.464	1
Finance Research Letters	2020	881	48	12	29	3.000	10.5	2.231	2.670	9.848	1
Journal of Sustainable Finance and Investment	2014	443	33	12	20	1.200	8.9	0.897	1.564	0.642	1
Journal of Cleaner Production	2017	360	16	8	16	1.143	18.4	1.981	2.379	11.072	1
Journal of Asset Management	2015	271	11	6	11	0.667	3.6	0.482	0.945	3.070	3
Journal of Portfolio Management	2020	191	17	7	13	1.750	2.0	0.688	1.349	1.530	3
International Review of Financial Analysis	2021	160	15	6	12	2.000	8.7	1.881	2.373	8.235	1
Journal of Risk and Financial Management	2021	44	12	4	6	1.330	3.7	0.258	0.476	2.820	3

Quality: An International Journal" and titled "Is Sustainability Reporting (ESG) Associated With Performance? Evidence From The European Banking Sector" and has been cited 217 times. His most recent article, "Sustainability Reporting And Energy Sectorial Performance: Developed And Emerging Economies", was also published in International Journal of Energy Sector Management and has so far accumulated 4 citations. In the majority of his articles, he linked the sustainability reporting with the bank performance and firm performance.

- *Most influential journals*

Table 3 listed the journals with the highest number of articles published in the ESGalong with their citation counts. The journal with the most citations in the field is Business Strategy And The Environment, which has contributed 45 articles on the subject and has been cited 1,874 times globally and 1,929 times locally. In 2016, it first began to publish articles. The H-index of the journal reveals that it has published at least 20 papers, each of which has received at least 20 citations

Table 4: Most influential countries

Country Name	N	TC	Avg. AC	NSP	SCP	MCP	Freq.	MCP Ratio
USA	69	1934	28.00	220	53	16	0.090	0.232
Italy	70	1543	22.00	229	56	14	0.092	0.200
United Kingdom	49	1463	29.90	126	27	22	0.064	0.449
Germany	37	1146	31.00	97	29	8	0.048	0.216
Australia	27	814	30.10	76	22	5	0.035	0.185
China	90	772	8.60	290	70	20	0.118	0.222
France	22	518	23.50	68	10	12	0.029	0.545
Malaysia	25	324	13.00	87	10	15	0.033	0.600
Canada	22	317	14.40	72	17	5	0.029	0.227
India	41	253	6.20	128	39	2	0.054	0.049

and its G-index reveals that a total of 43 articles have been cited at least 1849 times. The Impact Factor is also excellent, which is greater than 10. The SCImago Journal Rank (SJR), which is 2.870, is the second highest of all journals and also this journal's Source Normalized Impact per paper is 2.754, which is also the second highest of all. Following it are three journals with articles that have each been cited more than 800 times: "Journal of Business Ethics", "Corporate Social Responsibility and Environmental Management", and "Finance Research Letters". The most cited paper in this journal is "Do environmental, social, and governance activities improve corporate financial performance?"by, Xie *et al.*, (2019) which is also one of the highly influential papers in ESG domain. The top five journals as presented in Table 3 have published 24.3% of total publication in Scopus, respectively.

Here, in the above table, TC stands for total citations for each individual source; N represents each journal's overall number of publications; LC stands for local citations that a journal has received; H stands for the h-index, G for the g-index, and M for the m-index. The cite score for each journal is CS; SJR stands for "SCImago Journal Rank", SNIP "Source Normalized Impact per Paper", and IF for the journal's Impact Factor.

- *Most influential countries*

Table 4 listed the most influential contributing countries to the ESG field. The United States holds the most significant global influence among nations. The 69 articles written by American authors received a total of 2,934 citations, with an average of 28 citations per article. If we look at the USA's production of articles from 2013 to 2023, it had the highest frequency of production (0.090) and also demonstrated a trend towards growth. It only produces 1 articles of the scientific content in 2015, but by 2023, that number had increased to 220. Among all nations, the China is the only one with the largest Single Country Publications (SCP) at 70. Then comes the Italy, United Kingdom, Germany and Australia whose documents have all been cited more than 800 times combined. The top three nation authors i.e., from USA, Italy and UK contributed 41.7% of total articles written by top most 10 nation authors. On the basis of citation, Germany has average article citation 31, followed by Australia, 30.10, and

UK, 29.90. Higher citation per article shows that Australia, Germany and UK are more impactful than others.

In the aforementioned table, N stands for the total number of articles produced by each nation, TC for the total number of citations of each nation's articles, and Avg. AC for average article citations. Each nation's NSP stands for its total number of scientific productions, while SCP stands for Single Country Publications and MCP Ratio for Multiple Country Publications Ratio.

Science Mapping Analyses ("Co-citation, Co-author, and Co-occurrence analysis")

Co-citation analysis of authors

Figure 3 displays the network of influential authors' co-citations. Each author's article has received a certain number of citations, represented by the size of the bubbles. The co-citations

between the two authors are also represented by the strength of the lines that connect the two bubbles (Leung *et al.*, 2017). The cluster with which the article is associated is indicated by the bubble color. Analyzing all 35,022 article citations is all but impossible. To select the most influential works, McCain (1990) advises using a cut-off. A minimum of 50 citations for an author is required to meet the qualification standards. 212authors have met the criteria. 3 clusters are shown in Figure 3 Red, Green, and Blue. The literature on ESG has been used to categorize them.

The first cluster (red) with 88 items denotes the clubbing of authors who have focused solely on ESG performance, Sustainability reporting, ESG discloser and its impact on firm market financial and operation performance.

The second cluster (green), which comprises 85items, is made up of writers who have written about the adoption ESG criteria in investment decision. Among the well-known papers in this cluster are those on the usage and effects of ESG news on stock price(Serafeim, G.),Does ESG performance/score of enterprises promotes corporate green technology innovation or not.

The third cluster (Blue) with 39 items, has recommended the clubbing of authors who have explored ESG contribution toward sustainable development and better financial performance. Among various paper in this cluster Busch *et al.*, (2016)investigated the impact of financial markets on sustainable development, with a specific focus on ESG factors.(Eccles &Stroehle, 2018) explored How ESG performance can contribute to sustainable development.

Co-author analysis of countries

Figure 4 depicts international cooperation between different developed and developing countries. The visualization map's node area and font size are determined by each country's weight value, and the thickness of the line connecting any two countries indicates how well those
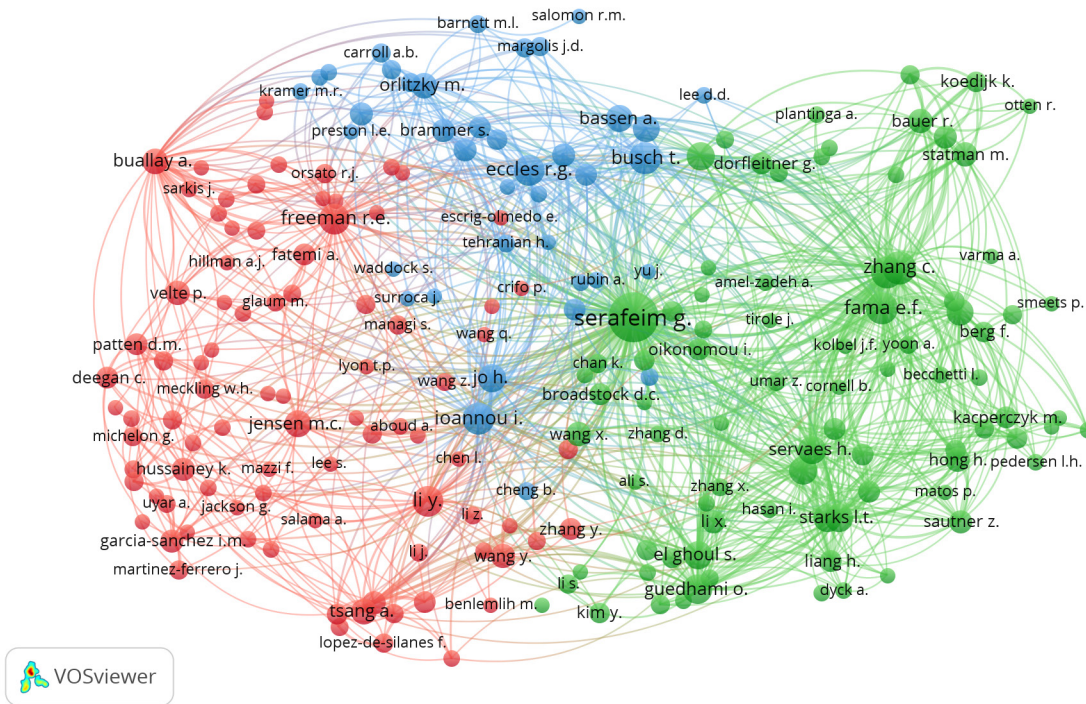
Figure 3: Analysis of the co-citation network for the most-cited articles
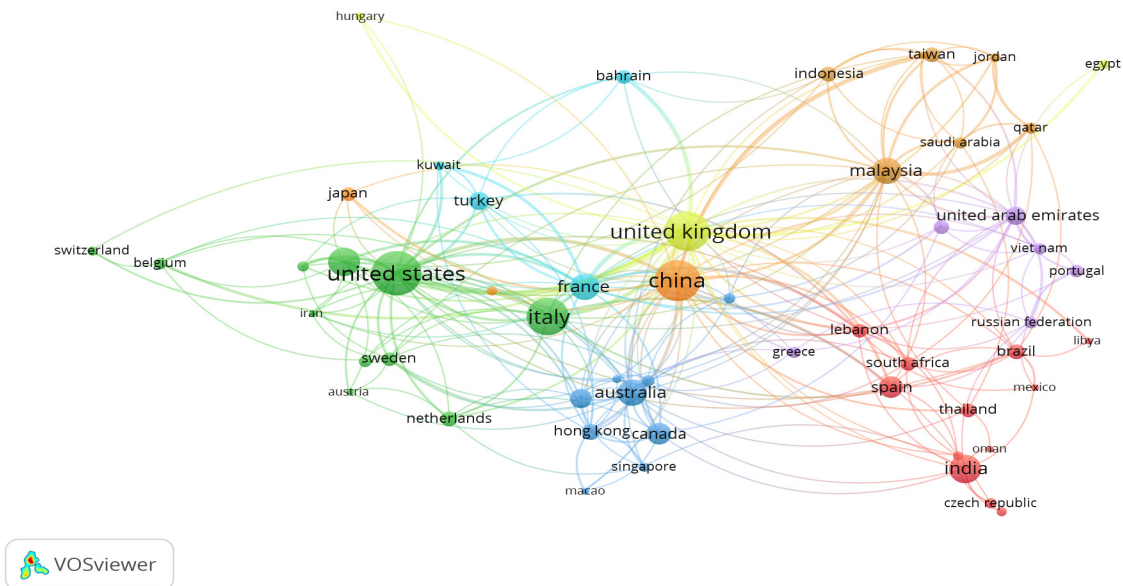
Figure 4: Country co-authorship cluster analysis

countries collaborate. The most influential countries can be determined by looking at the larger nodes, as shown in the figure; the United Kingdom is represented by the yellow node, which has 96documents and a total link strength of 105, followed by United States (Green node), which has 117 documents and a link strength of 74, the China (Orange node), which has 104 documents and a link strength of 56, France(Sky blue node), which has 43 documents and a
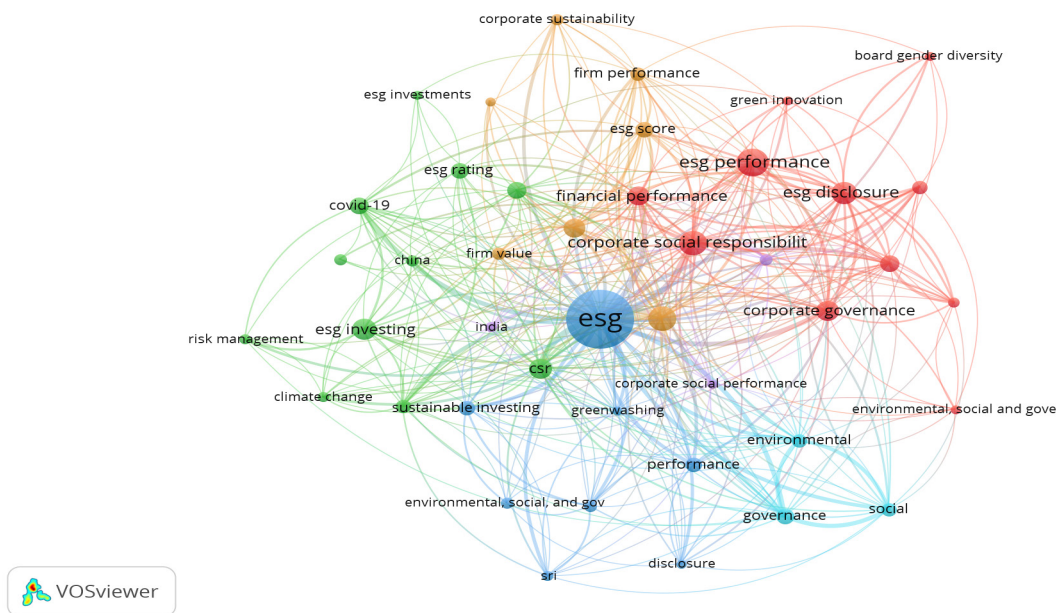
Figure 5: Cluster analysis of keyword co-occurrence

link strength of 50, It is also important to note the growing cooperation between developed and developing nations to generate scientific data for research on ESG indices performance for the sake of domestic investors, foreign institutional investors and companies.

Co-occurrence analysis of keywords

a keyword co-occurrence cluster was produced using the VOSviewer software. A co-occurrence analysis was carried out on the 43 keywords that were chosen from the 1815 keywords that had a frequency of more than 10, as depicted in Figure 5.

It can be seen that the research theme of ESG in financial sector has roughly formed four clusters in the above figure. The clusters were analyzed as follows:

- *Cluster 1(Red)*

Sustainable Business Nexus: ESG, Governance, and Performance.

The cluster with 11 items gathered publications with keywords focusing on corporate governance, ESG discloser, ESG performance, financial performance and sustainable development.

- *Cluster 2(Green)*

Covid-19 and climate change impact on ESG rating, ESG investing and Sustainable Finance.

It contains 11 items and the major keywords identified in this cluster showed the effect of Covid-19 and climate change on ESG rating, ESG investing and Sustainable Finance. This involves examining the financial performance of a set of sustainable investment funds, assessing factors

such as returns, volatility, and contagion risk amid the financial crisis sparked by the COVID-19 pandemic.

- *Cluster 3(Blue)*

ESG Disclosure: Navigating Greenwashing for Sustainable Investment Performance.

This cluster includes 8 items and it mainly includes publications focusing on Discloser, ESG, Greenwashing, performance, socially responsible investment, sustainable investing. The rapid development of ESG fund begins novel and innovative solutions for sustainable and responsible investing. Therefore, ESG in financial and wealth has wide relevance.

- *Cluster 4(Orange)*

Sustainability Metrics: ESG Scores, Firm Performance, and Value.

It has 7 keywords including corporate sustainability, ESG score, firm performance, firm value, materiality, sustainability, sustainability reporting. The keywords included in this cluster showed that whether ESG score influence the firm value & firm performance or not.

Research Prospects for Future

Even though this study gathers all the ESG research from the preceding 10 years, further research is still needed because there are countless other avenues for future study that researchers might take. Finding new and exciting research areas in ESG in context of sustainable finance and corporate practices is the goal of our fourth research question (RQ4). To promote more study in this area, we created a word cloud each year that concentrated on current publications

Figure 6: Visual depiction of last 4 years (2019-2023) textual data using word cloud

published in the previous four years in the fields of ESG (2019-2023). To consider strengthening the clusters with the most prospective growth, the study aims to identify existing difficulties that current research may take into account. Figure 6 presents the analysis conclusions and largely focuses on ESG approach towards sustainable development.

The future of ESG and sustainable development is set to play a crucial role for both businesses and research. As the world increasingly directs its attention to tackling pressing environmental and societal issues, ESG criteria emerge as a crucial instrument for assessing companies' commitment to sustainable practices. This convergence offers a fertile ground for research, providing opportunities to explore the changing dynamics of corporate responsibility, investor preferences, and the effects of ESG integration on financial performance. As businesses increasingly realize the strategic significance of aligning with sustainable development goals, ongoing research is poised to uncover detailed insights into the factors contributing to positive environmental and social impacts. The future research agenda in this field has the potential to influence transformative practices, shape policy discussions, and contribute to a more sustainable and responsible global business environment.

The rise in the number of research articles over time indicates that ESG and CSR have garnered increasing interest within academia. As global concerns grow regarding environmental sustainability, social equity, and ethical governance, the incorporation of ESG and CSR principles becomes increasingly crucial for organizations. Investigating the evolving landscape of ESG and CSR in research provides an opportunity to comprehend how businesses can effectively contribute to sustainable development while ensuring long-term financial *via*bility.

The outcome also recommended exploring the influence of ESG not only on investors and FII's but also on multidisciplinary industries to be studied. Industries worldwide are increasingly recognizing the impact of ESG considerations on their performance, risk management, and stakeholder relations. Future research can delve into how various industrial sectors integrate ESG principles into their operations, assessing the challenges, opportunities, and best practices that emerge.

Conclusion

This study offers the first thorough overview of ESG indices and conventional stock market indices articles written between 2013 and 2023. The authors examine four research questions using bibliometric-based analysis to provide an overall retrospective of ESG.

Our RQ1 aimed to analyze ESG publication trends in the Financial and wealth sector. An ongoing increase in publications has been indicated by the performance analysis. By 2023, ESG had accumulated 326 articles from the 2 articles that were published in 2013. Additionally, the number of authors has increased from 4 in 2013 to 969 by 2023. Additionally, from 61 citations in 2013 to 859 citations in 2023, shows that popularity of ESG and its influence increased. These figures thus show the impressive growth in the number of articles, authors, and overall citations.

Our RQ2 aimed to demonstrate the influence of ESG publications. With 10 articles and a total of 265 citations, Buallay, A. is the most influential author, followed by Hussainey, K. with119 citations, Karaman, A.S.with165 citations, and Kuzey & Uyar, 2017 with165 citations. With 69 articles that have been cited 1934 times in total, the USA is the most influential country, followed by Italy (70 articles with 1543 citations) and United Kingdom (49 articles and 1463 citations). Business Strategy and the Environment is the most influential journal, with 45 articles and a total of 1874 citations. Journal of Business Ethics is the second-most influential journal, with 15 articles and a total of 1321 citations.

Our RQ3 aimed to clarify the intellectual structure and mapping of ESG. Co-author analysis, co-citation analysis, and co-occurrence analysis are all carried out with the aid of VOSviewer. Author co-citation analysis suggests the formation of 3 clusters. These clusters have been categorized based on their analysis of the literature surrounding ESG in financial sector by each author. The first cluster's authors concentrated on ESG performance, Sustainability reporting, ESG discloser and its impact on financial performance. The second cluster's authors gathered their articles on adoption ESG criteria in investment decision and the final cluster's authors discussed ESG contribution towards sustainable development and better financial performance. An analysis of co-authorship patterns within the country indicates a rising trend of collaboration between advanced nations and less developed countries. This collaborative effort is directed towards generating scientific data to explore the impact of ESG on financial performance and their contribution toward sustainable development. Finally, Co-occurrence of keyword analysis suggests the formation of 6 clusters. The major 4 clusters were named; Sustainable Business Nexus: ESG, Governance, and Performance; Covid-19 and climate change impact on ESG rating, ESG investing and Sustainable Finance; ESG Disclosure: Navigating Green-washing for Sustainable Investment Performance; and Sustainability Metrics: ESG Scores, Firm Performance, and Value.

Our RQ4 aimed to advance new research in ESG field. Using a systematic review, our study identified the hottest trending topics including Sustainable development and ESG, Governance approach towards ESG, CSR & ESG, and relationship between ESG and Industrial performance.

Although this study provide bibliometric analysis of academic literature related to ESG. Like all studies, though, this one has certain drawbacks. First, the study is constrained by the terms we choose. The cluster classification and keyword segmentation into themes may be biased since we employed bibliometric evaluation of the ESG literature study in the context Sustainable Finance and Corporate Practices. The Scopus database was chosen above Web of Science, Google Scholar, and other data warehouses like EBSCO based on the relevance criterion. If the data were drawn from different databases, the study's conclusions may have been different. Last but not least, we think that this literature evaluation might benefit from the addition of additional types of study, notably network analysis, to provide more insightful results.

Author's Contribution

The study conducts an extensive review of literature on ESG indices performance against Benchmark indices performance. The systematic review identified ESG indices performed better than Benchmark indices.

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