








Mapping Current Evolution and Trends of Environmental, Social, Governance Influences on Firm Performance

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Abstract. The objective of this bibliometric study is to map the existing research on environmental, social, and governance (ESG) issues. The research utilized the Scopus database and focused on the influence of ESG factors on the performance of businesses or corporations. The search was conducted in English and utilized terms such as ESG, as well as publications completed and published in English. The analysis revealed 976 unique articles, with the United Kingdom being the country with the highest number of publications on ESG concerns. The data also showed an increase in the number of articles published from 1998 onwards. The VOS Viewer organizes the most frequently used search terms into eight groups, including Sustainability, CSR, Climate change, Covid-19, Environmental, Environmental performance, ESG, and Certification. Serafeim G. had the highest number of citations, with 1,694 in two articles, followed by Cheng B. with 1,407 citations in one article. Bennett J. had the most published articles, with six, but had 659 citations. This research serves as a reference point for future studies on the relationship between ESG-related variables and firm performance.

Keywords: CSR, ESG, Firm Performance, Sustainability.

1 Introduction

According to Eccles and Serafeim, The environmental issues, social issues, and governance issues score, abbreviated as ESG, has taken the lead a key aspect of corporate social responsibility (CSR) in the process of generating environmentally friendly tactics that have an impact on the financial performance (FP) [1]. Recent years have seen a significant rise in the importance placed on the concept of CSR in academic and business management circles [2]. There has been a steady increase in the amount of pressure that is being placed on organizations to maximize their productivity and profitability [3], while at the same time there has been a consistent demand from investors, suppliers, clients, staff members, organizations that are not governmental, and

public entities to encourage businesses to invest in their creation and execution of corporate social responsibility practices [4]. This is in spite of the fact that businesses have been put under a lot of pressure to boost their levels of production and profitability in recent years. According to Maas and Reniers [5], companies are concerned not just with economic issues but also with the social and environmental repercussions of their activities. According to Foote et al. [6], a company's level of success can be directly correlated to the quality of its corporate governance processes as well as the quality of its ties with both society and the natural environment.

Although the empirical evidence presented by this research is comprehensive and underscores the importance of ESG activities, it cannot be generalized to developing countries and economies. Despite the significant implications of the studies in question, it is essential to acknowledge that the social, cultural, and management practices of multilatinas firms vary notably and systematically [7]. This is due to the fact that businesses in economies that are developing must compete with businesses that are weak or disorganized [8], exclusive control by the state [9], a decline in the number of favorable business climates and an absence of efficient business oversight [10], and a higher prevalence of corruption¹¹ and increased political dangers [12].

Since the rating of ESG is founded on a firm's performance in the environmental issues, social issues, and governance issues It can be achieved for a firm to have a balanced risk profile if all of its subfactors are accounted for an involvement with increasing degrees of challenge in the E, S, and G responsibilities [13]. Some companies have the ability to undertake projects in any one of the aforementioned three areas that encourage the production of value, while other companies have the ability to destroy financial value.

According to Garcia et al. [14], the natural curiosity of academics has prompted them to frequently investigate the research tendencies of a publication as well as the academic structure of the article. This innate curiosity pushed scholars to explore the journal as the field gathered momentum and the magazine advanced [15]. It is conceivable for retrospective studies that make use of the data that is currently accessible to provide information that is up-to-date and relevant to the subject of the research being conducted. The majority of the projects that have been undertaken to give systematic retrospectives make use of bibliometrics. There have been a vast number of initiatives made to provide systematic retrospectives [16].

When conducting bibliometric research, the major objective is to evaluate previous compilations of literature that are connected to a specific topic in order to come to objective findings [17]. This research aims to promote firm performance through a comprehensive and systematic examination of the existing literature on ESG from an economic, management, and business perspective. To demonstrate the significance of the current study, it is necessary to show that it provides new and valuable insights to the growing body of literature that is relevant to the topic. Therefore, the results must be presented in a way that is consistent with the research questions. In order to fulfill these requirements, a structured categorical review of the existing literature will be conducted, with a focus on topics related to ESG from both an economic and a commercial perspective. The following three study subjects will serve as the primary focus of this investigation, and responses will be required for each of them:

RQ1. How is the trend analysis of scientific production that discusses ESG for firm performance in terms of its implications for the economy, management, and business.?

RQ2. Who are the most influential authors, publishers, and nations, and what are their contributions?

RQ3. Which journals are the most discussed in ESG for firm performance in terms of its implications for the economy, management, and business.?

RQ4. Which of these is the most important subject in research on ESG for firm performance implications for the economy, management, and business?

The remaining parts of this work are structured as outlined in the following paragraphs. To begin, we will provide an overview of the trends in the papers that have been published in Scopus, as well as their citation numbers and authorship records. Following this, we undertake an examination of the key methodological techniques and theoretical frameworks that are applied in the papers that are found in Scopus. After that, we concentrate on the intellectual subjects that arise from the clusters of scientific study that can be identified in Scopus and highlight those. After this, we will proceed to provide an overview of the most important topics of interest based on the keywords that were used in the Scopus literature. The investigation comes to a close with a conclusion as its final stage. Because of this, our study contributes to the pool of previously accumulated information in a variety of different ways. Textual analysis was used to supplement the bibliometric research that was conducted. This content analysis was a feature that added value to the research regarding ESG by providing insights into major ideas and approaches.

2 Method

Scopus was utilized in order to obtain the metadata pertaining to this research, and bibliometric analysis was utilized in order to carry out an evaluation of the records that were discovered to be mapped from the outcomes of the publication. There are a variety of reasons why we chose to make Scopus our major database resource rather than Web of Science and Google Scholar, and these reasons may be broken down into several categories. To begin, Scopus's depth of coverage is significantly greater than that of other databases, containing citation data for more than 15,000 titles that have been subjected to peer review [18]. This is only one of the many reasons why Scopus is so widely used. Second, when compared to Google Scholar, Scopus enables users to conduct more in-depth research than is possible with the former. During the process of carrying out the bibliometric research, for example, Google Scholar is only able to supply a limited quantity of the bibliometric information that is required. Third, a number of bibliometric studies have used Scopus as their major source of data [19]. This highlights the importance of Scopus as a research tool.

Analyzing written content, such as articles or other forms of network literature, requires a combination of statistical and quantitative methods, which is what bibliometrics provides. A systematic bibliography is another name for this type of bibliography. Bibliometric techniques, to be more exact, serve multiple functions, some of which

are as follows: they explain the process of written communication; they pinpoint the course that particular fields of study will take in the future; and they statistically analyze written research [20]. This method is also used to evaluate the level of quality and significance of research topics that have been published in the form of scientific journals. Specifically, this evaluation is done using a citation analysis.

In this piece of bibliometric writing, the procedure can be broken down into three steps. The primary factor that must be considered in order to locate and establish the origin of the information being sought. The second section deals with computer programs and the collection of data, while the third section discusses the analysis and interpretation of the collected data. This is the phase in which the search for the criteria that were utilized takes place, as well as the phase in which the origin of the document is determined. The first step, which is called the bibliographic data source, involves using Scopus as the primary source for the data mining process. The next step is to choose the topic of discussion, which will define whether this investigation will center on ESG. The selection of such topics yielded 4,335 documents, which might be considered a provisional result. After screening with the constraint that only research publications, completed articles, and research that is conducted in English were included, and subject areas: business, management, and accounting accompanied economic, econometric, and finance. The ultimate result, which is 976 items, was obtained once the limitation was applied. The choice of keywords used in the analysis has a direct impact on the conclusions drawn from bibliometric analysis, according to Chabowski et al [21]. According to Zupic and Ater's research, Utilizing keywords that are useful and applicable to the search at hand is one of the key things that can be accomplished to increase the accuracy of the results of the search [22]. To begin doing a search, you will first need to choose some keywords to apply as filters to the available information. The research that was done to determine what Islamic finance is from a commercial and financial point of view served as the basis for the keyword categories that were used in this study. These categories were used to help guide the research.

The concepts that were just mentioned that are connected to the ESG literature have been used as keywords when conducting research for records in the Scopus database. In this technique, the operators known as Boolean "OR" and "AND" as well as the command of quotations and, of obviously, the exclamation mark are used to search for all of the following text in a single query: TITLE-ABS-KEY ("environmental" AND "social" AND "governance") AND (LIMIT-TO (OA , "all")) AND (LIMIT-TO (PUBSTAGE , "final")) AND (LIMIT-TO (DOCTYPE , "ar")) AND (LIMIT-TO (LANGUAGE , "English")) AND (LIMIT-TO (SRCTYPE , "j")) AND (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")).

The subsequent phase, which is represented in (see Fig. 1.), is the utilization of software and the collection of data. At this point in the process, a number of different applications are utilized in order to petrify the results of the study. The Open Refine program can be found at <https://openrefine.org/> and is a tool that can be used to improve the data on keywords that are used by authors who use different terms but words that signify the same thing. After the results of data mining from Scopus have

been cleaned up and statistical analysis has been performed using Microsoft Excel, which is a type of file that uses CSV, the results are presented. This bibliometric statistical study can be seen with the assistance of the application known as Tableau Desktop for public (which can be found at <https://public.tableau.com/>). And finally, the last step in this second stage is the Construction and graphic depiction of the bibliometric maps that are exhibited by the application Visualizing utilizing VOSviewer [23].

Stage methodology: bibliometric analysis design shown in Fig 1 as follow:

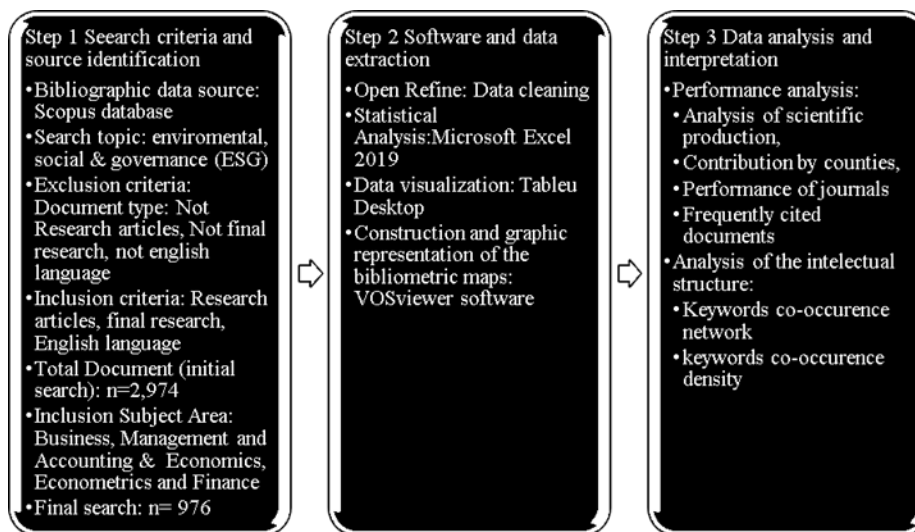


Fig. 1. Stage Methodology: Bibliometric Analysis Design.

The analysis and interpretation of the data are the last phases of the bibliometric analysis and design process. The outcomes of performance analysis and analysis of the intellectual structure are what constitute the results of analysis and interpretation, respectively.

3 Result and Discussion

When analyzing bibliometrics, it is evident that the value of such analysis lies in its ability to encompass the complete spectrum of research pertinent to a particular field of study. Through examining the growth of scientific output, the origin of publications, the accomplishments of publishers, highly cited literature, and prominent keywords, one can gain insight into the exploration of Environmental, Social, and Governance (ESG) issues. This discussion pertains to the mapping of research performance through bibliometric analysis, which can be divided into two primary categories: bibliometric mapping, also known as bibliometric analysis, and performance analysis.

3.1 Document Genres and Current Publication Trends

After setting inclusion and exclusion criteria, the selection of article sources led to the acquisition of 976 documents out of a total of 2,947 documents that were to be evaluated. Research on ESG was initially published in 1998 by S. Faucheux and I. Nicola in the journal *Ecological Economics* under the title "Environmental technological change and governance in sustainable development policy" [24]. This is illustrated in Fig. 2.

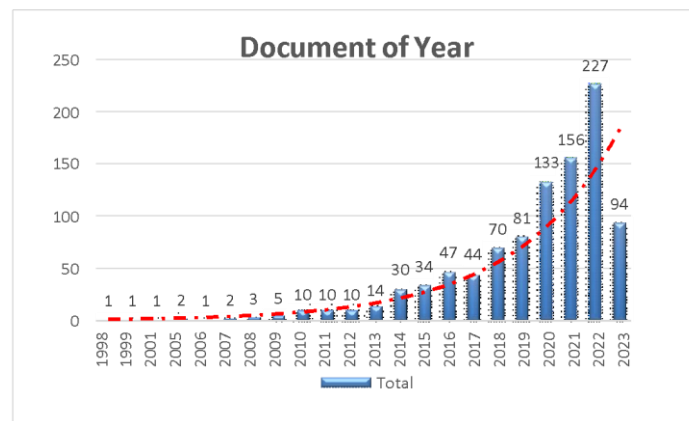


Fig. 2. ESG Trends.

In the first decade that the book was published, there was very little growth, and a total of only ten papers were released into circulation. Since sometime around the year 2010, there has been a gradual growth in the number of publications that are related to this subject. This trend is expected to continue. In spite of the fact that there has been an increase in the number of articles and other publications, the examination of the data has shown that there has been a continuous improvement in the state of information technology. The quantity of documents that were made available to the public in the year 2020 saw a considerable spike as compared to the previous year. In that year, ESG factors started making their way into the business performance of a number of countries with a high standard of living. This illustrates that the publication tendency has maintained its upward trend all the way up until the current year.

3.2 Countries Contribution of ESG

It is observed that 55 countries contribute to scientific publications in the realm of Islamic finance. The majority of contributing countries are located in Europe, with the remaining publications spread across America, Australia, Asia, and Africa. The United Kingdom, a forerunner in research in this field, accounted for 242 out of 976 publications, representing 24.8% of the total publications worldwide. The United States

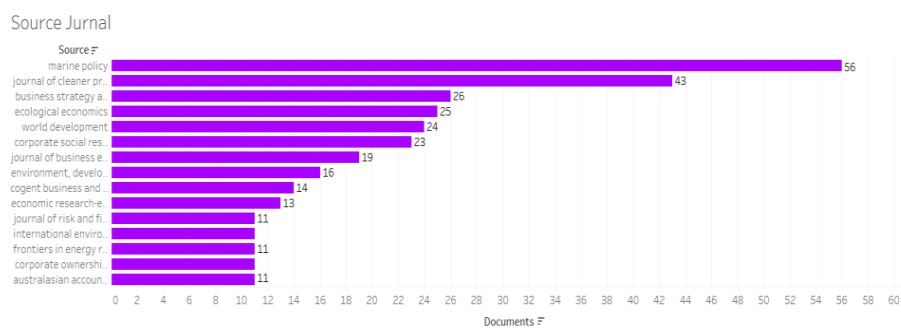


Fig. 4. Top fifteen source of journal in ESG.

It was found that 56 articles related to the topic of ESG were published by Marine Policy, and 43 articles were published in the Journal of Cleaner Production. This was followed by: Journal of business strategy and environment (2.66%), ecological economics (2.56%), world development (2.45%) and many others. Published articles that number less than 5 as much as 49.5%. It is projected that it will become the preeminent journal in the subject of recovery as well as a prominent publishing firm in the fields of ESG (see Fig. 4.). It is probable that the specifics of the journals chosen by each author to publish their work are reflected in the fact that the majority of these papers are published by Elsevier Group. It can be supported by the fact that the majority of these articles are published in Elsevier Group journals.

3.4 Authors's Contribution to ESG Research

According to the analysis of ESG as influence firm performance related article published starting from 1998 to 2023, and a reference to the total number of papers an author has had published whose researcher is Beiting Cheng, Ioannis Ioannou, and George Serafeim in 2014 titled "Corporate Social Responsibility and Access to Finance". From this description, the researcher has been accredited 1,407 times, in 1 published article. On another side, it can be seen that "Strategic Management Journal" has received a total of 2,178 citations from the publisher, and there are 4 documents associated with these citations. (see Fig. 5.).

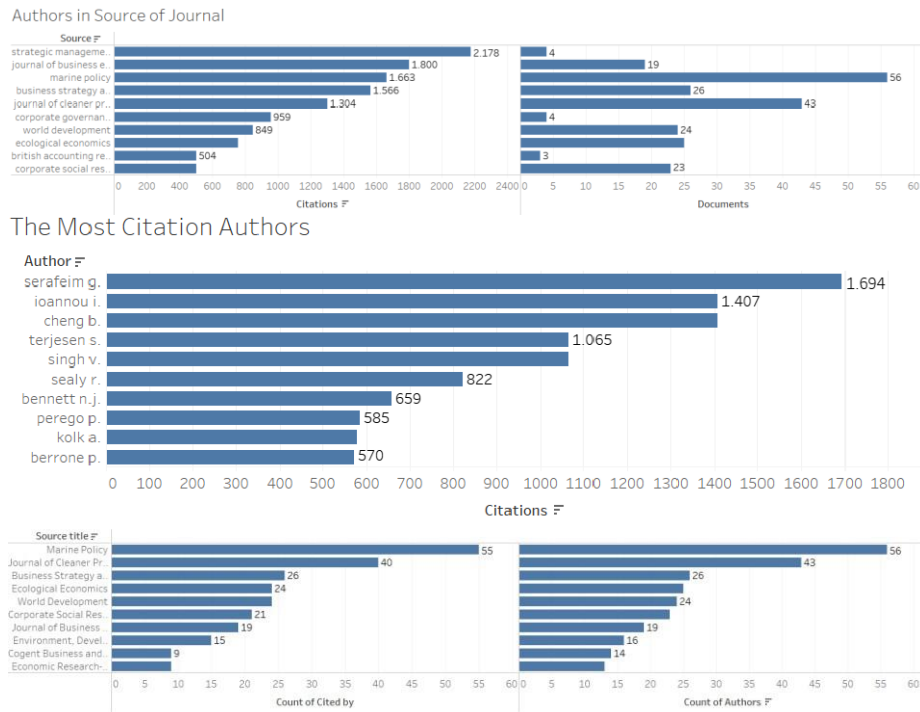


Fig. 5. Performance authors and publisher.

3.5 The Most Cited Articles in ESG Research

Over the course of many years of research, a number of notable papers on ESG were published in a variety of periodicals. An approach that has been utilized in the past can be used to categorize articles according to the amount of citations in which they have been given [26]. This is one method that can be used to determine who they are. The level of influence, popularity, and attention that a piece of research has garnered in the scientific community is reflected in the number of citations it receives from other re- searchers. In this research study on ESG, we searched at the publications that Scopus identifies as being the most frequently cited in the relevant topic. The required information is included in Table 1. and Fig. 6.

Table 1. Table captions should be placed above the tables.

Cited	Authors	Title	Source title	Year
1407	Beiting Cheng, Io- annis Ioannou and George Serafeim [27]	“Corporate social respon- sibility and access to fi- nance”	Strategic Manage- ment Journal	2014

822	Terjesen S., Sealy R., Singh V.[28].	“Women directors on corporate boards: A review and research agenda”	Corporate Governance: An International Review	2009
565	Judith L. Walls, Pascual Berrone, and Phillip H. Phan [29].	“Corporate governance and environmental performance: Is there really a link?”	Strategic Management Journal	2012
405	Kolk A., Perego P.[4]	“Determinants of the adoption of sustainability assurance statements: An international investigation”	Business Strategy and the Environment	2010
346	Gereffi G., Lee J.[30]	“Economic and Social Upgrading in Global Value Chains and Industrial Clusters: Why Governance Matters”	Journal of Business Ethics	2016
288	Amama Shaukat, Yan Qiu and Grzegorz Trojanowski [31]	“Board Attributes, Corporate Social Responsibility Strategy, and Corporate Environmental and Social Performance”	Journal of Business Ethics	2016
287	Amir A.-Z., Serafeim G.[32]	“Why and how investors use ESG information: Evidence from a global survey”	Financial Analysts Journal	2018
259	YiweiLi, Mengfeng Gong, Xiuye Zhang, Lenny Koh [33]	“The impact of environmental, social, and governance disclosure on firm value: The role of CEO power”	British Accounting Review	2018
257	David C. Broadstock, Kalok Chan, Louis T.W. Cheng, Xiaowei Wang [34]	“The role of ESG performance during times of financial crisis: Evidence from COVID-19 in China”	Finance Research Letters	2021
255	DochertyI., Marsden G., Anable J.[35]	“The governance of smart mobility”	Transportation Research Part A: Policy and Practice	2018

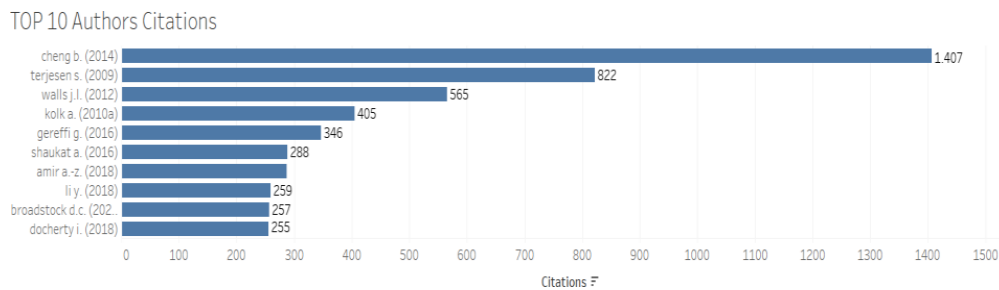


Fig. 6. Top articles citations.

According to the information that is provided in the table, each of the top ten articles that are considered to be the most significant and cited ones has received more than one hundred citations. The article "Corporate social responsibility and access to finance" earned the greatest number of citations, and with a record of 1,407 citations, this demonstrates that this publication is the one that is cited the most frequently. The article was published in 2014 via Strategic Management Journal and was written by Beiting Cheng, Ioannis Ioannou, and George Serafeim.

3.6 The Most Used Keywords in Studies

As we move on to the next stage of the study, we are going to investigate the content by looking at the distribution of the keywords. Following the presentation of an immersive co-occurrence mapping, which will include the top 8 keywords discovered in publications on ESG, a presentation of a keyword density visualization map and then a presentation of a keyword timeline view will take place. Co-occurrence keywords can be a useful tool for scientific research since they can effectively highlight study clusters in a certain subject area [36]. This additional help for scientific research can be achieved through the use of co-occurrence keywords.

The co-occurrence network of ESG terms was generated by the VOS viewer software as a result of its evaluation of the aforementioned data (see Fig. 7.). After doing a search through all 976 articles related to the subject of ESG methodology, we created an overall list of 2,879 keywords based on the results of those searches. There are only 59 keywords that are pertinent to the image and are presented in it when there are at least eight cluster papers present. These keywords are presented in the image.

The values of the nodes are represented in the image by a number of different things, including the dimensions of full nodes and the same sentences that are displayed there. According to Zhang et al.'s research from 2022 [37], the overall weight is affected not only by the diameter of the circle but also by the length of the word. The range that separates two nodes is a reflection of the strength of the relationship that exists between those nodes; associations that have a shorter range are more likely to be stronger than those that have a greater distance. It may be deduced from the fact that a line has been drawn connecting the two keywords that were initially discovered in conjunction with one another. According to the findings of Hernandez-Torrano and Ibrayeva's re- search [38], the probability of a line appearing in a group rises as the

Corporate governance (99), Governance (90), Environmental (72), sustainability development (69), financial performance (31), and Social (30). For clustering done by VOSviewer into 8 clusters, can be seen in Table 2.

Table 2. Main Keywords in occurrences

Thematic cluster with central keyword	Main Keywords (number of occurrences)
Cluster 1 (red) Sustainability (16 keyword)	Sustainability (111), governance (90), sustainable development (69), SDGs (25), stakeholders (19), accountability (9), innovation (9), power (9), regulations (9), development (8), environmental sustainability (8), reporting (8), social network analysis (8), transparency (8), content analysis (7), engagement (7).
Cluster 2 (Green) CSR (13 keyword)	CSR (145), corporate governance (99), financial performance (31), ESG performance (27), sustainability reporting (22), ESG disclosure (15), integrated reporting (15), stakeholder theory (14), stakeholder engagement (12), gender diversity (8), legitimacy theory (8) environmental disclosure (7) institutional theory (7)
Cluster 3 (Blue) climate change (7 keyword)	climate change (31), environmental policy (11), equity (11), social-ecological systems (11), water governance (9), human rights (8), resilience (8)
Cluster 4 (Yellow) covid-19 (6 keyword)	covid-19 (25), disclosure (19), finance sustainability (12), esg ratings (10), esg investments (7), institutional investors (7)
Cluster 5 (Violet) environmental (6 keyword)	environmental (72), social (30), ESG scores (21), firm value (15), corporate sustainability (13), firm performance (13)
Cluster 6 (Aqua) environmental performance (5 keyword)	environmental performance (15), social responsibility (13), corporate financial performance (12), corporate social performance (11), environmental management (9)
Cluster 7 (Orange) ESG (4 keyword)	ESG (149), sri/socially responsible investing (20), performance (15), sustainable investing (7)
Cluster 8 (Brown) certification (2 keyword)	certification (9), global value chain (8)

It is possible to employ it as a quantitative signal in order to elucidate the nature of the link that exists between two nodes and make the connection more clear. The overall connection strength of a single node can be calculated by adding together the connection strengths of the individual components that make up the node as well as the connection strengths of the other nodes in the network.

4 Conclusion

During the course of this research, an analysis of ESG literature using bibliometric techniques revealed the development of emerging trends in international research. In order to facilitate this inquiry, a search using various keywords was performed on the Scopus database, and the papers that were determined to be the most pertinent were extracted. It has been established that there are a total of 976 documents that are relevant to the subject that is the focus of the conversation that is taking place right now. The first ESG journals appeared in 1998, and since then, their circulation has been steadily and quickly growing throughout the 2013s. The year 1998 marked the beginning of the growth of ESG publications. The United Kingdom, the United States, Italy, Spain, Australia, the Netherlands, Germany, Canada, France, and Malaysia were the 10 most productive nations in the study, according to the figures, as they had the highest number of published articles worldwide. Other highly productive nations included China, Canada, France, and Malaysia. The "Marine Policy and Strategic Management Journal" is the one that publishes the most material in this subject and has the most writers, making it the publisher that publishes the most articles on ESG. Other publishers also produce ESG-related articles. An analysis of all the works that have attracted a sizable number of citations revealed that 56 authors have contributed at least two publications to this field, which has been cited 2,178 times. In addition, the author Serafeim G. is well recognized as a preeminent voice in the field of study concerned with this topic. He has been cited by 1,694 different works, while the publications written by Cheng B., Ioannou I., and Serafeim G have received 1,407 different citations. In addition, the author's keyword research uncovered a total of eight clusters, which indicates that there are a total of eight interconnected keyword groups. The terms Sustainability, CSR, Climate change, Covid-19, Environmental, Environmental performance, ESG and Certification are the keywords that best describe each of the clusters. There are a number of new keywords as well as emerging ones in the publication from the current year, which indicates that ESG is just beginning to explore this area. The findings from this study are significant to the respective study of globally ESG, and they can be used to lead subsequent research into the topics and areas of research that are now the most relevant. They reaffirm that these findings can be helpful to academics, businesses, and anybody who seek to learn or discover essential information concerning ESG. as part of their research.

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