

Article

Corporate Social Responsibility: A Business Strategy That Promotes Energy Environmental Transition and Combats Volatility in the Post-Pandemic World

Sofia Karagiannopoulou ¹, Nikolaos Sariannidis ¹, Konstantina Ragazou ^{1,2,*} , Ioannis Passas ³ 
and Alexandros Garefalakis ^{2,3} 

¹ Department of Accounting and Finance, University of Western Macedonia, 501 00 Kozani, Greece

² Department of Business Administration, Neapolis University Pafos, Pafos 8042, Cyprus

³ Department of Business Administration and Tourism, Hellenic Mediterranean University, 714 10 Heraklion, Greece

* Correspondence: koragazo@uth.gr

Abstract: Corporate social responsibility can assist in reducing the noise caused by pricing volatility and a lack of energy-efficient business solutions. The study's objective is twofold: (i) to investigate the role of corporate social responsibility (CSR) in reducing volatility through the contribution of energy-efficient strategies; (ii) to identify research trends in the field that may indicate future research directions for the development of more dynamic strategies that will help in mitigating the impact of pricing volatility. A five-step bibliometric analysis was applied to address the research question. The findings were visualized by using bibliometric tools such as R Studio, Biblioshiny, and VOSViewer. Chinese academics have been revealed as pioneers in integrating CSR into corporate strategies to reduce volatility and support energy-efficient investments. Moreover, results indicate that financial institutions must embrace a new business model based on both CSR and environmental, social, and corporate governance (ESG) principles. Since very little is known about the interaction structure between CSR and ESG in the mitigation of price volatility, the purpose of this article is to bridge that knowledge gap. The pioneering character of this research—the construction of a business model based on the principles of CSR and ESG—contributes significantly to both the field's knowledge and the practice of corporate sustainability management.

Keywords: stock market; volatility; business strategy; ESG; CSR; sustainability; green finance



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1. Introduction

Academics consider that corporate social responsibility (CSR) is crucial for businesses [1,2], as CSR can improve a company's reputation, attract investors, and boost long-term performance [3–5]. Social and environmental concerns should be considered by both large and small enterprises. Companies that practice social responsibility gain a competitive edge, satisfy stakeholders' needs, retain employees, enjoy high levels of consumer loyalty, and even surpass their competitors financially [6]. Recent academic and professional advancements have stressed the need of setting CSR techniques into practice [7,8]. CSR refers to the public services provided by corporations. However, this point of view is rather limited. Companies should assume new social duties, incur legal and financial obligations, and participate in charitable endeavors. Accountability to employees, suppliers, local communities, and even national communities is a must for a responsible firm. The social expectations for company actions in terms of economics, law, ethics, and organizations are another definition of CSR [3,9]. To put it another way, CSR is the combination of relevant ideas, projects, and strategies used in response to society's expectations.

The effectiveness of corporate social responsibility initiatives varies per company. For example, CSR may encourage customers to purchase more items, increase sales, and have

a positive influence on business performance or operations. Furthermore, multiple studies have demonstrated that CSR may increase a company's insurance value [3,10,11]. Investors will hesitate from cooperating with businesses that are linked to a negative occurrence, allowing the stock price decline to be halted. Furthermore, research indicates that CSR has a risk management influence on a company's stock price when a negative event occurs. In other words, CSR can operate as insurance by protecting stockholder value. This is supported by research conducted during the Great Recession of 2008. According to research published during this time frame, businesses that have integrated CSR had lower company risks, and the effect of CSR engagement on risk mitigation was significant [7,12].

The COVID-19 pandemic, which initially emerged in late 2019, has had a significant influence on the world economy and people's lives. Furthermore, it has resulted in dramatic declines in stock values [13,14]. However, there has been limited research conducted on how corporate social responsibility commitment influences firm risk. CSR is a critical topic in the field of crisis management research, but in the setting of crises, CSR remains understudied, despite significant study potential. CSR may cover both what businesses do with their income and how it is generated. It defines how businesses manage their economic, social, and environmental consequences, as well as stakeholder relationships, across all their key realms of influence, including the workplace, the market, the supply chain, the community, and the field of study. It analyzes how organizations manage their economic, social, and environmental consequences, as well as stakeholder relationships, in all their primary realms of influence, including the workplace, market, supply chain, community, and public policy. This is more than just altruism and compliance. Adopting a CSR strategy, like other adaptations of "scaling up," is a logical extension of going global, given the dynamic links of the global economy. CSR is connected to corporate risk management, particularly for a worldwide organization, in two ways: it provides knowledge about the risks and an efficient approach to resolving them.

On the other hand, companies that adhere to social responsibility can engage in less negative news management. CSR measures reduce the likelihood of stock price collapses. Making risk management and investment decisions is critical because crash risk indicates asymmetry in hazards, which is largely a negative risk. Stakeholders are concerned with the social outcomes of organizations as well as their financial ones. Businesses must create a strong governance structure in order to successfully conduct CSR efforts. An efficient corporate governance framework assists organizations in meeting their financial objectives. Corporate governance is an important concept since it outlines how a company's management, board of directors, shareholders, and other stakeholders interact. It considers how an efficient governance structure helps organizations by increasing financial performance, making capital more accessible, and improving stakeholder management. Best practices in corporate governance align the interests of management and shareholders.

The current paper seeks to contribute to the corporate finance literature by (i) analyzing the effect of corporate social responsibility on decreasing stock market volatility and enhancing energy-efficient investments and (ii) examining the latest research trends in the domain, which could provide new opportunities for future research. The research contribution of this work may be shown by contrasting it with the existing body of literature. Instead, this study examines the role of CSR in the mitigation of price volatility. Furthermore, the current study is the first to investigate the development of a business model that will be based not only on CSR practices but on ESG archetypes as well. The proposal of a business model with the above characteristics can contribute to the development of theory in the field of sustainable business models and sustainable tools for the mitigation of volatility as well. With the support of the R package, we used bibliometric analysis for our research. By highlighting and analyzing the newly emerging research clusters, bibliometric analysis mapped the conceptual structure of the studied area and highlighted the global collaboration network among authors. To address the research question, 460 bibliographic records for the period 2014 to 2022 were retrieved from the Scopus database and analyzed by using bibliometric tools Biblioshiny and VOSviewer.

The rest of this study is organized as follows: The literature review is presented in Section 2. The methods and tools that were used are outlined in Section 3. The bibliometric analysis and results are presented in Section 4; the discussion of the findings, a summary of restrictions, and recommendations for further study are all presented in Section 5. Section 6 concludes the paper.

2. Corporate Social Responsibility: A Tool for Empowering Sustainability and Enhancing Energy-Efficient Investments

Corporate Social Responsibility (CSR), one of the most dynamic and challenging areas of a company's activity, has been used for 50 years as the primary tool for balancing the economic, social, ethical, and environmental impact of its activities. CSR is the term used to describe a company's moral conduct in its interactions with society, which refers to the adoption of ethical practices by companies to manage their stakeholder relationships sustainably [4,10,15]. Although the most popular definition of CSR is as follows, which states that it is "the voluntary commitment of businesses to include in their business practices social and environmental actions, which are beyond what is imposed by legislation and are related to all those who are directly or indirectly affected by their activities," there is no universally accepted definition, due to the complexity of the concept. According to theory, CSR has a big impact on how valuable information about companies is disclosed and how likely crashes are to occur. With active management to ensure obligations for its stakeholders, CSR primarily pertains to maximizing the social welfare and sustainability of businesses [9]. Businesses have modified their organizational structures and departmental makeup to better manage their social responsibilities and to guarantee that their efforts are directed in the proper direction when interacting with local and global communities [16]. Additionally, research on the issue has shown that companies engaging in socially responsible activities are comparatively more transparent in giving trustworthy financial information. It is pertinent to the idea that businesses perceive greater financial disclosure as a sign of civic responsibility when CSR initiatives are applied broadly. These businesses are more likely to exhibit extreme openness and seldom keep unpleasant news from owners. As a result, we might conclude that such companies are less vulnerable to crash risks. Businesses that engage in CSR activities might inspire customers and investors, which can aid them in resolving their financial problems.

However, at the start of 2020, the COVID-19 pandemic put businesses in a situation where they had to quickly adjust to the brand-new conditions and requirements that were formed. The firms' key guiding principles throughout this initiative have been to prioritize their human resources, consumers, and society at large [17]. It is therefore very likely that COVID-19 will accelerate the emergence of an evolutionary form in the way a socially responsible business is organized and operated [17–19]. Numerous companies and employees were compelled to adjust to the remote work procedure as a result of the conditions. This new reality brought to light tools and technologies that enabled work teams to function more intelligently, facilitated parenthood, and shed light on equal access to resources, which resulted in new regulations and perks for employees. In addition, a lot of companies made substantial efforts to combat COVID-19. Due to this choice, major industries are now more concerned with finding a balance between income and impact than with maximizing profits and protecting them from any financial risk. Most business activities have been suspended because of fears about the future of the global economy prompted by the outbreak of COVID-19. As a result, there was a destabilization of the financial markets and significant declines. In addition to daily price recoveries that demonstrate their increasing negative volatility, some stock markets in Asia, Europe, and North America had their worst drops ever. The COVID-19 outbreak is so unpredictable that it is nearly impossible to predict how long it will last, making it equally difficult to predict the economic and financial effects. Investors and portfolio managers are facing unheard-of challenges because of this terrible catastrophe. Indeed, they have been forced to embark on a difficult road toward the adoption of new investment strategies that may increase returns while lowering

risk, and all the while, stocks continue to be plagued by extreme volatility. In relation to real-world consequences, the unprecedented health crisis brought on by COVID-19 has highlighted the need for a careful examination of severe downward market movements across all global markets to determine the consequences for the stability of the financial markets as well as their interconnectedness and contagion.

Nonetheless, studies have shown that when CSR initiatives are heavily adopted, businesses may consider enhanced financial disclosure as a sign of civic obligation. Extreme openness and withholding of negative information from owners are more typical in these businesses. Thus, we might infer that such companies are less vulnerable to crash risks [20]. Businesses that take part in CSR programs may be inspired by customers and investors, which might help them get out of financial trouble. Moreover, other scholars, who looked at the effect of charitable giving on accident risk in China came to the same conclusion [1,16]. As a result, it leaves open the question of how CSR may lessen the effects of negative news concealment and crash risk. For instance, businesses with higher CSR involvement are probably less likely to crash [16,21]. Owners of businesses as well as other stakeholders' interests are protected through corporate governance. According to the corporate governance process, monitoring the management's operations assures the preservation of the interests of the firm's stakeholders. Stewardship theory and resource dependency theory contend that when CEOs also serve as chairman of the board, they provide integrated and effective leadership on behalf of the owners. Corporate governance procedures aid in reducing crash risk and managerial resourcefulness. Thus, the reduced danger of a stock price fall contributes to an improvement in business financial performance. Furthermore, researchers emphasize the idea that good corporate governance procedures improve business performance and strengthen owner protections, which draws increasing attention globally. The quality and value of a firm's accounting information are both enhanced by an efficient governance framework [1].

This study investigates the role of CSR as a strategy to increase the transparency of investment information effectively to alleviate any type of volatility, such as stock price crash risk and asymmetric information [22]. The current research work proposes a mitigation strategy towards volatility phenomena, which can be characterized by its green and energy-efficient profile. The business reputation may be improved and stakeholders, including customers, can be won by actively disclosing CSR sustainable practices, such as green bonds [23]. On the other hand, organizing the relationships between stakeholders might benefit from high-quality CSR eco-friendly methods. Green CSR may therefore communicate to the public that a firm's actions are legitimate and that the company places a high value on environmental preservation. This signal lessens volatile phenomena such as stock price crash risk and asymmetric information and makes information more transparent while enhancing the efficacy of investors' decision-making [22].

3. Materials and Methods

Many academics and researchers throughout the world have endorsed bibliometric analysis as a popular research technique that enables them to work with vast amounts of data and have a significant impact on knowledge. This approach seeks to classify the papers in a study topic according to several criteria to evaluate and categorize the publications. In the current study, we used Bibliometrix as the foundation for our analysis because it provides all the resources necessary to carry out a comprehensive bibliometric analysis by the Science Mapping Workflow [24,25]. The invention, availability, and use of a wide range of bibliometric tools included in the R package, a programming language used for statistical computing and graphics, are only a few of the aspects that contribute to its respectability. These software-based methods utilize the Biblioshiny bibliometric tool, which is part of the R package [26]. We start by acquiring the data from the Scopus bibliographic database before beginning to use R. The following step was to upload the data that had been retrieved into R studio, which is the R environment and aids in conducting research topic analysis and exporting dynamic graphs [25].

3.1. Bibliometric Analysis Method

For this study's research issue, a five-step bibliometric methodological technique (Figure 1) was used. The first phase (Step 1) is the collecting of data via a comprehensive, systematic literature study. Step 2 is divided into two sections: the first (2a) focuses on a thorough evaluation of the field through bibliometric citation analysis, and the second (2b) presents a network analysis to identify the research trends of the publications of the most influential journals, research works, institutions, and authors, to highlight the network of collaboration between scholars around the world. Bibliographic coupling is demonstrated in Step 3, while cluster analysis is demonstrated in Step 4 by combining MCA and factorial analysis. Step 5—the last—displays the results and discusses potential future possibilities for further investigation.

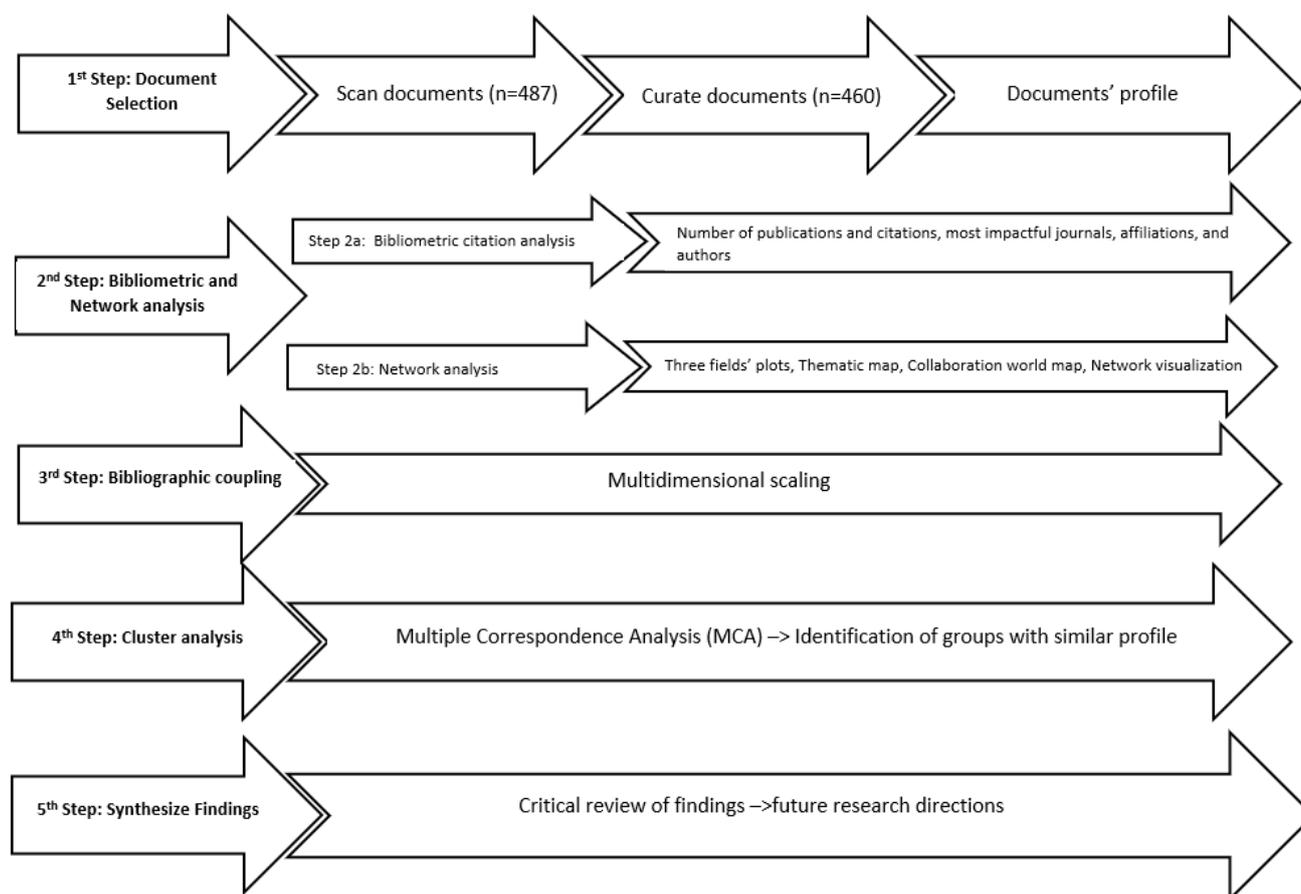


Figure 1. Methodological workflow. Source: Own elaboration.

3.2. Data Extraction

The Scopus database, which was launched by Elsevier in 2004, was used to acquire data for the bibliometric analysis in this study. It serves as a multidisciplinary repository for reports [24,27]. It is one of the world's largest "peer-reviewed" databases, with over 24,000 current academic journal titles on a wide range of disciplines with significant research interests, including life, social, and health sciences. Scopus also has over 10,000,000 conference papers and 230,000 book titles. Furthermore, the Scopus database provides its users with online tools for bibliometric analysis of their articles, such as calculating various bibliometric indicators such as the h-index and applying statistical analysis tools such as frequency charts of publications over time, among other things.

The bibliographic Information was obtained from Scopus in September 2022, and Table 1 presents and goes into depth about the keyword search. The final keyword search, which was the result of a 10-step procedure, had four sections. The articles that discuss CSR

and its involvement in empowering sustainability in the business world are contained in the first segment (“corporate social responsibility” OR “sustainability”). The second section (“volatility” OR “risk” OR “crash risk”) explains how to determine an investment’s risk over a specific time frame. When compared to investments with moderate volatility, highly volatile investments are more likely to suffer frequent and potentially significant price changes on both the upswing and downswing. The connectivity network of stock market volatility is impacted by the COVID-19 pandemic. The third component, “stock market” OR “stock price,” refers to a market with a high level of volatility, such as the stock market. In particular, the COVID-19 epidemic strengthens the world’s overall degree of connectivity, which stays high throughout 2020. The COVID-19 crisis is cited as the most significant factor in the increase in market volatility in the fourth and final portion of the Boolean function (“crisis” OR “COVID”). Thus, 460 papers were still available after research purification for bibliometric analysis. Only articles were chosen, and therefore, any other document types—such as conference papers, reviews, books, book chapters, and editorials—were not included. Additionally, only publications from the years 2004 to 2022 were chosen for the analysis. The data from the bibliometric search were extracted in an Excel file, which was integrated with the following information: (i) the title of the paper, (ii) the date of publication, (iii) principal details of the author (name/s and affiliation/s), (iv) the title of the article, (v) authors’ keywords, (vi) the abstract, and (vii) the count of citation. Software such as VOSviewer and the Biblioshiny packages in R Studio was used to analyze and display the data. Thematic maps, country collaboration maps, and network visualizations are just a few examples of the maps and diagrams that were provided by both tools. The research patterns, the dynamics of CSR in reducing volatility, and the potential impact of sustainability on the stock market are all depicted in these maps and infographics.

Table 1. Keyword search process in Scopus database. Source: Scopus/Biblioshiny (Own elaboration).

Step	Keyword Search	Articles
1	“corporate social responsibility” AND “volatility”	3852
2	“corporate responsibility” AND “volatility”	595
3	“corporate accountability” AND “volatility”	185
4	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability”) AND “volatility” AND “stock market”)	1912
5	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability”) AND “volatility” AND (“stock market” OR “stock price”)	974
6	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability”) AND “volatility” AND “stock market” AND “stock price” AND “crisis”)	561
7	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability”) AND “volatility” AND (“stock market” OR “stock price”) AND (“crisis” OR “COVID”)	608
8	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability”) AND (“volatility” OR “risk” OR “crash risk”) AND (“stock market” OR “stock price”) AND (“crisis” OR “COVID”)	391
9	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability” OR “sustainability”) AND (“volatility” OR “risk” OR “crash risk”) AND (“stock market” OR “stock price”) AND (“crisis” OR “COVID”)	487
10	((“corporate social responsibility “ OR “ corporate responsibility “ OR “ corporate accountability” OR “sustainability”) AND (“volatility” OR “risk” OR “crash risk”) AND (“stock market” OR “stock price”) AND (“crisis” OR “COVID”)AND (LIMIT-TO (DOCTYPE, “ar”))	460

4. Results

This study intends to: (i) analyze the function of CSR in reducing stock market volatility brought on by COVID-19's effects and (ii) highlight the research trends in the area under study that will pave the road for the stock market's transition to sustainability. A total of 460 related studies that were published between 2014 and 2022 comprise the reviewed sample. In total, 1143 authors contributed to these documents, and each one had an average of 9.043 citations. Overall, 97% of the contributing authors are involved in multi-authored research, i.e., 1113 authors, whereas just 3% of the authors are involved in single-authored studies (30 authors).

4.1. Annual Publication and Timespan Trend

The quantity of research articles on CSR and its role in reducing stock market volatility is shown in Figure 2 along with a summary of the field. Almost no publications from the years 2014 to 2015 describe the contribution of CSR to lowering stock market volatility. The negative impacts of the global economic crisis began to seriously affect the global economy and, by extension, the stock market, in 2016, yet there was a slow but steady rise in research after that. CSR has therefore become recognized as a vital instrument that may help ensure that the stock market is sustainable and in balance. To be more precise, 37 articles were produced over the first four years of the study (2014–2018), which is much less than the 419 publications produced during the subsequent four years (2019–2022). It is interesting to notice that 2021 saw the highest number of publications; however, 2022 appears to have a high record of publications, as the findings in Figure 2 indicate that in 2022, the number of publications will increase by a double from the year before. This shows how important it is for the stock market to include CSR and reduce volatility concerns brought on by the COVID-19 pandemic's impacts. Additionally, Figure 2 depicts the impact of publications that have been published through the number of citations (TCPY and TCPA) in the research area each year. The overall citation per year is shown in the first measure, while the total citation per article is shown in the second. The results from both measures indicate that there are not many citations for publications that were published recently. The number of citations increases over time, and therefore, new research takes time to be understood and to become an influence on the academic community.

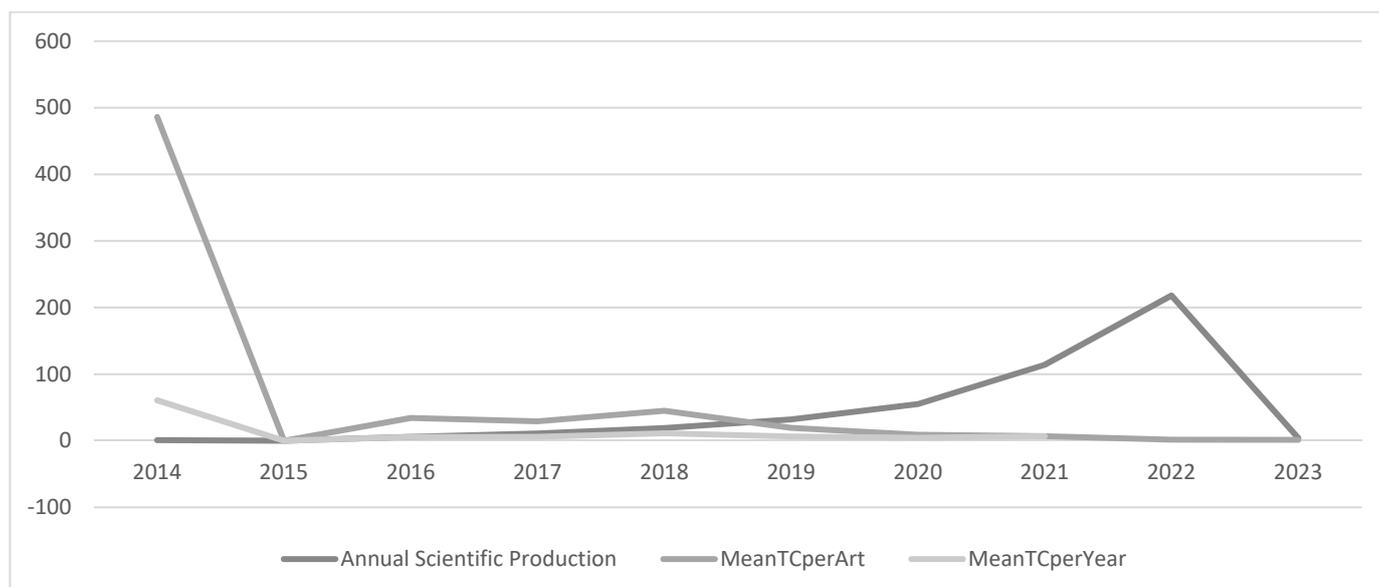


Figure 2. Annual research growth (TCPY: Total citation per year, TCPA: Total citation per article). Source: Scopus/Biblioshiny (Own elaboration).

4.2. Most Influential Journals, Institutions, and Authors

For the years 2014 through 2022, Table 2 lists the journals with the most related papers published in CSR and their impact on stock market volatility reduction. The body of knowledge on volatility mitigation and other research subjects with the integration of the CSR model has been significantly impacted by “Sustainability,” which is in the frontier journal with the largest number of published papers on the research area (31). With 16 published pieces, “Journal of Corporate Finance” came in second, followed by “International Review of Financial Analysis” (16 articles) and “Journal of Business Ethics” (14 articles). “Finance Research Letters” concludes the list with the top five most related journals in the research field. Additionally, Scopus, Scimago, and ABS List index many of the top referenced publications in the Post-COVID-19 era’s research on CRS and stock market volatility.

Table 2. Top 10 relevant sources based on several publications. Source: Scopus/Biblioshiny (Own elaboration).

Sources	Articles	H-Index	Subject Area	ABS List	Scimago List
Sustainability (Switzerland)	31	109	Management, Monitoring, Policy, and Law		Q1
Journal of Corporate Finance	16	109	Business, Management, and Accounting	4 ****	Q1
International Review of Financial Analysis	14	69	Finance	3 ***	Q1
Journal Of Business Ethics	14	208	Business, Management, and Accounting	3 ***	Q1
Finance Research Letters	13	62	Finance	2 **	Q1
Research In International Business And Finance	12	51	Finance	2 **	Q1
Energy Economics	11	168	Economics, Econometrics, and Finance	3 ***	Q1
Pacific Basin Finance Journal	10	62	Finance	2 **	Q1
Accounting and Finance	9	52	Finance	2 **	Q1
Journal of Banking and Finance	9	172	Finance	3 ***	Q1

* This symbol refers to scientific papers published by journals indexed by the Academic Journal Guide and produced by the Chartered Association of Business Schools (CABS). The journals are given a star rating from ** to **** (the highest).

The most significant organizations that produce studies on CSR and its role in lowering market volatility are highlighted in Table 3. Interestingly, China is home to 80% of the top 10 universities, where the majority of publications in the field of research are concentrated. China has the biggest economy in the world, and it served as the pandemic’s origin. That, together with actions taken to contain the outbreak, caused the biggest economy in the world to experience a steep downturn as manufacturing stopped and supply lines were congested. Consequently, both the local and international financial markets were directly impacted by each response the Chinese economy made to the pandemic’s expansion [1]. The Chinese, who have significant economic sway worldwide, started looking at models that may help businesses become immune to the pandemic [16]. Chinese researchers concluded that more CSR activity can enhance stock returns. Central South University, which holds the top spot with 27 published research publications, is one of the Chinese universities listed with the top ten most relevant affiliations for the study topic. Tianjin University is in third place with 18 published publications, followed by the Central University of Finance and Economics in second place with 19 articles.

Table 3. Top 10 relevant affiliations based on the number of publications. Source: Scopus/Biblioshiny (Own elaboration).

Affiliations	Articles
Central South University, CH	27
Central University of Finance and Economics, CH	19
Tianjin University, CH	18
Macquarie University, AU	17
Polytechnic Of State Finance Stan, ID	14
Xi'an Jiaotong University, CH	14
Zhongnan University of Economics and Law, CH	13
Capital University of Economics and Business, CH	12
Jilin University, CH	12
University Of International Business and Economics, CH	12

The investigation of the most significant authors can help to design the research domain after the bibliometric analysis. While the metrics of the articles fractionalized of the individual authors have been combined and provide the percentage of their co-authored publications, Table 4 shows the authors with the biggest effect in the research community of the examined topic. According to Table 4, Wang J. is the author in the study area who is most connected, while Hasan M. is rated second on the list of writers who are most relevant to the topic being investigated. The author collaboration network is shown in Figure 3. Each node indicates a different author, while the edges show their degree of co-authorship. The author's influence on the study subject is greater the larger the node. Eight clusters comprise the author's collaboration network. The most significant and vital author collaboration networks may be defined as clusters in red and blue, with Wang X and Hasan Mm predominating in each of them. Three writers comprise the grey cluster, whereas two author networks comprise the green, pink, orange, and purple clusters. Notably, neither cluster is connected, leaving room for improved author cooperation overall within the integration of the CSR model in the reduction in stock market volatility, due to the effects of COVID-19.

Table 4. Top 10 relevant authors based on the number of publications. Source: Scopus/Biblioshiny (Own elaboration).

Authors	Articles	Articles Fractionalized	Affiliation
Wang J	8	2.50	Texas A&M University
Hasan Mm	7	3.50	Sebelas Maret University
Li X	7	2.28	National University of Singapore
Wang X	7	2.58	National University of Singapore
Zhang Y	7	2.17	Birmingham University
Chen Y	6	1.92	National University of Tainan
Liu X	6	1.67	Brunel University
Chen S	5	1.92	Shou University
Habib A	5	1.87	Purdue University
Liu J	5	1.75	Harvard University

4.3. Network, Bibliographic Coupling, and Cluster Analysis

The relationship between authors, nations, and study areas may be graphically represented to provide intriguing information about the scientific community. Consequently, Figure 4 shows the inventive three-field plot, also referred to as a Sankey graph, which shows the interaction between the most related authors (on the left), nations (in the middle), and keywords (on the right), all within the research domain of CSR and its function in managing volatility in the stock market in the post-COVID-19 era. The findings show that Chinese researchers and academics both focus their research mostly on the stock market's volatility and how CSR might help to mitigate this issue. The Sankey graph shows

that researchers in China concentrate on researching how CSR helps to reduce the danger of stock market crashes. The conditional skewness of the return distribution, which is the definition of crash risk, reflects the asymmetry in risk and is crucial for risk management and investment choices. Socially conscious businesses would be less likely to fail if they committed to a high level of openness and took part in fewer negative stories. However, CSR would be linked to a higher risk of collapse if management used it to hide negative news and sway shareholder control. Thus, it has been revealed that Chinese scholars have considered one of their top goals to be the investigation of ways to decrease the risk of a stock market fall, such as by pushing more companies to engage in corporate social responsibility (CSR) initiatives. As a result, companies that participate in more CSR activities will be less vulnerable to the risk of a stock market fall in the post-COVID-19 period than companies that engage in fewer CSR activities.

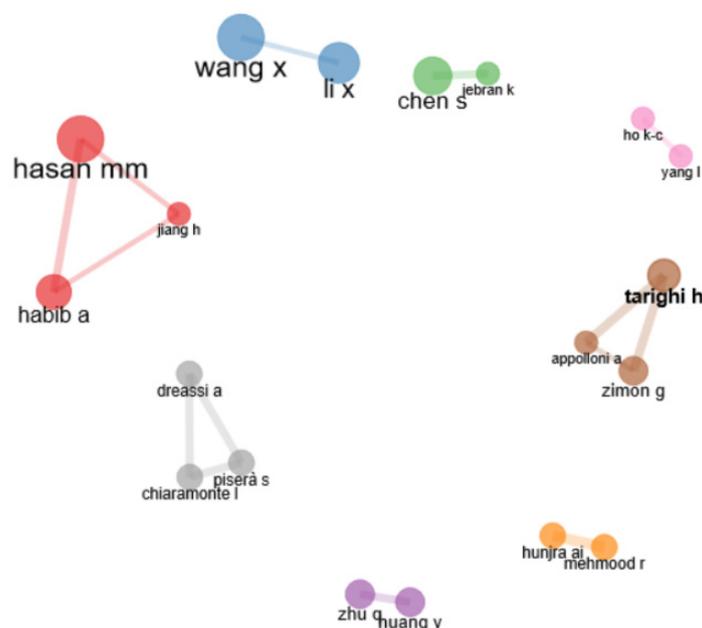


Figure 3. Author collaboration network. Source: Scopus/Biblioshiny.

Furthermore, Figure 5 illustrates the authors' geographic cooperation in their study on the volatile stock market and CSR as a tool to address this problem in the post-COVID-19 era. Biblioshiny's bibliometric tool was used to realize the depiction of this scientific partnership. This spatial study of collaboration tries to emphasize the social organization of the research community in the area under investigation. The graph's nodes stand in for the authors, while the linkages signify co-authorship. The map reveals that the vast majority of scientific collaborations in the sector have their roots in China. The USA–China and USA–Australia scientific channels are the most reliable. Moreover, Figure 6 also shows how researchers and scholars collaborate. The country-based bibliographic coupling is seen in this graph. The greater the node, the greater the influence of this nation on the subject of the study. Based on the unique features of the country, China dominates the other nations (the biggest economy globally and the source of the pandemic of COVID-19). It is interesting to note that the United Kingdom has become a vibrant nation overall, including in the field of research. One of the oldest and biggest financial hubs on the planet is The City of London. Despite the UK stock market being among the most robust in the world, studies show that COVID-19 may also have an impact on it, which would increase volatility.

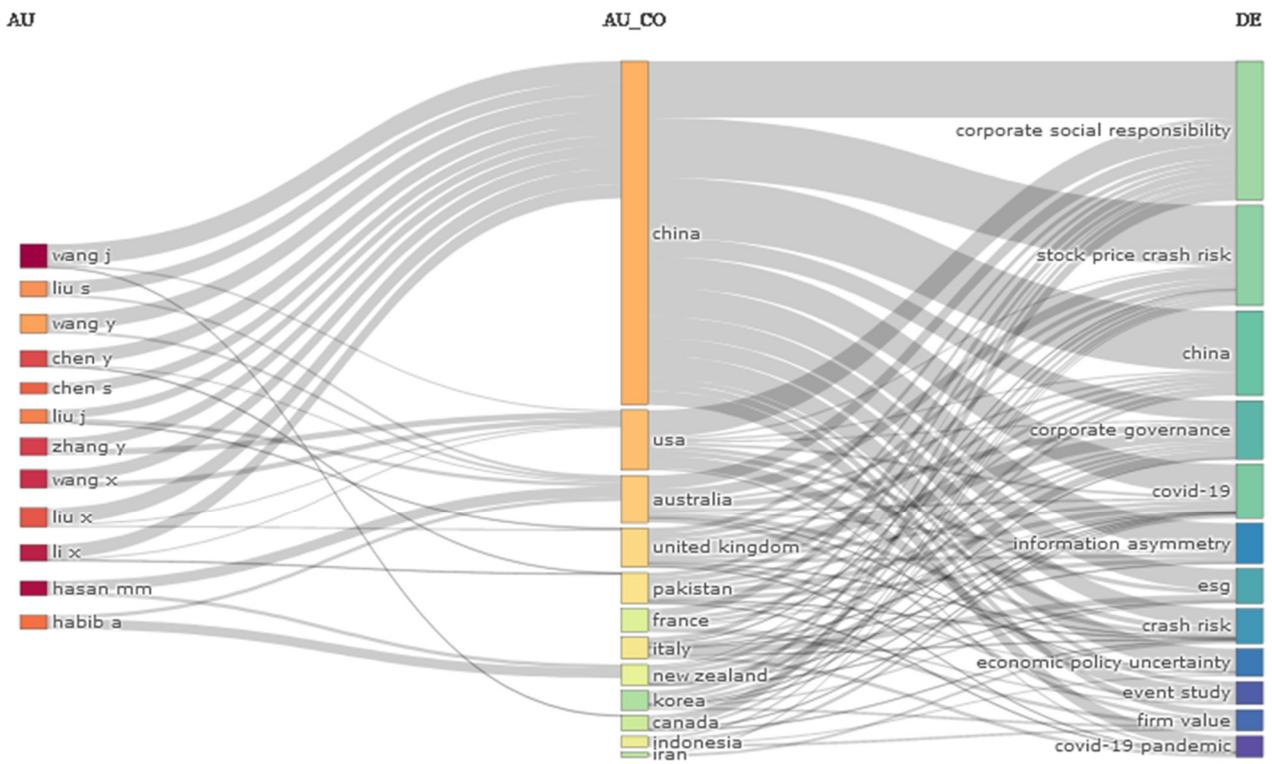


Figure 4. Three-fields plot (Sankey diagram). Source: Scopus/Biblioshiny.

Country Collaboration Map

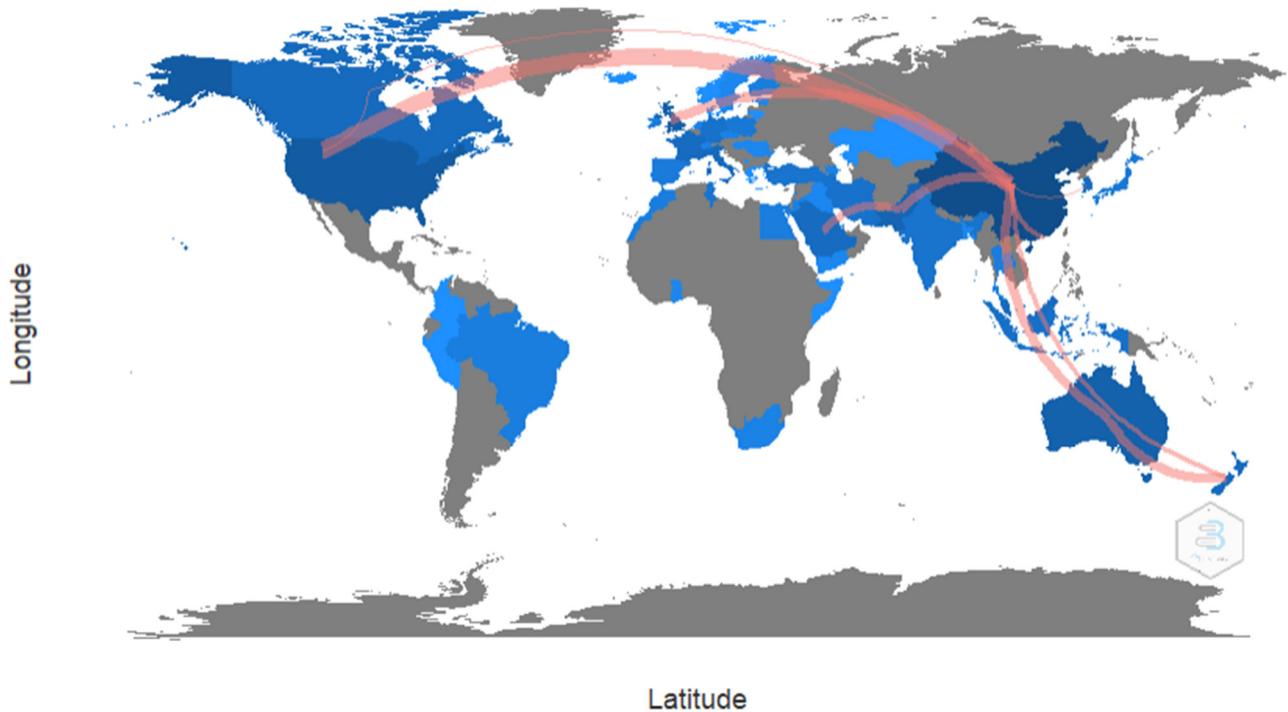


Figure 5. Country collaboration map. Source: Scopus/Biblioshiny.

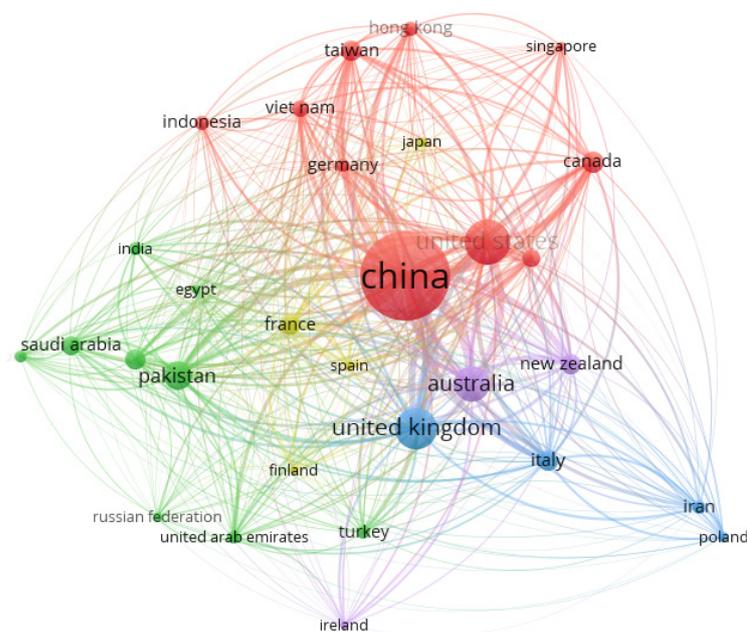


Figure 6. Bibliographic coupling based on documents. Source: Scopus/VOSviewer.

A powerful technique that provides insightful information, keyword analysis also constitutes a component of network analysis. A study domain's distinction and important trends are to be highlighted through the keyword analysis. The network visualization based on the co-occurrence of the authors' keywords is shown in Figure 7. The VOSviewer software was used to demonstrate the co-occurrence of the authors' keywords. Software called VOSviewer aids in the creation of a bibliometric network and the display of the data inside it. Each circle in the graph depicts an occurrence. The stronger the co-occurrence of authors' keywords, the greater the circle size. The circles of either a similar color signify a cluster of keywords, and the lines connecting the circles show a link between the keywords. Seven clusters of keywords, each represented by a different color, were created from a total of 41 keywords. The cluster in blue color demonstrates the core issue, which is volatility, and the cluster in yellow draws more attention to the strong relation between CSR practices and the control of volatile stock markets in the post-COVID-19 pandemic "new normal." The COVID-19 component is shown in red as the most important indicator of volatile stock markets, and the stock price crash risk is shown in purple as the market's highest risk [28]. This kind of risk causes financial turmoil throughout the world, but it is also the catalyst for many businesses to implement CSR procedures to mitigate it. Additionally, asymmetry of information or asymmetric volatility is a risk category associated with volatility that is highlighted by co-occurrence analysis (orange cluster). The observed tendency of equities market volatility to be higher in sinking markets than in rising markets is known as the "asymmetric volatility issue." This indicates that a 10% decline from current price levels will result in greater volatility than a 10% increase. Additionally, the cluster in green plays a distinctive significance in the study's theme, since it suggests that ESG is a novel idea for controlling volatile stock market behavior [20]. ESG factors reduce risk and volatility, resulting in superior risk-adjusted returns. Higher ESG scores are frequently linked to lower overall price volatility and lower volatility peaks, especially in the context of the recent market volatility brought on by the pandemic crisis, which has affected stock markets throughout the world. A model based on Environmental, Social, and Corporate Governance (ESG) and CSR archetypes might therefore develop as a dynamic business tool that will help to reduce market volatility. The cluster in light blue shows the necessity for a model to reduce the phenomena of volatility to maintain the firm's value.

substantially worse than the Great Financial Crisis of 2008, by a wide margin. However, specific topics highlight the critical role played by CSR in limiting any adverse stock market effects. In the quadrant of emerging themes, future strategies such as green bonds also are described that will help to lessen the effects of erratic stock markets [23,29]. At the height of the COVID-19 outbreak, green bonds proved to be a safer haven than gold. Climate-friendly debt outperformed other investments in the environmental, social, and governance sectors and provided more efficient market safety than gold. Passive investors who were interested in the research study's topic thought that green bonds were the "preferable haven" option to protect their portfolios from the "uncertainty" of the pandemic. The researchers found that traditional stock portfolios that incorporated green bonds saw the highest risk-adjusted returns during the pandemic when compared to equity portfolios augmented by gold and other ESG assets [30]. In a market downturn like the one experienced during the start of the pandemic, it is challenging to find low-risk assets. According to scholars, green investments could be able to fulfill that role. Gold is frequently chosen by investors as a reliable if fragile, haven asset.

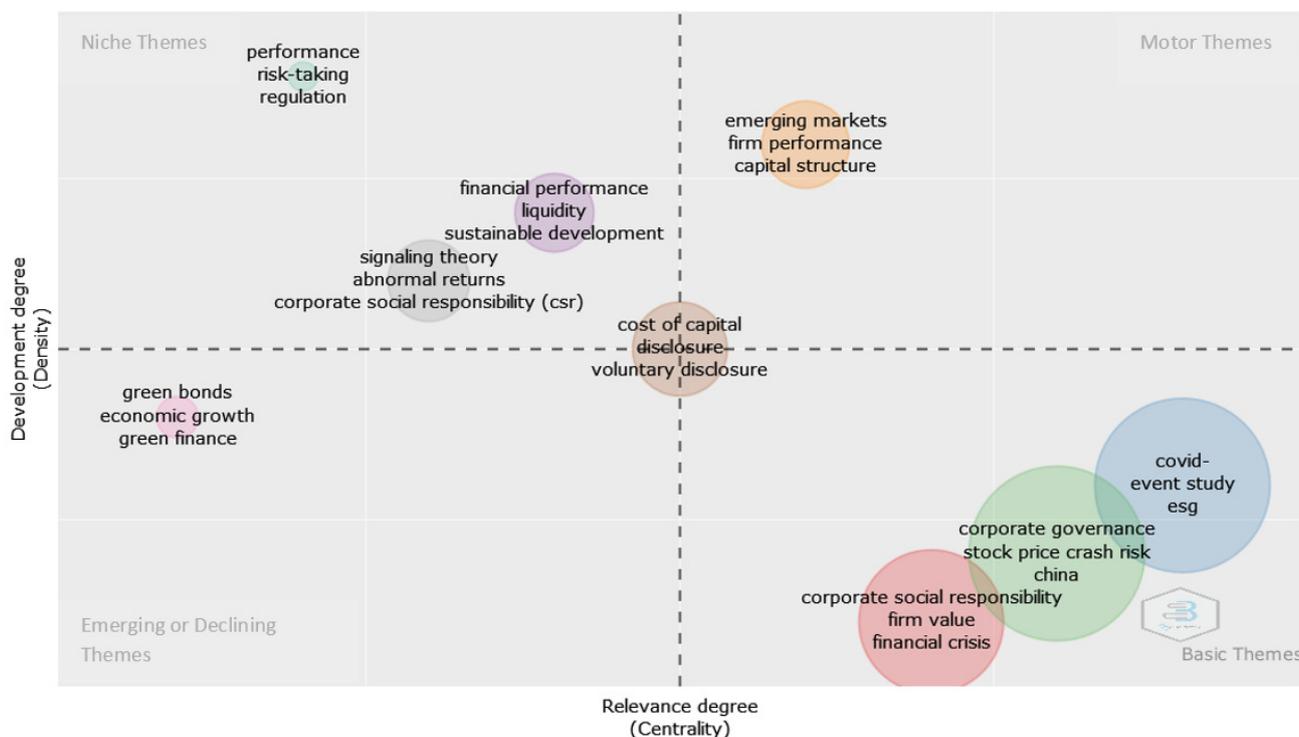


Figure 8. Thematic map based on authors' keywords. Source: Scopus/Biblioshiny.

Scholars have begun to realize the importance of integrating CSR into a strategy for reducing volatility in the stock market due to COVID-19's effects, but ESG factors have emerged as a crucial component. However, researchers in the field are not yet investigating a model that would be based on both CSR and ESG. In keeping with this, the current bibliometric study highlights this important issue and takes into consideration potential future research paths. The necessity for the development of a model that will ensure sustainability in the stock market within the adoption of ESG and CSR archetypes is demonstrated by factorial analysis based on the Multiple Correspondence Analysis (MCA) approaches (Figure 9). In terms of the MCA approach, this is a grid that integrates the co-word analysis (MS Word Document) with the keywords mapped out on a two-dimensional map. The MCA approach categorizes the keywords of the original retrieved articles according to the following dimensions: (i) the frequency of each keyword and (ii) the joint reference of the keywords in each retrieved document. The findings of the MCA approach are interpreted in terms of the position of the points and the distribution of those points along

each dimension. Therefore, the closer the terms are depicted on the Conceptual Structure Map, the more similar they are in their distribution. In summary, various colors denote distinct clusters, the distance between keywords denotes a relationship, the vertex depicts the keyword, and the size of each node corresponds to the frequency of the word.

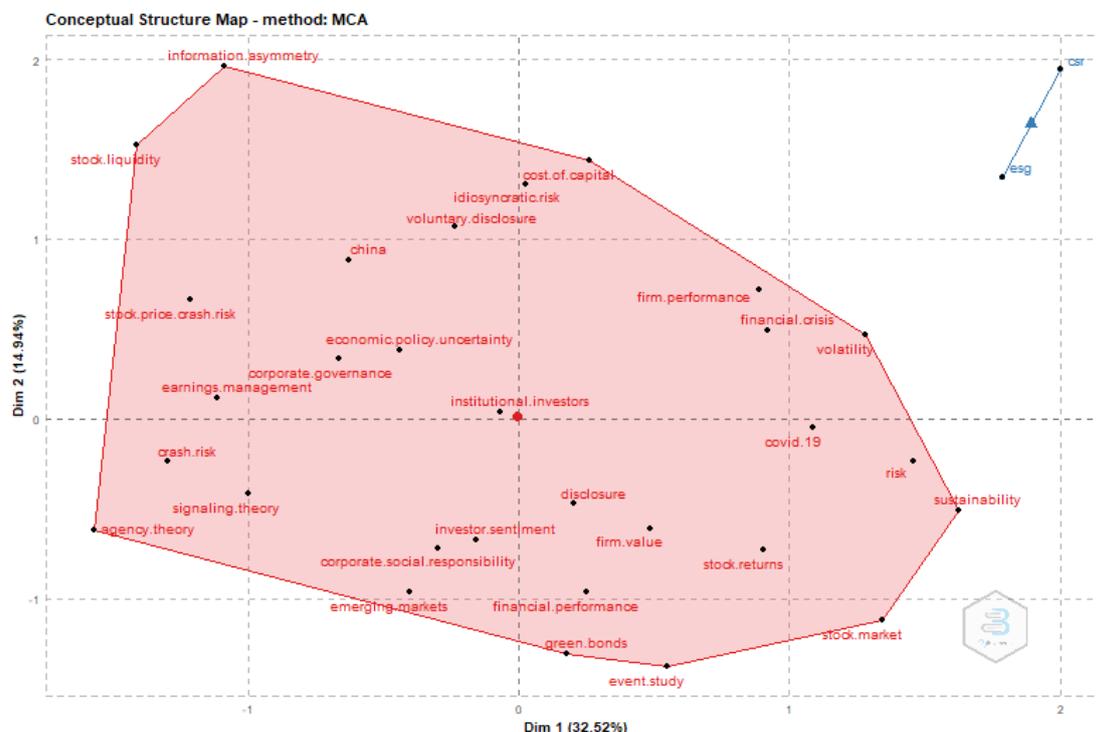


Figure 9. Factorial analysis based on the MCA method. Source: Scopus/Biblioshiny.

The cluster in red color highlights the importance of CSR in the mitigation of any type of volatility such as asymmetric information and stock price crash risk [31]. On the other side, the cluster in blue color highlights the need for a model that will be based on ESG and CSR principles and will contribute to the mitigation of volatility in the market. Corporate social responsibility (CSR) has gained popularity around the globe over the past 20 years. Small- and medium-sized enterprises have increasingly started to adopt what was previously mostly the focus of major organizations with the resources to engage in programs and initiatives. The idea of environmental, social, and corporate governance (ESG) emerged at the same time as CSR started to come up in board meetings, igniting a contentious discussion between proponents and opponents of ESG reporting. In summary, critics said that businesses that invest in ESG issues are likely to do poorly because they do not place enough emphasis on financial success. Studies have shown, however, that ESG variables result in lower volatility and risk overall, as well as superior risk-adjusted returns. Low-volatility investments are more important than ever given the recent volatility in stock markets throughout the world.

5. Discussion

Capital markets have always been volatile, and they are vulnerable to both market risk and unsystematic risk. On some level, taking risks is necessary to make significant rewards. However, it will bring about disaster if it reaches a certain threshold. If the returns are good, there is no cause for concern; however, if they are bad, investors will suffer, and the economy will suffer as a result. The behavior of the stock market has been extensively studied by researchers, particularly during times of crisis. Due to their market failure vulnerability during times of crisis, stock markets may hamper economic growth.

Hygiene crises are considered more severe since they have an impact on both people's lives and the economy.

Studies on the subject further demonstrate that the instability in one specific equities market is strongly correlated with the instability in other equity markets due to the inter-related aspects of the global markets following globalization [32,33]. Therefore, negative news from a foreign market affects markets in other countries as well as other asset classes in addition to the market in that country. It is problematic when there is no preparation in place for emergencies, like in the case of COVID-19, which has terrified the entire world. The first COVID-19 case was reported in Wuhan, China, on 31 December 2019. Although it was not taken seriously at first, the World Health Organization (WHO) labeled it a Public Health Emergency of International Concern on 30 January 2020. Even after travel bans in China, the WHO determined that this was a severe worldwide public health emergency with rapid increases in infection [34–36]. On 11 March 2020, the WHO finally declared COVID-19 a global pandemic after waiting nearly two consecutive months. Every sector of the world economy has been impacted by this undesired and unexpected event [30]. Since the Republic of China is the largest producer and trader of crude oil globally, experts have anticipated that its growth will slow down. The situation is fast deteriorating, and because the terrible disease spread to other nations and regions of the world, more people were killed there than in China. Most of the virus-affected nations' governments are putting in place several measures, including lockdowns and closures of public spaces, compensation for businesses, and tax breaks.

The purpose of this study is to determine whether CSR reduces the probability of future stock price crash risk or asymmetric information [3,12]. We would anticipate CSR to be related to decreased stock price crash risk if socially conscious businesses adhere to a high standard of financial reporting transparency and hence display less bad news-hoarding behavior [37]. On the other side, CSR may be linked to a higher collapse risk if management uses it to hide negative news and distract shareholder attention. Our results are in line with CSR's ability to decrease the primary forms of volatility. As a result, the analysis's findings show that the Chinese academic community was among the first to thoroughly study the incorporation of CSR into volatility reduction techniques [16]. This is supported by the fact that China has the largest economy in the world and is the region where the COVID-19 epidemic originated. Wang J. and Central South University are two Chinese scientists and organizations that have had the most influence on the research issue. In addition, sustainability is the source with the most pertinent published works in the field of CSR and volatility mitigation.

It is noteworthy that green bonds are proposed by the findings of this research as one of the most crucial factors in mitigating volatility in the market [38]. Green bonds are enabling investors to accomplish environmental goals and can assist the market to generate money for initiatives to meet climate commitments. Like typical bonds, green bonds give the bond issuer the ability to raise money for particular initiatives or continuous operations. Investors are informed by the "green" designation that the cash obtained will be utilized to support projects that benefit the environment. Green bonds are integrated in the category of green finance, which is perceived as one of the most efficient and popular ways to meet the needs of environmentalism and capitalism. Specifically, green finance (GF) is a novel financial instrument that combines financial gains with environmental protection [39]. On the other hand, corporate social responsibility (CSR) is viewed as another activity that helps firms improve their operations for long-term sustainability. The environmental performance of any firm may be assessed using a variety of criteria, such as low environmental emissions, pollution control, waste reduction, and recycling. CSR and GF may therefore be seen as significant strategies for raising an organization's environmental sustainability [29]. In this scheme, the green bond market can be witnessed rapid growth. Although the green bond is a new green financial instrument, the green bond market has brought huge benefits to issuers by lowering financing costs via long-term liquidity and involving investors in favor of eco-friendly financial instruments and those seeking to di-

verify their investment portfolios [23,38]. Wide acceptance of the green bond market is reflected by the exponential growth of its market size. The Climate Bond Initiative projects that the total issuance of green bonds will exceed USD 1 trillion by the end of 2020. Even in the face of the extraordinary and ongoing detrimental effects of the COVID-19 pandemic, the average annual issuing growth rate has been over 95%, and a target of USD 5 trillion is anticipated by 2025. There is little question that the market for green bonds will shortly grow rapidly.

In addition, findings present the emergence of a new dynamic model based on CSR and ESG archetypes, which can contribute to the mitigation of volatility in the market. Researchers can utilize several hypotheses to determine the link between ESG performance and risk about the role of ESG in reducing volatility. For instance, “legitimacy theory” contends that business practices have to align with societal expectations, norms, and values. Companies could also employ legitimation methods to prevent legitimacy crises brought on by major accidents, environmental releases, or financial scandals [40,41]. As a result, social capital may be a crucial instrument for establishing the legitimacy of business operations and profits. The “Stakeholder hypothesis” is another idea that connects ESG practices to corporate success [42]. Based on this theory, businesses should prioritize stakeholders’ interests over investors since doing so helps them maximize long-term value. The stakeholder group consists of all social groups in the community that have a direct or indirect relationship with the firm, including shareholders, workers, customers, public organizations, and the government. The stakeholder theory states that considering the interests of all stakeholders guarantees the company’s long-term value increase. Given that ESG is a complicated phenomenon that cannot be well explained by a single theory, it has been proposed that ESG should be evaluated from a variety of theoretical perspectives. The “legitimacy” and “stakeholder” theories are associated with operating complementarities rather than antagonistically since the legitimacy of businesses might be assured by considering the interests of all stakeholders [43–45]. A company’s actions must conform to societal norms, which can be achieved through socially responsible behavior. Additionally, ESG enhances a company’s image by developing moral capital, which attracts a flow of resources in several forms, including financial, human, and technical [43]. ESG is now seen as a tool to boost reputation, trust, and credibility in the market by growing interest. Thus, the development of a model that will be based on the archetypes of both ESG and CSR could be a novel idea for the mitigation of volatility in the market [20].

Additionally, in a theoretical manner, the contribution of this study is to enhance the theory regards the strategies that can help financial institutions and not only mitigate risks such as volatility. Precisely speaking, this study adds to the body of knowledge on the association between ESG/CSR and the mitigation of volatility. CSR has been considered one of the most important tools in keeping volatility at low levels. On the other hand, the results of the current study have highlighted that a business model based on ESG and CSR principles will contribute to the mitigation of volatility in the market. Over the last two decades, corporate social responsibility (CSR) has risen in popularity throughout the globe. Small- and medium-sized businesses are rapidly adopting what was previously primarily the focus of large corporations with the capacity to participate in programs and initiatives. However, the concept of environmental, social, and corporate governance (ESG) originated at the same time as CSR began to be discussed in board meetings, sparking a heated debate between proponents and opponents of ESG reporting. As a result, organizations that invest in ESG concerns are more likely to fail because they concentrate too much focus on financial success. Thus, ESG norms can help reduce volatility and risk overall, while also providing greater risk-adjusted returns. To accomplish the aforementioned goals, the creation of a business model based on these archetypes, CSR and ESG, is critical and will aid in the growth of theory in the field. Because there have been few studies in this area, our effort will add to the depth of the research. Furthermore, the latest research endeavor has practical implications for both financial institutions and governments. The paper underlines the importance of developing a new business model/strategy

that combines CSR and ESG principles. This business model will help financial institutions reduce and maintain pricing volatility. As investors, customers, employees, and partners demand greater corporate accountability, transparency, and sustainability, financial institutions and other businesses face new risks. Stakeholders would like to know how companies affect the environment, how they treat their employees, customers, and communities, and if they do business ethically. ESG and CSR activities include all of these environmental, socioeconomic, and corporate governance components. Furthermore, CSR and ESG standards vary, but they all have one thing in common: they may have a substantial influence on a company's long-term sustainability and profitability, as well as contribute to volatility reduction. Furthermore, good CSR and ESG risk reduction results in less volatile organizations and increases investor trust. Companies are rewarded with access to credit and debt markets, favorable brand equity, reinvestments, and long-term growth that is sustainable [46]. Finally, the findings revealed the importance of CSR and ESG activities in decreasing volatile phenomena and carrying out environmentally sustainable projects. As a result, this study can persuade legislators and top-level market managers to invest more in environmental and social responsibility, modify their managers' attitudes toward the environment, and develop the appropriate sorts of sustainability cultures in their organizations [47]. Businesses and the government might improve environmental sustainability and long-term growth by compensating or rewarding financial institutions that adhere to socially responsible practices and initiatives, for example. This strategy should be simple for industry managers to adopt, and it may also help them improve their environmental performance.

6. Conclusions

For more than half a century, corporate social responsibility (CSR) has served as the key "vehicle" for balancing the economic, social, ethical, and environmental impacts of a company's operations, being one of the most dynamic and demanding areas of its activity. In early 2020, the COVID-19 pandemic ushered us into an era where we monitored businesses worldwide to move rapidly to change for the good of employees, customers, and society at large. It is therefore very likely that COVID-19 will accelerate the emergence of an evolutionary form in the way a socially responsible business is organized and operated. However, according to experts in the field, if corporations perform corporate social responsibility, even at low and moderate levels, CSR can assist in reducing volatility in the market.

The scope of this study was (i) to highlight the role of CSR in the mitigation of volatility through the development of sustainable strategies and (ii) to indicate the research trends in the field. To approach the research problem, Bibliometric analysis based on a five-step method was applied. In the context of this research, 460 scientific papers were analyzed, while for visualization of the findings, the following bibliometric tools have been used: R studio, Biblioshiny, and VOSviewer. Findings highlight not only the importance of CSR in the mitigation of volatility but the contribution of ESG as well. Thus, the current study indicates the emergence of a new dynamic model based on CSR and ESG archetypes, which can contribute to the mitigation of volatility in the market. Scholars can utilize several hypotheses to determine the link between ESG performance and risk about the role of ESG in reducing volatility.

Based on the above, businesses should prioritize the interests of stakeholders over investors to maximize long-term value. All social groups in the community that have direct or indirect interaction with the enterprise, such as shareholders, workers, consumers, public organizations, and the government, are included in the stakeholder group. According to the stakeholder theory, addressing the interests of all stakeholders ensures the company's long-term value improvement. Given that ESG is a complex phenomenon that cannot be adequately explained by a single theory, it has been advocated that ESG be assessed from several theoretical viewpoints. The "legitimacy" and "stakeholder" theories are related by acting complementarily rather than antagonistically, because the legitimacy of enterprises

may be assured by taking into consideration the interests of all stakeholders. A company's actions must comply with societal norms, which can be accomplished through socially responsible conduct. Furthermore, ESG improves a company's image by building moral capital, which draws a flow of resources in many forms, including financial, human, and technological. With increasing attention, ESG is increasingly recognized as a strategy for improving market reputation, trust, and credibility. Thus, developing a model based on the principles of both ESG and CSR might be a creative strategy for reducing market volatility. The proposal of the theoretical framework of this novel business model is included in our future research plans.

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