

## THE CONCEPT OF ESG IN A SYSTEMATIC ANALYSIS OF LITERATURE, MAPPING AND KEYWORD CLUSTERS

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**Purpose:** The purpose of this paper is to identify and classify the scientific publication of ESG and to identify potential directions for the development of future research.

**Design/methodology/approach:** A systematic review of the relevant literature is the method used in this research. The Scopus database was used for the search. The author has identified keyword co-occurrence mapping analysis in 1,111 publications and analyzed thematic clusters in terms of the research areas of the publication. The analyzed publications were selected based on research query that included TITLE-ABS-KEY ("ESG").

**Findings:** This work is based on the bibliometric analysis and identifies nine research areas included in thematic clusters: 1 - ESG and responsibility investing, 2 - the correlation between sustainable enterprise development and enterprise value, 3 - climate and social aspects in the functioning of a company and its investors, 4 - factors influencing sustainable development goals and ESG rating, 5 - impact of csr activities on stock liquidity, investor preferences, and efficiency in technological innovation, 6 - perception of the ESG ratings by firms and the impact of ESG components on company results, 7 - the impact of climate change on corporate finance and investments, 8 - the circular economy and green innovation, 9 - the impact of ESG on financial performance. The author also identifies potential areas for future research, such as green innovation, esg controversies, fintech, sustainability performance, and financial performance.

**Research limitations/implications:** The study has some limitations that should be noted. These result from being limited to the Scopus database and the omission of gray literature. The researcher also had to omit some analyses due to the need to present the publication within a certain character limit.

**Originality/value:** This article presents a comprehensive identification and classification of scientific publications on the ESG concept and the number of publications over the years. Dominant authors, countries and research units are indicated. Identification of thematic clusters and the research gap can help researchers and practitioners in designing future research and implementation plans.

**Keywords:** ESG, environmental, social, governance, systematic literature review.

**Category of the paper:** Systematic literature review.

## 1. Introduction

ESG is a concept in connection with sustainable development that includes environmental, social, and governance aspects as key elements of responsible organizational management (Gemra et al., 2024, p. 24), taking into account the internal interests of an organization as well as its impact on the external environment. Very popular today is the approach in which a company should focus not only on its own well-being and economic results, but how the organization should also take care of the ensuing benefits for the environment, the local community, and other stakeholders. Caring for the external environment can improve the company image, the opinion of potential investors (Egorova, Grishunin, Karminsky, 2022, p. 339), and customer purchasing choices. As a result, it may have an impact on the financial condition of the organization. Legal regulations impose an obligation to report on sustainable development whose aspects prove the relevance and importance of the ESG.

Taking all this into account, a summary of the current state of knowledge in the area of ESG has been conducted using a systematic review of the literature. The aim of this article is to identify and classify the scientific publication of ESG and to identify potential directions for the development of future research. The conclusions obtained from the completed research process can be used as a basis for planning other future research about ESG.

## 2. Theoretical assumptions of the concept of ESG

ESG includes three elements: impact on the environment, on social issues, and on consequent governance (Kotsantonis, Pinney, Serafeim, 2016, p. 10; Li et al., 2021, p. 1) by incorporating these areas into investment strategy (Maquieira, Arias, Espinosa-Mendez, 2024, p. 1; Cicirko, 2022, p. 118). The ESG concept is in connection with sustainable development and visualizes the achievements of a company in this area (Korzeb et al., 2024, p. 1). ESG contains areas and risk groups which will be included in a non-financial report (Zielińska, 2023, p. 129). In the environmental areas risks are identified as well as opportunities related to the natural environment and climate. The second area – social – includes values and relationships with the company's stakeholders, activities aimed at improving employee well-being, actions promoting inclusivity, and fair policies within the organization. The final area, corporate governance, refers to the organizational structure and executive compensation, as well as the approach to lobbying (Zielińska, 2023, p. 129; Chytis, Eriotis, Mitroulia, 2024, p. 1). ESG illustrates the way in which companies and investors integrate these areas into their business models (Gillan, Koch, Laura, 2021, pp. 1-16).

ESG helps to establish strategic goals in line with the three above aspects (Cicirko, 2022, p. 121), which are the basis for management decisions (Syed, 2017, p. 1). ESG is the standard and strategy used by investors in assessing corporate behavior and predicting future financial results (Li et al., 2021, p. 1). It can be considered that the popularization of ESG as a tool used to assess the sustainable development of companies has been contributed to by climate change and the need to move towards a low-emission economy (Daugaard, Ding, 2022, p. 1), but the main factor is the imposition of ESG reporting obligations through international regulations such as UE taxonomy (Zielińska, 2023, p. 129).

### 3. Methodology

The aim of this article is to identify and classify the scientific publication of ESG and to identify potential directions for the development of future research. To achieve the research objective a systematic review of the relevant literature was employed. This systematic review shows the level of development of the selected topic in current literature (Rollnik-Sadowska, 2023, p. 6), based on identified and summarized scientific publications. It also allows for the identification of a research gap (Carrera-Rivera, Larrinaga, Lasa, 2022, p. 3).

This comprehensive identification, assessment, and synthesis of scientific publications on the given topic (Rahmaniara, Pramanab, 2024 p. 751), while maintaining its relevance and correctness, constitutes a reliable summary of the current state of knowledge in this area (Whittemore, Knafl, 2005, p. 546) based on reliable scientific evidence (Harris et al., 2013, p. 1) from an extensive database of publications. Precise description of the method employed in conducting the research, and the inclusion of an extensive database of searched publications, works to reduce any bias (Mazur, Orłowska, 2018, p. 235; Hensel, 2020, p. 9).

In this article, the research process was carried out according to a methodology consisting of seven stages (Szpilko et al., 2023, p. 55; Orłowska, Mazur, 2018, p. 237) presented in Figure 1.

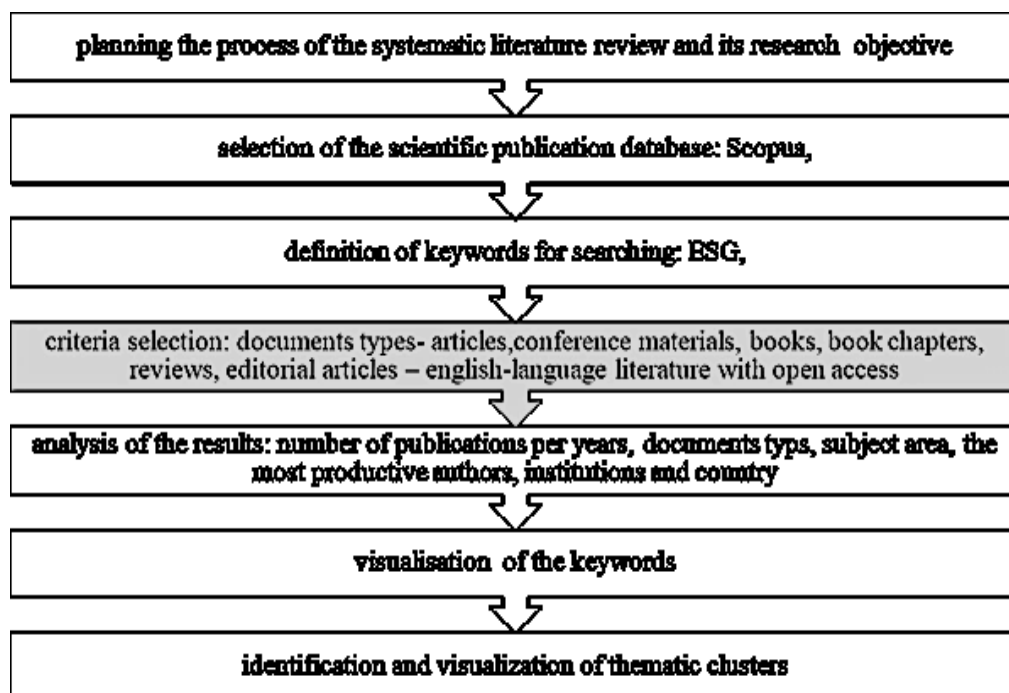
The research process consisted of planning the systematic literature review and its purpose, as well as formulating these research questions:

Q 1: What thematic areas can currently be identified in research on the ESG?

Q 2: What are the directions for future research on the concept of ESG?

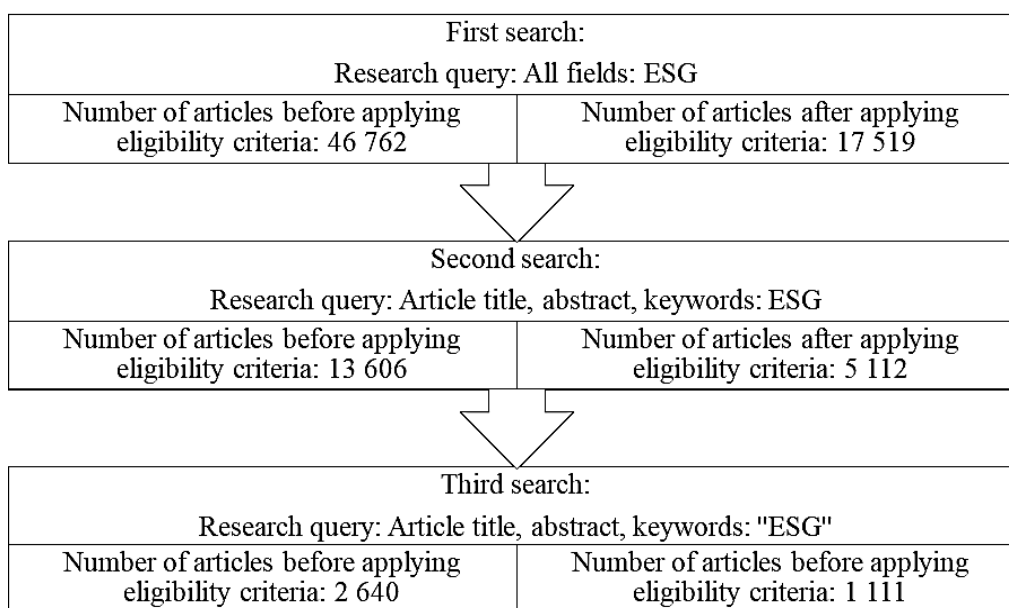
Then, the researcher chose publication database for analysis – Scopus, which has a large number of scientific publications. This has also been observed in research by other authors who have also conducted a systematic literature review (Baas et al., 2020, p. 377). The next step was to select the keywords: the three components of ESG. To narrow the search eligibility criteria were used and analyses were conducted on English language literature with open access,

including: articles, conference materials, books, book chapters, reviews, editorials. The results of the searches are presented in Figure 2. Further analysis was based on 1111 search results.



**Figure 1.** Methodology of systematic literature review.

Source: author's own study.



**Figure 2.** Search results.

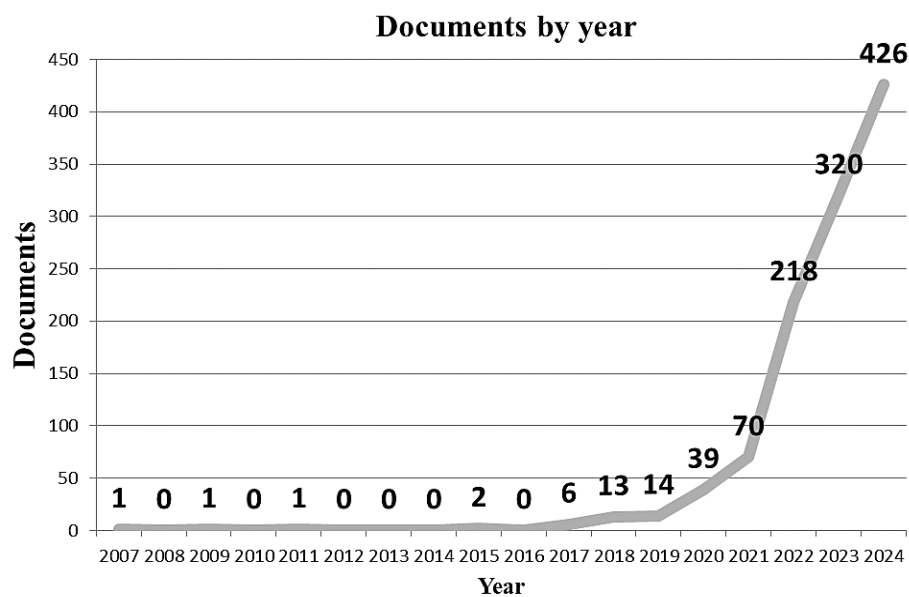
Source: author's own study based on the Scopus database.

The author conducted an analysis of recurring keywords, which led to the creation of a map showing the co-occurrence of keywords related to the ESG. The researcher used VOSviewer software to create a keyword co-occurrence map.

## 4. Findings

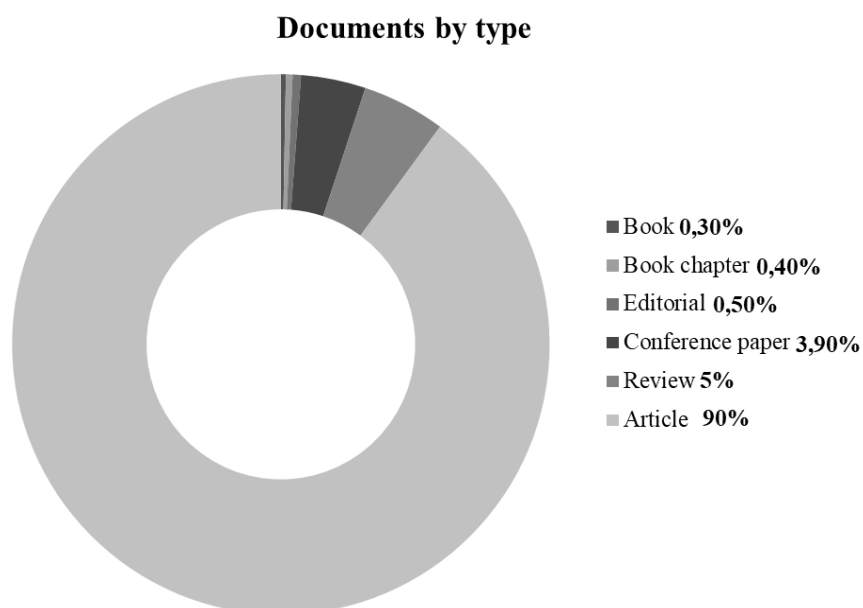
Then the author analyzed the search results, including the number of publications over the years (Figure 3), type of publications (Figure 4) and by subject area (Figure 5) and identified the most productive authors, institutions, and countries (Figure 6). 1111 publications were included in analyzes.

The scientific publication on ESG was increase in 2021 and since then it has been constantly growing.



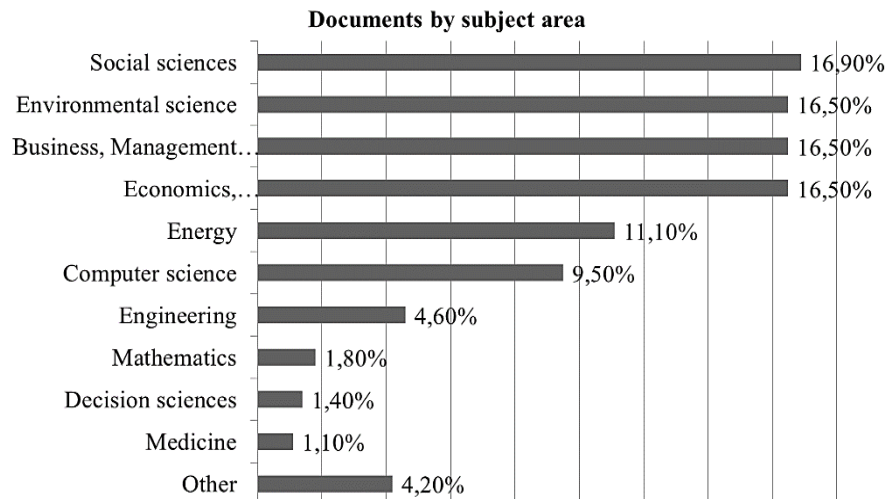
**Figure 3.** Number of publications containing the keywords "ESG".

Source: author's own study based on the Scopus database.



**Figure 4.** Type of publications containing the keywords.

Source: author's own study based on the Scopus database.



**Figure 5.** Documents of ESG by subject area.

Source: author's own study based on the Scopus database.

Documents by author	No. of publications	% of scientific publications
Garefalakis A.	5	0,45%
Lee J.H.	5	0,45%
Makarenko I.	5	0,45%
Passas I.	5	0,45%
Ragazou K.	5	0,45%
Rahi A.F.	5	0,45%
Treepongkaruna S.	5	0,45%
Barros V.	4	0,36%
Bax K.	4	0,36%
Cho J.H.	4	0,36%
Documents by country or territory	No. of publications	% of scientific publications
China	161	14,49%
United Kingdom	151	13,59%
United States	122	10,98%
Italy	100	9,00%
South Korea	87	7,83%
Germany	60	5,40%
Spain	60	5,40%
Australia	53	4,77%
Poland	50	4,50%
Malaysia	43	3,87%
Documents by institution	No. of publications	% of scientific publications
University of Oxford	16	1,44%
HSE University	14	1,26%
Sapienza Universita di Roma	13	1,17%
University College London	11	0,99%
Szkoła Główna Handlowa w Warszawie	10	0,90%
Chulalongkorn University	10	0,90%
University of Cambridge	10	0,90%
Sungkyunkwan University	9	0,81%
Centre for Economic Policy Research, London	9	0,81%
Hogskolan & Gavle	9	0,81%

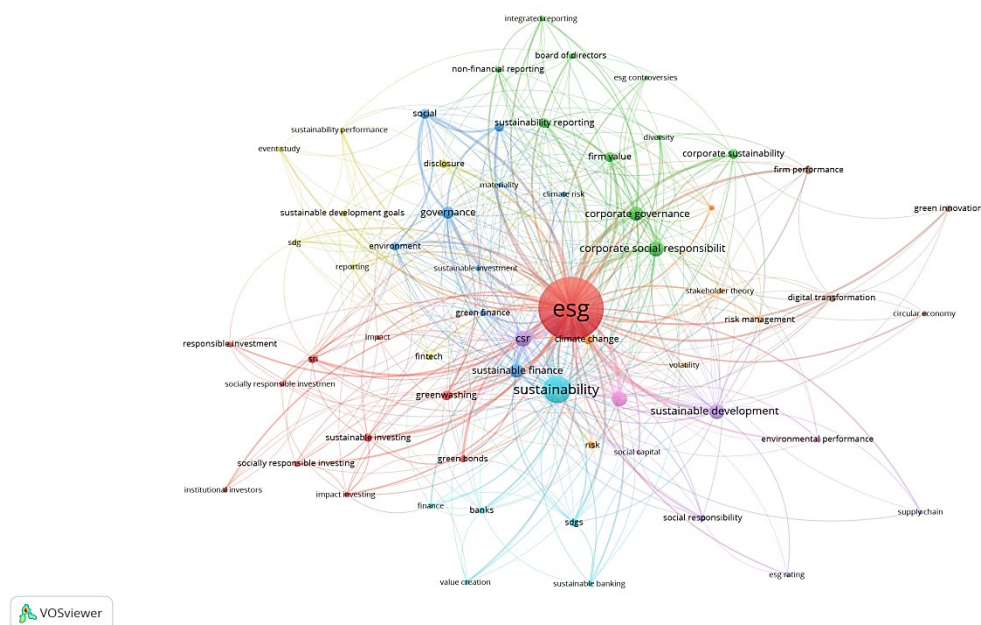
**Figure 6.** Most productive authors, countries and organizations.

Source: author's own study based on the Scopus database.

Articles are the dominant type of publication and account for 90%. Thematic areas containing the keyword ESG are mainly focused on: social sciences (16.9%), environmental science (16.5%), business, management and accounting (16.5%), economics, econometrics and finance (16.5%).

Authors with the highest number of ESG-related publications included in the Scopus database such as Garefalakis A., Lee J.H., Makarenko I. as well as others presented in Figure 6 are authors of 5 or 4 papers in this thematic area. The countries with a significant number of publications are China with 14,5 % of publications, United Kingdom with 13,6 % and United States almost 11%. Italy 9%, South Korea 7,8%, Germany 5,4%, Spain 5,4%, Australia 4,8%, Poland 4,5% and Malaysia 3,9% are territorial areas that also show a high level of interest in the field of ESG. The most productive institutions in terms of published works dedicated to environmental, social, and corporate governance issues are University of Oxford, HSE University, Sapienza Università di Roma as well as the other institutions shown in Figure 6.

In the next stage of the research, the occurrence of keywords in publications from the Scopus database was visualized (Figure 7). The VOSviewer tool was used, and the keyword co-occurrence option was selected. The tool generated 2,865 keywords, after which a minimum occurrence of 7 was applied and reducing to 73 keywords. Subsequently, terms unrelated to the research topic (e.g. “literature review”, “systematic literature review”) were excluded, resulting in 61 keywords, which were organized into 9 clusters. The most frequently occurring keywords include ESG are ESG, sustainability, CSR, corporate social responsibility, corporate governance, governance, sustainable development.



**Figure 7.** Keyword co-occurrence mapping for the topic “ESG”.

Source: author's own study based on Scopus, using the VOS-viewer program.

Based on the analysis made using the VOSviewer (Figure 7), 9 thematic clusters can be created, the first cluster consists of 11 items, the second 10 items, the third 9 items, the fourth 7, the fifth, sixth and seventh clusters contain 6 items each, the eighth 4 items and the ninth 2 items. The clusters were grouped according to the research areas of the publications included in the individual groups (Figure 8). Keyword mapping helps to characterize the ESG concept. Additionally, it allows to draw conclusions about the areas of interest of researchers. The publications included in Figure 8 are frequently cited publications and were therefore selected to draw conclusions about the research areas that are of particular interest to researchers.

<b>Cluster 1 (red): ESG and responsibility investing</b>
<ul style="list-style-type: none"> <li>Keywords: ESG, green bonds, greenwashing, impact, impact investing, institutional investors, responsible investment, socially responsible investing, socially responsible investment, sri, sustainable investing.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Identifying the relationship between ESG ratings and responsible investing. Investment portfolio choice based on ESG ratings. The influence of investment choices on the social and environmental impact of an organization. Impact of public environmental concern on corporate green investments.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Pedersen L., Fitzgibbons S., Pomorski L. (2021), Pástor L., Stambaugh R.F., Taylor L.A. (2021) Yan G., Cheng H.K. (2021), Raghunandon A., Rajgopal S. (2022), Demers E. et al. (2021).</li> </ul>
<b>Cluster 2 (green) The correlation between sustainable enterprise development and enterprise value</b>
<ul style="list-style-type: none"> <li>Keywords: Board of directors, corporate governance, corporate social responsibility, corporate sustainability, diversity, ESG controversies, firm value, integrated reporting, non-financial reporting, sustainability reporting.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Management and corporate social responsibility. Identification of the relationship between the sustainable development of business and their market valuation. Analysis of the impact of ESG scores on company value and profitability. Research on the relationship between sustainability disclosure (environmental, social and corporate governance) and company value. Analysis of the impact of harmonizing sustainability reporting standards in the context of investing based on ESG ratings. Determining how ESG contributes to creating shareholder value over the long term. Identifying whether ESG is becoming one of the key elements of how corporate functioning.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Bohyun Y., Hwan L.J., Ryan B. (2018), Azeem Q.M. et al., (2020), Adams C.A., Abhayawansa S. (2022), Aydagmus M., Gulay G., Ergun K. (2022), Zumente I., Bistрова J. (2021), Hassan S.M. (2024).</li> </ul>
<b>Cluster 3 (blue) Climate and social aspects in the functioning of a company and its investors</b>
<ul style="list-style-type: none"> <li>Keywords: Climate risk, environment, environmental, governance, green finance, materiality, social, sustainable finance, sustainable investment.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Exploring the effects of climate regulations on companies and investors, along with associated risks. The social aspect in the creation and use of ESG data and benchmark Identifying the relation between climate change and financial markets. Constructing investment portfolios resilient to climate risk.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Stroebe J., Wurgler J. (2021), Eccles R.G., Lee L.E., Strohle J.C. (2020), Giglio S., Kelly B., Stroebe J. (2021), Pastor L., Stambaugh R.F., Taylor L.A. (2022), Jorgensen S., Mjos A., Pedersen L.J.T. (2022).</li> </ul>
<b>Cluster 4 (yellow) Factors influencing sustainable development goals and ESG rating</b>
<ul style="list-style-type: none"> <li>Keywords: Disclosure, event study, fintech, reporting, sdg, sustainability performance, sustainable development goals.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: The impact of conflicts of interest arising from commercial ties on ESG ratings Analysis of the impact of artificial intelligence and digital technology on ESG reporting and sustainability results. The impact of the organization's sustainable development activities on the implementation of ESG challenges included in the sustainable development goals.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Li X., Lou Y., Zhang L. (2024), Sætra H.S. (2021), Delgado-Ceballos J. et al. (2023), Camodeca R., Almicci A. (2021), Wu S., Li Y. (2023).</li> </ul>

**Figure 8.** Clusters of keywords.

Source: author's own study based on Scopus.



<b>Cluster 5 (purple ) The impact of csr activities on stock liquidity, investor preferences and efficiency in technological innovation</b>
<ul style="list-style-type: none"> <li>Keywords: CSR, esg rating, social capital, social responsibility, supply chain, sustainable development.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Analysis of the impact of the functioning of company CSR committees on ESG ratings. Exploration of the individual stock market investors' preferences for ESG issues and influence of the investment purpose on decision-making process. Identification of the relationship between the amount of financial expenditures to CSR actions and firms' stock market liquidity. Exploring the impact of ESG considerations on supplier ratings. Identification dependencies between ESG results on efficiency in green technology innovation.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Baraibar Diez E., Odriozola M.D. (2019), Sultana S., Zulkifli N., Zainal D. (2018), Roy P.P., Rao S., Zhu M. (2022), Rudnik K., Chwastyk A., Pisz I. (2024), Zhang C., Jin S. (2022).</li> </ul>
<b>Cluster 6 (azure) Perception of the ESG ratings by firms and impact of ESG components on company results</b>
<ul style="list-style-type: none"> <li>Keywords: Banks, finance, sdgs, sustainability, sustainable banking, value creation.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Identifying how companies approach ESG ratings. Effect of ESG components on stock returns. Analyzing the impact of ESG disclosure on a firm's performance include growing stakeholder interest in ESG practices. Implication of environmental innovations to ESG ratings.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Clementino E., Perkins R. (2021), Torre M.L. et al. (2020), Pulino S.C. et al. (2022), Varyash I. et al. (2020), Brandon R.G, et al. (2022).</li> </ul>
<b>Cluster 7 (orange) The impact of climate change on corporate finance and investments</b>
<ul style="list-style-type: none"> <li>Keywords: Climate change, corporate financial performance, risk, risk management, stakeholder theory, volatility.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: The impact of climate change on the stock prices of green firms and financial risk for investors. Identification of strategies for protecting investment portfolios of climate change. Identifying the impact of ESG factors on corporate financial performance, including profitability and financial risk. Verification of the impact of ESG reporting on reducing organisations' greenhouse gas emissions.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Allahdadi M.R., Fretheim T., Vindedal K. (2024), Kim S., Li Z. (2021), Ardia D., et al. (2023), Peng L.S., Isa M. (2020), Luo L., Tang Q., (2023).</li> </ul>
<b>Cluster 8 (brown) Circular economy and green innovation</b>
<ul style="list-style-type: none"> <li>Keywords: Circular economy, digital transformation, firm performance, green innovation.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: Identifying the relationships between ownership structure and business model to corporate innovation and efficiency in the ESG ratings. Analyze the impact of sustainable strategic investment decision on the financial results in the circular economy. Integration of sustainable development goals and ESG' results in the circular economy. Analysis of the impact of ESG practices on corporate financial performance</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Lin Y., Fu X.M., Fu X. (2021), Alkaraan F. et al. (2023), Fatimah Y.A. et al. (2023), Nguyen D.T., Hoang T.G., Tran H.G. (2022), Katsamakas E., Miliareis K., Pavlov O. (2022).</li> </ul>
<b>Cluster 9 (multicolored) The impact of ESG on financial performance</b>
<ul style="list-style-type: none"> <li>Keywords: Environmental performance, financial performance.</li> </ul>
<ul style="list-style-type: none"> <li>Research areas: The effect of ESG on financial result of companies and company's market value. Impact of ESG disclosure on corporate performance through the lens of institutional theory and signaling theory.</li> </ul>
<ul style="list-style-type: none"> <li>Selected publication regarding keywords: Umakanta G. et al. (2024), Friede G., Busch T., Bassen A. (2015), Zhou G., Liu L., Luo S. (2022), Taliento M., Favino C., Netti A. (2019), Abdi Y., Li X., Camara Turull X. (2022).</li> </ul>

**Cont. figure 8.** Clusters of keywords.

Source: author's own study based on Scopus.



Nine thematic clusters were identified as a result of the analysis: 1 - ESG and responsibility investing, 2 - the correlation between sustainable enterprise development and enterprise value, 3 - climate and social aspects in the functioning of a company and its investors, 4 - factors influencing sustainable development goals and ESG rating, 5 - impact of CSR activities on stock liquidity, investor preferences, and efficiency in technological innovation, 6 - perception of the ESG ratings by firms and the impact of ESG components on company results, 7 - the impact of climate change on corporate finance and investments, 8 - the circular economy and green innovation, 9 - the impact of ESG on financial performance. Keywords in the latest publications indicate that future research directions in the ESG field should increasingly focus on green innovation, ESG controversies, fintech, sustainability performance, and financial performance.

The analysis reveals that publications related to ESG often examine, among other things, the impact of ESG implementation, ESG ratings on stakeholder perceptions, the market value of the company, and the level of organizational innovation. The rather fragmented research on the consequences of companies' failure to meet ESG criteria and their failure to comply with the obligation to report them may be considered a research gap. This may therefore constitute a direction for further research, taking into account the increasingly stringent legal regulations in this area.

The study has some limitations that should be noted. These result from being limited to the Scopus database and the omission of gray literature. The researcher also had to omit some analyses due to the need to present the publication within a certain character limit.

## **6. Conclusions**

In reference to the formulated objective of the article and research problems, it can be stated that in recent years there has been an increase in interest in the ESG concept.

In response to the first research question, based on the nine thematic clusters identified by the author, it can be stated that the main research areas in scientific publications on ESG pertain to its impact on enterprises, stakeholder perceptions of companies, market value, financial performance, and organizational innovation.

Regarding the second research question, potential directions for future research include the relationship between ESG and green innovation, sustainability performance, the impact of ESG implementation on financial results, and ESG controversy. The topic of the consequences of companies' lack of ESG activities and failure to comply with their reporting obligations may also be considered a research gap.

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