

FRAUD ON NON-FINANCIAL REPORTING

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Abstract

Sustainable development refers to that development that satisfies current needs, without jeopardizing the ability of future generations to meet their needs. In this study, we set out to track the types of non-financial reporting fraud and their impact on users. The need for non-financial reporting arose precisely from the desire of stakeholders to trust in the smooth running of the company. The need for non-financial reporting arose precisely from the desire of stakeholders to trust in the smooth running of the company. The paper aims to achieve two main objectives: to follow the evolution of publications on ESG, for this, we will use the Web of Science and determine the greenwashing practices and factors that may lead to this behaviour. As a methodology, we used the VOSviewer application to perform a bibliometric analysis of the scientific studies taken from the Web of Science, 5,277 papers were taken over for the ESG term and 972 papers for the Greenwashing term, we have analysed studies from the beginning of sustainability publications to the present day. As a result, we identify from the literature three types of fraud: the first type of ecological washing is the manipulation of decline to stimulate the value of the company. The second type of eco-washing is selective closure to mislead investors. The third type of simple eco-washing focuses on greenwashing at the product level. Among the factors that can lead to greenwashing behaviour, we mention: the level of competition, pressure from rating agencies, pressure from banking companies and others. This research is important to consumers, organizations, governments and, last but not least, the environment. Consumers have the right to be properly informed about the impact of the products and services they purchase, and companies must be accountable and transparent in their communication. Governments can use this research to develop effective policies and regulations to protect the environment and consumers.

Keywords

financing constraint, green innovation, corporate social responsibility, governance performance.

JEL Classification

G00, Q01, Q56

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Introduction

Greenwashing is an increasingly common phenomenon in companies trying to improve their public image by misleadingly presenting their practices as environmentally friendly. At a time when sustainability is becoming a crucial factor for consumers and investors, the need to understand and address this behaviour is essential.

Lyon and Maxwell (2011) see greenwashing as "the selective disclosure of positive information about a company's environmental or social performance, without full disclosure of negative information on these dimensions, to create an overly positive corporate image". Greenwashing includes any firm behaviour that misleads consumers about the environmental benefits of their practices, products, or services (Parguel et al. 2011).

This study aims to raise the alarm for consumers by helping them identify false or exaggerated sustainability claims, thus protecting them from being misled and making uninformed purchasing decisions.

Companies that practice greenwashing can gain an unfair advantage over the competition by attracting customers who are looking for green products or services. The case study aims to highlight the need for stricter policies and penalties for such practices, ensuring a level playing field for all companies. Investors are becoming increasingly interested in the environmental practices of the companies in which they invest. Thus, this study could provide investors with the necessary information to make more informed choices and avoid the risks associated with companies that overestimate their environmental performance. The study could inform regulatory authorities about the prevalence and forms of greenwashing, which could lead to the development of more effective policies and regulations to prevent such practices and promote true sustainability.

The need to conduct such a study is fundamental to protecting consumers, ensuring corporate transparency, protecting the environment, sustaining investor confidence, developing effective public policies and educating the public, in a context where sustainability is becoming a major differentiator in the marketplace.

As a methodology, we used the VOSviewer application to outline two bibliometric analyses, the data being taken from the Web of Science. The results capture the types of fraud identified in the literature, more specifically, the types of greenwashing: manipulation of disclosure to stimulate the company's valuation; Selective disclosure to mislead investors and greenwashing at the product level. The research helps to enrich the literature and helps to formulate policies to reduce fraud regarding non-financial reporting.

Based on the objectives of the research and the contributions of this paper to the previous literature, the structure of the article is as follows: Section 2 provides a brief review of the previous studies to clarify the gaps in the literature, which the literature seeks to fill. Section 3 captures the research methodology used, section 4 includes the results, limitations of the research and the premises for future research.

1. Review of the scientific literature

According to the authors Ghisetti and Rennings (2014) and Yu et al. (2020), ESG ratings vary significantly between rating agencies due to the lack of a uniform standard

for measuring and reporting ESG factors. This creates a situation where the same company can receive very different ratings depending on the rating source. This variability can confuse lenders and investors who rely on these ratings to make informed investment and lending decisions.

The author's Goss and Roberts (2011), Hoepner et al. (2016), Nandy and Lodh (2012) and Sharfman and Fernando (2008), that superior ESG practices help reduce risks associated with non-financial factors and improve companies' access to finance at lower costs. Investors and lenders perceive these companies as safer, which translates into lower costs of capital and bank loans. This underlines the importance of integrating ESG criteria into corporate strategies and investment decisions.

Verrecchia (1983) and Dye (1985) argue that firms with high ESG performance tend to report their ESG activities in detail, while those with low ESG performance tend to report less frequently.

The author's Walker and Wan (2012) argue that greenwashing refers to the art of not talking about the negative aspects of ESG activities. According to Lin et al. (2023), in the absence of standardized format requirements and rigorous auditing, ESG reporting can be used as a discretionary tool by managers to project a favourable image of the company.

The way to guide firms towards prudent green investments is of vital importance for the effectiveness of environmental improvement (Yang et al., 2023).

Considering this behaviour, we have pencilled in some research questions, which we try to answer throughout the paper: to identify the level of awareness of greenwashing among consumers and other stakeholders. Education about the tactics and signs of greenwashing can help people become more aware and critical of advertising and marketing messages.

Another research question is: does advertising contribute to the distortion of non-financial reporting? The implementation and enforcement of stricter regulations regarding the advertising and labelling of products and services can help reduce greenwashing. Effective oversight and sanctions for greenwashing practices can deter entities from resorting to such tactics.

Other questions arise when studying this phenomenon: can the lack of a global governing body on sustainability encourage greenwashing? Do the rating agencies use the same reporting framework?

The purpose of this paper is to identify the types of greenwashing and ways to combat greenwashing, the practice by which an entity promotes its products or activities as more sustainable than they are, being essential for maintaining consumer trust and promoting genuine sustainable development.

The research issue concerns the impact of the manipulation of non-financial reports on users. Thus, the case study of this paper pursues two main objectives: the analysis of case studies on sustainability reporting, identified on the Web of Science, and the determination of greenwashing modalities and the factors that can lead to this behaviour.

The author's Chen and Dagestani (2023) argue that the mechanisms of greenwashing behaviour are: quality of disclosure, stakeholder concerns and funding constraints. So far, little is known about how greenwashing affects corporate value. The findings

suggest that washing environmentally friendly increases the quality of disclosure, and the attention of stakeholders and mitigates the constraints of corporate financing.

The confusing and contradictory landscape of corporate environmental certification has resulted in an increasing number of calls (Kolcava, 2023). The European Union recently adopted a new proposed law (the Directive on Green Claims) to address this issue. Responsibility is still attributed primarily to the individual in this plan, the reason being that if the rigour and reliability of environmental claims made by companies and organizations can be guaranteed by regulation, then, consumers will be empowered to make better-informed choices and play an active role in the green transition (European Commission, 2023).

By disclosing correct information and comprehensive environmental, firms demonstrate their commitment to transparent management environmental and sustainable practices, making it more difficult to engage in eco-laundering (Costantini & Mazzanti, 2012; Yin & Wang, 2018; Zeng et al., 2012; Hu et al., 2023).

The research hypothesis of the study focuses on the existence of a correlation between greenwashing and other key terms (corporate social responsibility, governance performance), but also the existence of a correlation between ESG and other key terms (financial constraint, ecological innovation). At the same time, the absence of a strong global authority can create a space where companies can exaggerate or distort the truth without being subject to clear standards and adequate controls. In this context, organizations can take advantage of the lack of regulation or transparency to engage in greenwashing practices without being held accountable. The lack of a global reporting framework can encourage greenwashing. A global reporting framework would set clear standards and requirements for how organizations should report their environmental impact and demonstrate their commitment to sustainable practices.

2. Research methodology

As a research methodology, we used the VOSviewer application to capture the bibliometric analyses regarding the ESG term and the Greenwashing term, as we analysed case studies taken from the Web of Science. Web of Science is one of the most prestigious and comprehensive bibliographic research and analysis platforms available today. This platform provides access to a vast collection of scientific and technical literature, including journal articles, conference proceedings, books, patents and other sources of information.

To create the bibliometric analysis and scientific mapping through VOSviewer, 5,277 studies were retrieved for the term ESG and 972 studies for the term Greenwashing. VOSviewer can be used to create scientific maps that illustrate bibliometric networks in the scientific field of interest. These maps can be generated using bibliographic data such as author information, keywords and citations between scientific papers. Through these maps, users can view and analyse the interactions between authors, articles, keywords, and other entities relevant to their research field. This can provide a deeper understanding of the structure and evolution of research in a given field, identifying trends, research groups and significant contributions.

The data were processed using the Microsoft Excel program, using several functions to minimize the risk of error, without the need to use another special program for statistical

interpretation of the data. The results of bibliometric analyses are found in the form of tables and figures.

3. Results and discussions

The need for performance analysis of scientific publications is determined by the speed with which research develops in all areas of life, but also by the social responsibility of the researcher to procure added value by creating quality studies. The database used to prepare the bibliometric analysis is Web of Science, I consulted this database to extract the information on 17.04.2024.

- **Bibliometric analysis on ESG**

We used the key term ESG (environment-social-governance), then we stylized the search to select the information about published publications, most research being registered in the categories: business finance (24.88%), environmental studies (17.3%), environmental sciences (15.69%), business (15.1%), green sustainable science technology (14.88%), management (14.72%), economics (11.75%), etc. Thus, the statistical sample we acquired includes 5,277 scientific papers, most of which (98.26%) are written in English.

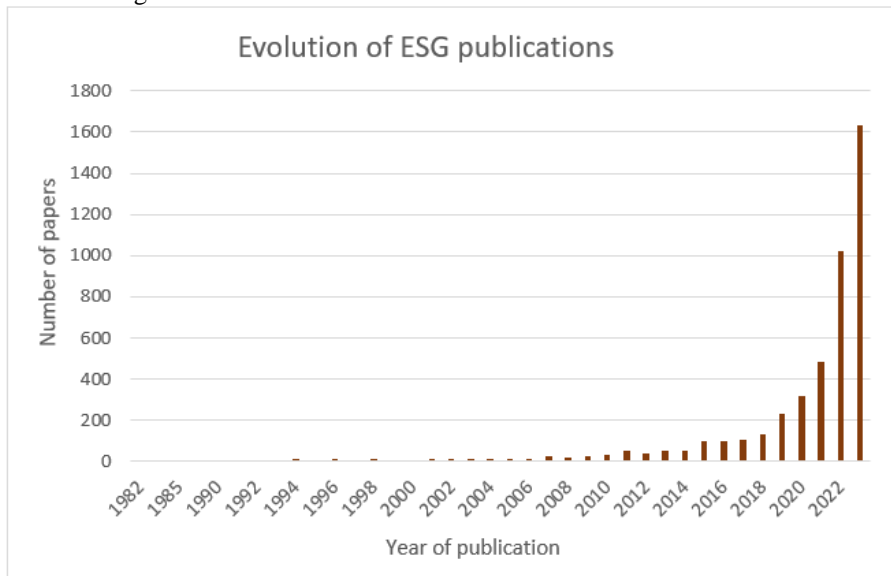


Figure no. 1: Evolution of ESG publications

Source: Own processing, according to Web of Science.

In (figure no. 1) we can see the attention paid by the authors to the ESG publications; the number of publications increased significantly compared to the previous year. The year 2024 cannot be considered for interpretation as it is unfinished. The first writings on ESG date back to 1982.

We notice that the interest in the study of sustainability has an increasing rate during the analysed period. Thus, if in the years 2020 and 2021 321 and 487 works on this topic are identified in the Web of Science database, in 2022 1,019 works of this kind will be published, and in 2023, 1,634 (a 60% increase compared to the year 2023).

In Table no. 1 we can see the list of the most cited papers in the field of sustainability, the last years being considered the most relevant from the point of view of the quality of the publications (we selected the papers with over 200 citations).

Table no. 1: Top of the most cited papers on ESG

Author	Number of references cited	Year of publication
Saeidi, S; Sapt, A; Khoja, AH; Najari, S; Ayesha, M; Konya, Z; Asare-Bediako, BB; Tatarczuk, A; Hessel, V; Keil, FJ; Rodrigues, AE	498	2023
Lund, DS; Pollman, E	453	2021
Feigin, SV; Wiebers, DO; Lueddeke, G; Morand, S; Lee, KL; Knight, A; Brainin, M; Feigin, VL; Whitfort, A; Marcum, J; Shackelford, TK; Skerratt, LF; Winkler, AS	427	2023
Lim, T	394	2024
Christensen, HB; Hail, L; Leuz, C	391	2021
Bar, A	375	2009
Shanor, A; Light, SE	346	2023
de Villiers, C; Jia, J; Li, ZT	331	2022
Esty, DC; Karpilow, Q	314	2019
Brummer, C; Strine, LE	306	2022
Della Tommasina, L	290	2023
Light, SE; Skinner, CP	267	2021
Adediran, AO	265	2023
Macchiavello, E; Siri, M	261	2022
Persakis, A	261	2023
Sulkowski, A; Jebe, R	254	2022
Minocha, G	248	2023
Steuer, S; Tröger, TH	246	2022
Yuan, XZ; Cao, Y; Li, J; Patel, AK; Dong, CD; Jin, X; Gu, C; Yip, ACK; Tsang, DCW; Ok, YS	239	2023
Chang, KJ	238	2019

Author	Number of references cited	Year of publication
Kovvali, A	233	2024
Schanzenbach, MM; Sitkoff, RH	230	2020
Samkin, G; Mihret, DG; Lemma, T	229	2024
Halder, A; Batra, S	226	2024
Yap, CK; Al-Mutairi, KA	226	2024
Jebe, R	225	2019
Barbosa, AD; Crispim, MC; da Silva, LB; da Silva, JMN; Barbosa, AM; Morioka, SN	225	2024
Ringe, WG	223	2022
Fan, JH; Omura, A; Roca, E	223	2022
Cerciello, M; Busato, F; Taddeo, S	222	2023
Capelle-Blancard, G; Desroziers, A; Scholtens, B	217	2021
Heubeck, T	217	2024
Shelby, CM	215	2023
Domingo-Posada, E; González-Torre, PL; Vidal-Suárez, MM	212	2024
Zhou, YS; Yuen, KF	211	2024
Kuo, SS; Means, B	206	2022
Singhania, M; Gupta, D	204	2024
Bar, A	201	2009

Source: Own processing, according to Web of Science.

- ***Bibliometric analysis on Greenwashing***

We used the key term Greenwashing, then we stylized the search to obtain the information about published publications, most research being registered in the categories: environmental studies (23.87%), business (22.22%), environmental sciences (21, 6%), green sustainable science technology (18.83%), management (17.18%), etc. Thus, the statistical sample we acquired includes 972 scientific papers, most of which (95.16%) are written in English.

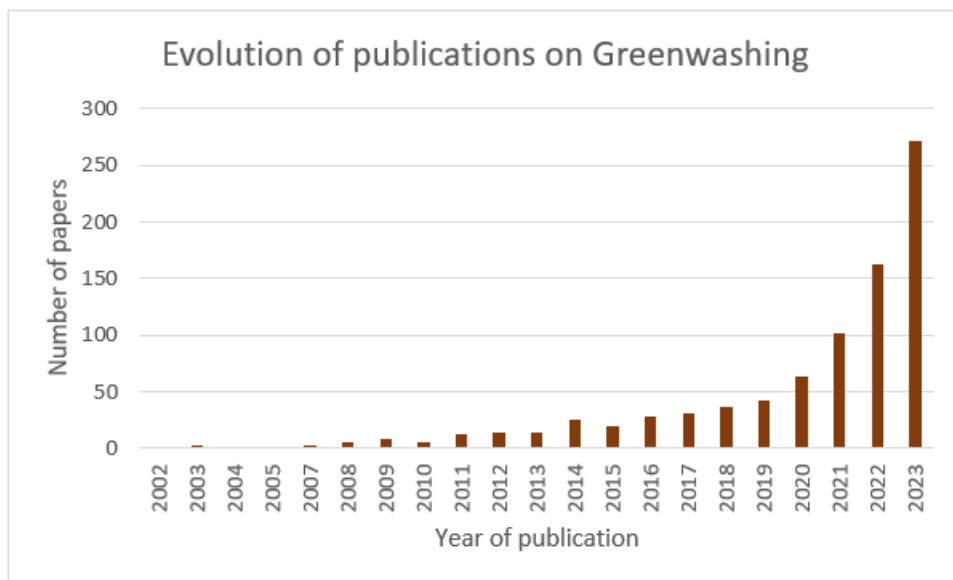


Figure no. 2: Evolution of publications on Greenwashing

Source: Own processing, according to Web of Science.

In Table no. 2 we can see the list of the most cited papers regarding greenwashing, the last years being considered the most relevant from the point of view of the quality of the publications (we selected the papers with over 150 citations).

Table no. 2: Top of the most cited papers on Greenwashing

Author	Number of references cited	Year of publication
Shanor, A; Light, SE	355	2022
Park, SK	322	2018
Warwick, C; Pilny, A; Steedman, C; Grant, R	272	2023
Cerciello, M; Busato, F; Taddeo, S	222	2023
Haji, AA; Coram, P; Troshani, I	217	2023
Kapil, S; Rawal, V	198	2023
Kumar, S; Sharma, D; Rao, SD; Lim, WM; Mangla, SK	195	2022
Thomas, AS; Jayachandran, A; Biju, AVN	192	2024
Chen, YF; Wang, G; He, Y; Zhang, HJ	188	2022

Author	Number of references cited	Year of publication
Talpur, S; Nadeem, M; Roberts, H	188	2023
Pope, S; Wraas, A	186	2016
Kaplan, Y; Perez, O	181	2022
Jones, E	181	2019
Nandakumar, A; Chuah, JA; Sudesh, K	175	2021
Singhania, M; Chadha, G; Prasad, R	173	2023
Lachapelle, P; Belmont, P; Grasso, M; Mccann, R;		
Gouge, DH; Husch, J; de Boer, C; Molzbichler, D; Klain, S	171	2024
Kazançoglu, I; Köse, SG; Arslan, A	164	2024
Montgomery, AW; Lyon, TP; Barg, J	163	2023
Chan, R	161	2021
Okbagaber, TB	161	2023
Brock, A	161	2020
Oppong-Tawiah, D; Webster, J	160	2023
Seele, P; Schultz, MD	159	2022
Opferkuch, K; Caeiro, S; Salomone, R; Ramos, TB	158	2022
Ahmad, W; Zhang, QY	157	2020
Zhang, W; Qin, C; Zhang, WY	155	2023
Vandenbergh, MP; Shewmake, S	154	2021
Konietzko, J; Das, A; Bocken, N	151	2023
Li, W; Li, WN; Seppänen, V; Koivumäki, T	151	2023
Scanlan, SJ	150	2017
Thomas, J; Patil, RS; Patil, M; John, J	150	2023

Author	Number of references cited	Year of publication
Ende, L; Reinhard, MA; Göritz, L	150	2023

Source: Own processing, according to Web of Science

- ***Bibliometric study with the help of VOSviewer-ESG***

After determining the sample that I presented previously, I resorted to the actual bibliometric analysis, using the scientific mapping methodology with the help of the computer program VOSviewer (Centre for Science and Technology Studies, Leiden University, Netherlands, 2020), a software adapted for the construction and viewing bibliometric networks.

The size of the nodes corresponding to each term captures its importance in research on the specified topic. The thickness of the curves and the distance between the nodes capture the collaborative relationship between the terms.

We first examined the distribution of the most intensively used keywords with the intention of examining the links between them, taking into account only those recommended by authors in published works, and we set a minimum threshold of 20 simultaneous occurrences. From the total of 15,898 works, 221 keywords were captured, and of these 133 meet the established criteria (they benefit from the 20 simultaneous occurrences). We selected the first 20 keywords whose strength of connection with other keywords is the highest, in other words, their occurrence together is the most impactful (for example, a high frequency of simultaneous occurrence in the same work of the words- key ESG and funding constraint translates into an increased intensity of correlation between them conceptually, according to (table no.3).

Table no. 3 shows the importance of the keywords identified in the studied sample in terms of the intensity of the connection with other keywords under the aspect of simultaneous appearance in the same paper. As can be seen, the most impactful keywords are in English, since, as I stated before, the recognized scientific works on the theme of sustainability are mostly written in this language.

Groups of keywords that are related to each other (occurring simultaneously in the same paper) are graphically represented by the same colour. The connections between two nodes, graphically represented by curves, describe the frequency of occurrence of the two terms they connect: the more pronounced the curved connecting line, the more frequent the simultaneous occurrence of the two keywords joined by that line. The shorter the connecting curve, the stronger the relationship between the two terms it joins.

Table no.4: The connecting force between the co-author and other organizations

Organization	Documents	Citations	Total link strength
Capital univ econ & business	16	323	8,00
Xiamen univ	14	62	8,00
Univ int business & econ	9	158	7,00
Beijing technol & business univ	8	67	5,00
Cent univ finance & econ	5	121	5,00
Kobe univ	10	409	5,00
Sun yat sen univ	11	113	5,00
Tech univ munich	5	34	5,00
Univ trento	6	36	5,00
Ezaki glico co ltd	6	73	4,00
Nanjing audit univ	5	70	4,00
Peking univ	8	168	4,00
Shanghai univ finance & econ	12	121	4,00
Southwestern univ finance & econ	10	53	4,00
Univ virginia	9	77	4,00
Xian jiaotong Liverpool univ	5	44	4,00
Hong kong Polytech univ	10	463	3,00
Liaoning univ	7	94	3,00

Source: Own processing, according to VOSviewer

Finally, we examined the relationship between co-occurrence and keywords, setting the minimum occurrences of a keyword to 20. Thus, out of the 3,168 keywords, 57 meet the threshold. For each of the 57 keywords, the total co-occurrence and keyword link strength will be calculated. Keywords with the highest total link strength will be selected.

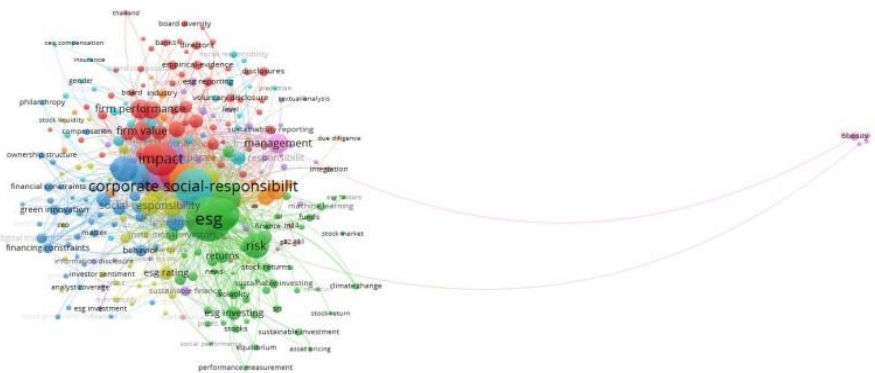


Figure no. 8: The connection network between co-occurrence and ESG keywords

Source: Own processing, according to Web of Science.

Table no.5: Connection strength between co-occurrence and keywords

Keyword	Occurrences	Total link strength
Esg	386	1374
Corporate social-responsibility	272	1262
impact	213	1112
Governance	186	977
Performance	204	856
Financial performance	149	821
Sustainability	161	728
Disclosure	122	673
Risk	125	538
Responsibility	114	534
Esg performance	135	516
CSR	92	471
Firm performance	77	438
Management	80	415
Firm value	64	395
Social-responsibility	82	379
Cost	65	350
Corporate governance	75	335
Environmental	72	327

Source: Own processing, according to VOSviewer

- ***Bibliometric study with the help of VOSviewer- Greenwashing***

We first examined the distribution of the most intensively used keywords with the intention of examining the links between them, considering only those recommended by authors in published works, and we set a minimum threshold of 20 simultaneous occurrences. From the total of 4,721 works, 38 keywords were captured, and of these, 23 meet the established criteria (they benefit from the 20 simultaneous occurrences). We selected the first 20 keywords whose strength of connection with other keywords is the highest, in other words, their occurrence together is the most impactful (for example, a high frequency of simultaneous occurrence in the same work of the words- key Greenwashing and CSR, corporate social responsibility, translates into a high importance of the correlation between them from a conceptual point of view, according to (table no.6)).

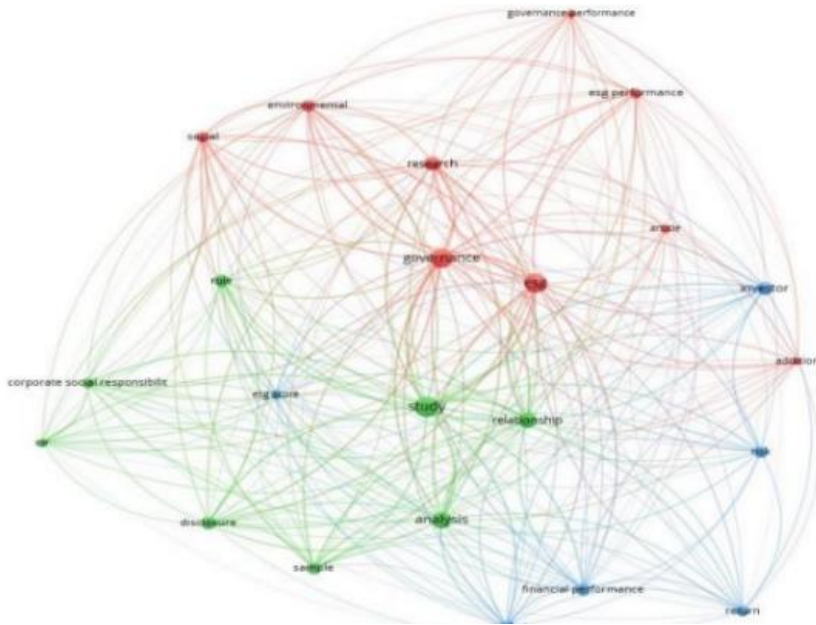


Figure no. 9: Linking network between keywords on Greenwashing
 Source: Own processing, according to Web of Science.

Table no.6: Link strength between Greenwashing and other keywords

Term	Occurrences	Relevance
CSR	25	3,13
Corporate social responsibility	33	2,42
Governance performance	20	1,73
Return	38	1,33
Social	37	1,20
Environmental	44	1,19
Esg performance	32	1,19
Esg	113	1,03
Risk	43	1,00
Investor	55	0,96
Governance	111	0,93
Study	131	0,86
Market	50	0,69
Disclosure	53	0,68
Analysis	86	0,64
Role	50	0,62
Financial performance	47	0,61

Term	Occurrences	Relevance
Relationship	77	0,59
Sample	42	0,55
Research	67	0,51

Source: Own processing, according to VOSviewer

Table no.6 captures the importance of the keywords identified in the studied sample in terms of the intensity of the link with other keywords in terms of their simultaneous appearance in the same work.

Keyword groups that are related to each other (appear simultaneously in the same work) are plotted by the same colour. The links between two vertices, graphically represented by curves, describe the frequency of occurrence of the two terms it connects: the more pronounced the curved link line, the more pronounced the link line, the more frequent the simultaneous appearance of the two keywords joined by that line. The shorter the bond curve, the more important the two terms it unites have a relationship.

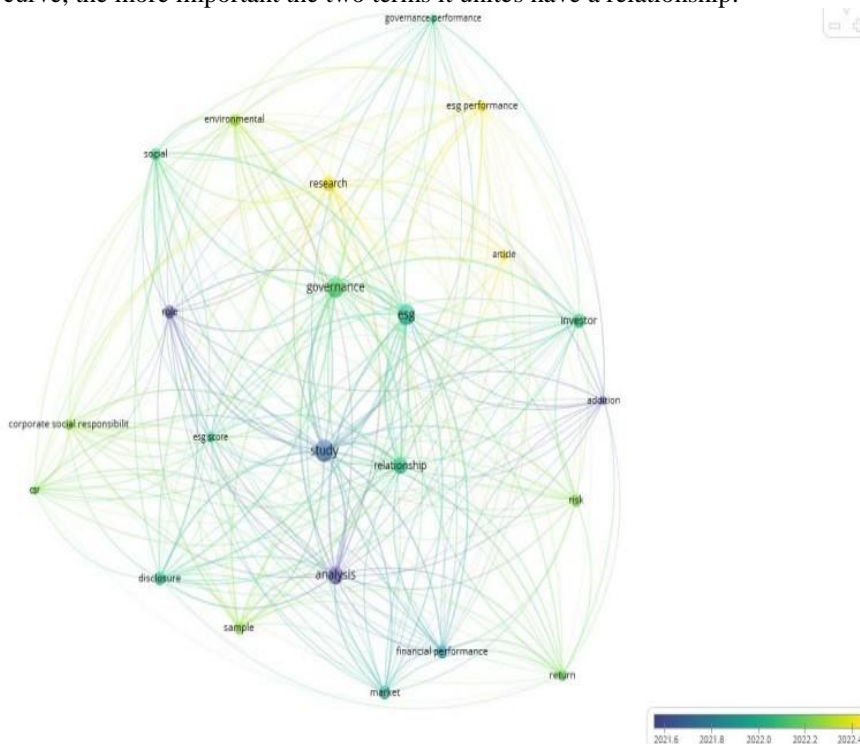


Figure no. 10: Overlay view of network links

Source: Own processing, according to Web of Science.

We got three groups of keywords. The red one includes the most keywords related to the notion of greenwashing. The largest node in this group is represented by the concept of governance.

Each point in the element density view has a colour that indicates the density of the elements. By default, colours fluctuate in the purple-green-yellow spectrum. The greater the number of elements around a point and the greater the impact of the surrounding elements, the closer the point colour is to yellow. Conversely, the lower the number of elements around a point and the lower the impact of the surrounding elements, the closer the point colour is to purple (figure no. 15).

In the cluster density view, the colour of a point in the view is defined by mixing the colours of different clusters, which are, and the importance given to the colour of a particular cluster is defined by the number of elements belonging to that cluster around the point.

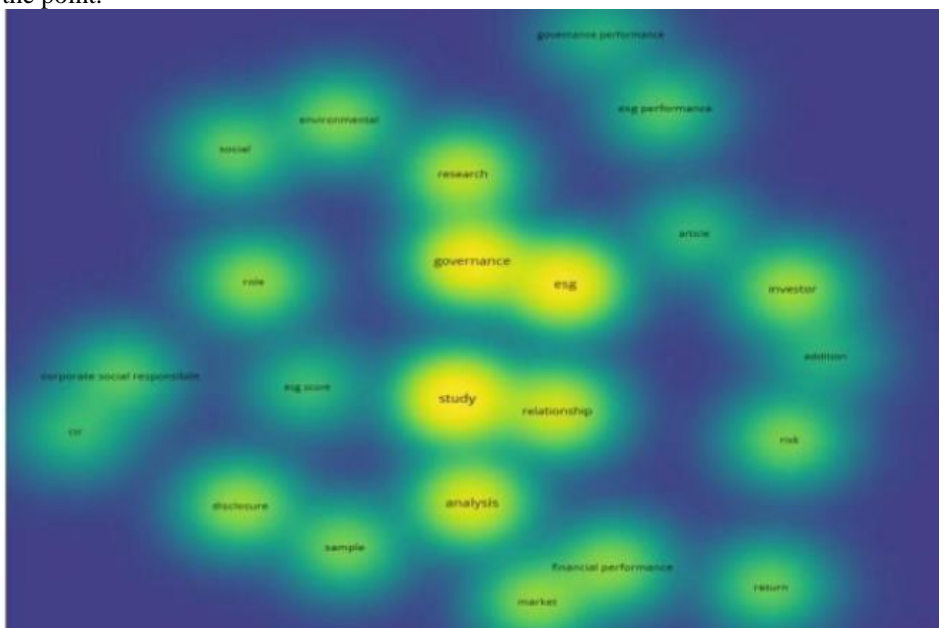


Figure no. 15: Density of the link network

Source: Own processing, according to Web of Science.

Second, we examined the connection between co-authors and the organization and set the number of documents of an organization to 1, and the minimum number of citations of an organization to 5. Thus, out of the 369 organizations, 204 meet the thresholds. For each of the 204 organizations, the total strength of ties between the co-author and other organizations will be calculated.



Figure no. 11: The connection network between the co-author and the organization regarding Greenwashing

Source: Own processing, according to Web of Science.

Table no.7: The connecting force between the co-author and other organizations

Organization	Documents	Citations	Total link strength
Tech univ Munich	5	30	5,00
Univ Trento	6	32	5,00
Ahlia univ	10	114	4,00
Brunel univ London	3	50	3,00
Indian inst technol madras	3	125	3,00
Munich data sci inst	3	29	3,00
Abv Indian inst informat technol & ma...	3	226	2,00
Amer univ middle east	3	183	2,00
Beijing inst technol	2	142	2,00
Comsats univ islamabad	2	119	2,00
Cuny	2	11	2,00
Fordham univ	2	11	2,00
Hamdan bin mohammed smart univ	2	18	2,00
Leuphana univ Luneburg	2	58	2,00
Notre dame univ	2	31	2,00
Oslo metropolitan univ	2	161	2,00
Rennes sch business	2	149	2,00
Samsun univ	3	183	2,00
Univ autonoma Madrid	3	12	2,00

Source: Own processing, according to VOSviewer

Finally, we examined the relationship between co-occurrence and keywords, setting the minimum occurrences of a keyword to 20. Thus, out of the 1,019 keywords, 18 meet the threshold. For each of the 18 keywords, the total co-occurrence and keyword link strength will be calculated. Keywords with the highest total link strength will be selected.

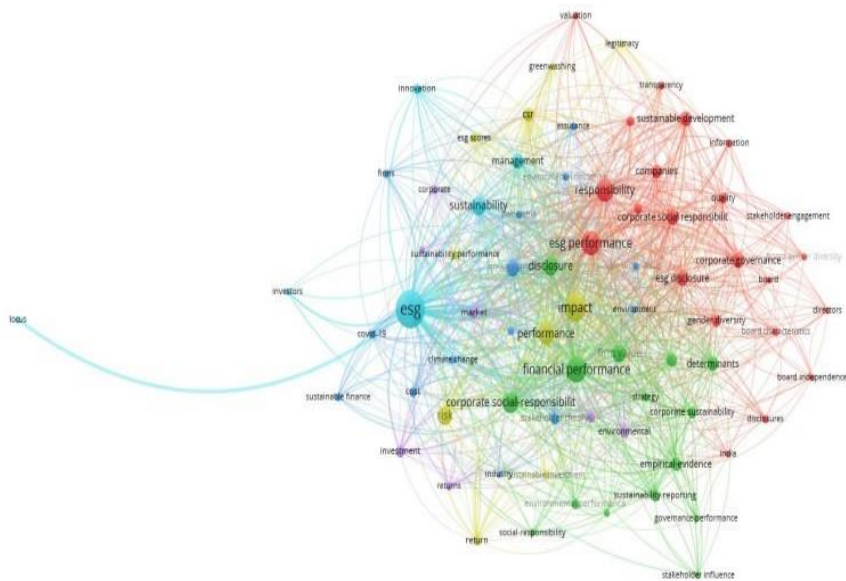


Figure no. 12: The connection network between co-occurrence and keywords regarding Greenwashing

Source: Own processing, according to Web of Science.

Table no.8: Link strength between co-occurrence and keywords

Keyword	Occurrences	Total link strength
Esg	143	400
Impact	79	304
Financial performance	68	263
Esg performance	59	206
Responsibility	50	194
Corporate social- responsibility	45	170
Disclosure	38	165
Performance	45	163
Firm value	30	142
Sustainability	35	140
Risk	33	118
Corporate social responsibility	26	107
Governance	28	103
Management	22	103
Sustainable development	22	92
Corporate governance	22	89
Determinants	21	88

Keyword	Occurrences	Total link strength
Esg disclosure	22	69

Source: Own processing, according to VOSviewer

- **Types of fraud in non-financial reporting**

Integrated Reporting (IR) is the latest development in the ESG reporting landscape. IR shifts the historical focus of financial reporting to a forward-looking value-creation process.

The author Zhang, DY (2022) argues in the paper "Are firms motivated to greenwash by financial constraints? Evidence from global firms' data" states that financial constraints (a higher leverage ratio could increase companies' financial pressure and increase financial constraints) intensify greenwashing behaviour and significantly motivate the decision to engage in greenwashing. Taking into account the control variables, sales growth and firm size are positively associated with greenwashing, and young firms are more susceptible to greenwashing. In addition, state-owned enterprises are less likely to engage in greenwashing behaviour, and large-scale industries are more intensively involved in this type of behaviour.

The authors Yupei Liu et. al. (2023) summarize in the paper "Why greenwashing occurs and what happens afterwards? A systematic literature review and future research agenda", the results show that mandatory regulations and policies often lead firms to engage in greenwashing. For example, the pilot policy entitled "low-carbon city" proposed by the Chinese central government forces treatment regions to aggressively reduce carbon emissions; however, this regulation stimulated firms to economize by making symbolic statements without taking substantive action (Zhang, 2023). A similar situation arises in the case of green financing policies. Highly polluting enterprises are more likely to engage in greenwashing to circumvent financial constraints imposed by green finance regulations, making it more difficult for them to obtain financing for renewable energy innovation (Zhang, 2022). The implementation of an ecological lending policy initially leads to a significant increase in the greening behaviours of firms; however, greenwashing behaviour is likely to be detected over time, motivating firms to improve green innovation. The level of competition is also an important factor in influencing corporate greenwashing. It has been observed that when active communication about green practices becomes widespread within an industry or group of competitors, "brown" firms are more inclined to engage in greenwashing tactics (Delmas & Burbano, 2011).

Lokuwaduge & De Silva (2022) add to the Australian context that some allegations of greenwashing are subject to scrutiny, such as climate disclosures, financial and other climate risk exposure disclosures, green marketing of products and brands making claims about green, sustainable or ethical products or practices, representations of corporate goals about drivers, such as alignment with the Paris Agreement for net zero or other goals to reduce emissions by a specified date. If not managed carefully, each of these elements has the potential to become misleading or a breach of relevant reporting obligations. In 2013, China's Department of Environmental Protection, together with the National Development and Reform Commission, the People's Bank of China and the

China Banking Regulatory Commission, announced the creation of the Corporate Environmental Credit Evaluation (CEC). Officially enacted in 2014, CECE is a corporate environmental credit rating system that aims to build a mechanism that "rewards good environmental credit history and penalizes violations" to ensure corporate environmental protection. According to CECE, Chinese local governments classify companies into five classes, Green, Blue, Yellow, Red and Black, where Green is the most environmentally friendly and Black is the most polluted. According to the authors, we find that firms on the CSR Best List have higher advertising expenditures (sales) than firms not on the list. The results of the linear probability regressions confirm that firms with higher advertising expenditures (sales) are more likely to appear on the Best CSR List. This effect is particularly significant for firms with poor environmental performance. This suggests that firms adopt an advertising buying strategy and use the media to shape their ESG image. From the corporate perspective, with the tightening of financing driven by the green credit policy, firms with poor environmental performance are motivated to adopt the "more words than deeds" strategy. Specifically, such firms speak louder in the media to exaggerate their green image to satisfy banks' credit standards.

The results of the researchers Ghitti, M; Gianfrate, G and Palma, L (2023), find that a higher number of independent directors leads to lower sustainability performance (Naciti, 2019). Finally, we find that the percentage of women on the board is positively associated with greenwashing. Their findings are consistent with the most recent evidence on the relationship between the share of women on the board and greenwashing (Tonetto, 2022). This evidence shows that a higher number of female directors on the board is associated with lower sustainability performance due to the extreme "occupancy" of women with board appointments.

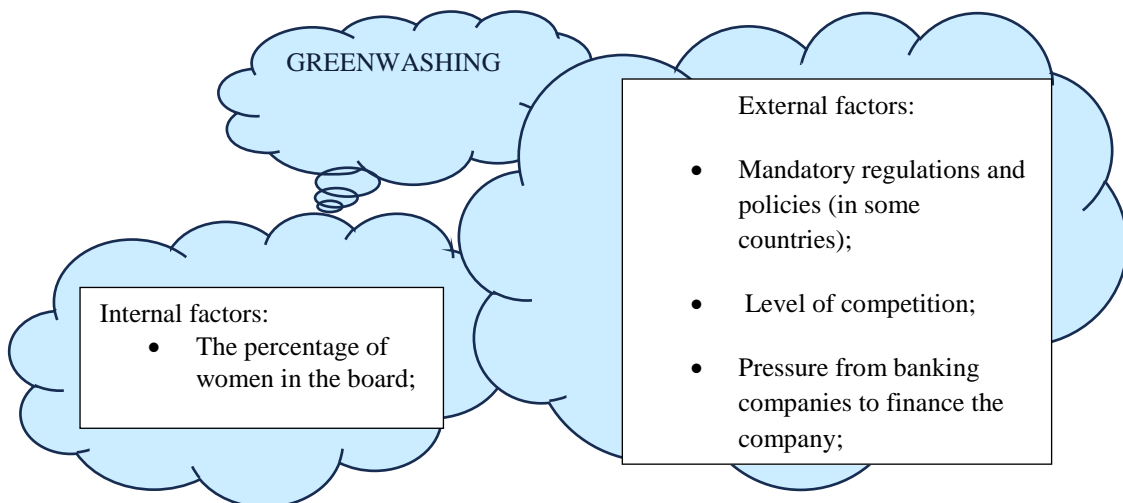


Figure no. 13: Factors that can lead to Greenwashing

Source: Own processing, according to Web of Science.

Conclusions

In today's challenging ESG-driven business environment, investors and other users of ESG scores continue to rely on rating agency weighted ESG scores as an indicator of a firm's ESG performance in evaluating firm performance.

Companies are increasingly interested in using green advertising claims to position themselves as active and environmentally friendly. In this context, greenwashing can appear as an attractive strategy, especially for products and services that are inherently unfriendly to the environment.

This paper explores the effects of asymmetric information and violation of consumer expectations through greenwashing on brand hate and corporate reputation. Greenwashing covers a wide range of negative effects, and with the prevalence of strong media and internet interest in environmental scandals, it is highly unlikely that greenwashing behaviour will go undetected, in addition to being rapidly spread among consumers.

Education is a tool to raise awareness of eco-washing practices among consumers when making purchasing decisions and to pressure governments to promote action to avoid this deceptive practice.

The current challenges of ESG disclosure are that sustainability reports are unaudited, there is a lack of standardization of ESG disclosure rules, and no global governing body to ensure the accuracy of reported ESG information.

Sustainability reporting is mainly voluntary disclosure, voluntary disclosure has no rigid constraints, it is easy to generate selective disclosure and greenwashing behaviour, to report only the good parts and hide the bad.

Although some argue that all persuasion is bad (eg Santilli, 1983), Emamalizadeh (1985) believes that all marketing aims to be persuasive and that green advertising can be moral in certain situations. Specifically, if persuasion is rational (informative) or does not affect individual autonomy, then he suggests that green advertising can be considered moral. Spahn (2012) extends this thinking by proposing that persuasion is an act of communication, situated between 'manipulation' and 'persuasion'. He draws on discourse ethics to argue that persuasive technologies (such as interactive websites) should follow Habermas' (1973) four validity claims of message comprehensibility, truth of content, appropriateness, and truthfulness of speaker's intentions. Based on these, he presents three ethical guidelines for the design of persuasive technologies: providing consent (real or counterfactual), giving as much consumer autonomy as possible, and pursuing education (informing the consumer). To minimize the perception of greenwashing, future green marketing practitioners should consider these ethical guidelines when designing interactive technologies such as websites.

ESG ratings provide investors with a more comprehensive perspective on the long-term stability and sustainability of companies, thereby contributing to more informed and responsible investment decisions. These scores also help companies improve their practices, reduce risks and attract investment by adopting higher standards in terms of the environment, social responsibility and corporate governance.

Sustainability standardization plays a key role in creating a more transparent, accountable and sustainable economic environment. By adopting common standards, companies can contribute to sustainable development, reducing their negative impact on

the environment and society, while improving their financial performance and reputation. Sustainability standardization refers to the development and implementation of common standards, frameworks and practices to guide companies and other organizations in the direction of sustainability. This involves adopting uniform principles and criteria for evaluating and reporting performance in areas such as environmental protection, social responsibility and corporate governance (ESG).

Despite the existing contributions of this state-of-the-art fundamental review of sustainability research, we admit that our review remains limited in several ways. Among the main limitations are: that access to relevant data in Romania regarding non-financial reporting may be limited, and many companies do not fully report data on their environmental, social and governance impact. Also, the diversity of reporting standards and frameworks (GRI, SASB, TCFD) can create confusion and difficulties in benchmarking. Differences in national and international regulations can affect the implementation and practical reporting of sustainability. Selective reporting can undermine confidence in reported data and research findings. Cultural and social differences can influence perceptions of sustainability, thus affecting the universal applicability of research findings.

Our review only provides an overview of sustainability performance. Although this is consistent with the purpose and value of systematic literature reviews using a bibliometric analysis, where large-scale reviews become pragmatically possible, we admit that this approach does not provide more precise insight into other worthwhile and interesting features such as would be as factors (independent, mediators, moderators, dependents) and relationships (positive, negative, linear) that may involve sustainability. In this regard, we encourage future reviews using alternative approaches, such as a review based on a sustainability framework or theory.

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