

THE CONTEMPORARY TRENDS OF SCIENTIFIC RESEARCH ON ESG AND NON-FINANCIAL REPORTING

Maciej KOSZEL

Poznan University of Economics and Business; maciej.koszel@ue.poznan.pl, ORCID: 0000-0003-1613-2334

Purpose: The article addresses the issue of contemporary directions of ESG research with particular emphasis on non-financial disclosure (non-financial reporting) of companies. The aim of the study is to identify areas of ongoing scientific research in the subject.

Design/methodology/approach: The conducted research has the character of meta-analysis. The focus was on achievements in two main scientific disciplines: economics and finance, and management and quality sciences. The research covered publications related to non-financial reporting, with ESG aspects - environmental (environmental), social (social) and corporate governance (governance) - as a common thread.

Findings: The study of ESG and non-financial reporting is a rapidly evolving area of contemporary research in economics and management. The volatility is driven, on the one hand, by the needs of companies themselves as they adapt to changes in the operating environment, while, on the other hand, ESG and non-financial reporting activities are significantly influenced by regulations that cover an increasingly wide range of companies. Increasingly, researchers are using statistical analysis methods for this purpose, which is slowly becoming a separate sub-discipline in methodology as a science. The development of research tools, including advanced statistical packages, can lead to significant changes in the range of analysis methods - from qualitative methods, based on descriptions, to statistical analysis, using measures of centrality, frequency, or so-called burst-terms analysis.

Research limitations/implications: The main limitation of the study is the time scope of the research. Only articles from 2004-2021 were included in the main analysis, which was determined by the availability of databases at the time the source material was collected. The research conducted shows the directions of change in the scientific exploration of ESG issues and non-financial reporting, which can be exploited for further analyses by researchers, students, and other entities working on the subject.

Originality/value: The research not only show past and current trends in ESG research, but also a change in research methodology, which increasingly uses quantitative methods. This thread represents an attractive area for further scientific exploration.

Keywords: ESG, non-financial disclosure, bibliometric analysis.

Category of the paper: literature review.

1. Introduction

Growing environmental pressures, negative consequences of business activities, increasing public awareness and tightening legislation are motivating efforts to mitigate the negative impact of companies. As a result, companies are becoming increasingly attentive to 1) environmental, 2) social and 3) corporate governance issues in their operations and are taking specific actions in these areas, known as ESG (Li et al., 2021; Chen, Xie, 2022). An example of companies' commitment to ESG issues is the implementation of solutions, monitoring of effects and reporting in the areas of corporate social responsibility (CSR) and corporate sustainability. ESG has also become an important area of research globally (Khan, 2022; Senadheera et al., 2022; Jain, Tripathi, 2023). Actions taken by companies in ESG areas are increasingly regulated by national and international laws (Kawacki, 2022). A consequence of the newly established legislation is also an increase in the range of entities to which specific measures, such as non-financial reporting, are required. (Hoang, 2018; Doni et al., 2020; Błażyńska, 2022) In the context of the inclusion of an increasing number of companies under non-financial reporting obligations in ESG areas, such as CSRD Directive of the European Union Parliament (Directive 2022/2464), a key practical and research problem is becoming the organizational preparation of companies for this task (Jackson et al., 2019; Chen, 2022; Ellili, 2022).

For the purpose of this article, a review of studies on ESG and non-financial reporting was conducted. The focus was put on studies of a meta-analysis nature, which used methods of umbrella review, systematic literature review and bibliometric analysis. This made it possible to identify the main areas and contemporary research directions on ESG, which was the main objective of the study. The paper is a critical review of the literature on the subject and is a synthesis of scientific achievements addressing ESG topics.

2. Literature review on ESG and non-financial reporting

ESG, as a term referring to the three key areas of corporate activities, i.e. environmental, social and corporate governance was first introduced in the 2004 (Jain, Tripathi, 2023). The report entitled *Who Cares Wins: Connecting the Financial Markets to a Changing World?* includes an analysis and recommendations for integrating ESG-related activities into the operations of public enterprises. The report's authors suggested that an integrated ESG-sensitive approach could lead to more sustainable markets and better corporate performance (Kell, 2021). Since then, the linkage between ESG and financial performance has become a major research topic in that field (Friede et al., 2015; Fatemi et al., 2018; Wong et al., 2020; Alsayegh et al.,

2020; Signori et al., 2021) Measuring the effects of companies' ESG-related activities is currently a significant challenge from various perspectives: managers, shareholders, customers, society. In this context, indexes of public companies that report non-financial activities (non-financial disclosure) in accordance with global standards such as European Sustainability Reporting Standards (ESRS) are useful. Research indicates that companies with better ESG performance (broad coverage, progress monitoring, transparent reporting) have lower debt costs (Eliwa et al., 2022) and face fewer barriers to raising capital (Cheng et al., 2014).

A specific niche is currently represented by studies involving meta-analysis of ESG issues conducted using systematic literature review (SLR) and methods of statistical analysis (Li et al., 2021; Khan, 2022; Wan et al., 2023; Zhao et al., 2023). The essence of SLR is to conduct a structured analytical procedure leading to the identification of key research areas focused around a central problem. A common SLR tool is the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses), which has its own unified methodology for the research procedure, which is framed in simple diagrams such as a flow diagram or an analysis criteria checklist (Page et al., 2021). The use of the PRISMA method entails compliance with all formal requirements, including the submission of an appropriate due diligence statement. (prisma-statement.org) Similar to any research procedure, SLR requires the identification of basic research scopes that enable the extraction of a database of publications subject for further analysis, such as bibliometric analysis using statistical methods. The basic scopes for the extraction of publications is the determination of: 1) objective scope, i.e. what is/will be studied (scientific publications containing the keyword, the research problem to be searched and studied), 2) subjective scope, which are databases aggregating scientific publications containing the searched keyword (e.g. Web of Science, Scopus), 3) time scope, which covers the period relevant to the research, 4) spatial scope, which defines the geographical scope of the impact of the research problem - due to the general access to databases, a global spatial scope is usually assumed and includes publications in English. In addition to the basic criteria defining the base of publications subjected to in-depth analysis, it is necessary to specify additional criteria (often in the form of filters) that will narrow the scope of analysis (e.g. type of publication, citation indexes, minimum number of citations, language of publication). Most ESG studies conducted using SLR employ the Web of Science (WOS) or Scopus database for this purpose (e.g. Li et al., 2021; Zhao et al., 2023) and the following citation indexes: Social Science Citation Index (SSCI), Science Citation Index Expanded (SCIE), Arts & Humanities Citation Index (A&HCI) and Emerging Science Citation Index (ESCI). All the indexes indicated are based on the resources of the Web of Science Core Collection database (WOSCC).

The use of bibliometric review and analysis methods, which, based on statistical analysis tools, enable objective identification and evaluation of research directions on a selected research problem, is now very popular (Donthu et al., 2021; Paul et al., 2021; Lim et al., 2022)

Bibliometric review methods include citation analysis, keyword frequency and centrality analysis, mapping, cluster analysis, or burst terms analysis, for example (Zhao et al., 2023).

The widespread popularity of ESG topics, especially in the context of non-financial reporting, is evident in both international (Orens et al., 2010; Gao et al., 2015; Doni et al., 2020; Raimo et al., 2023) and Polish studies (Walińska, 2015; Świdarska et al., 2016; Fijałkowska, 2016; Lament, 2017; Śniezek et al., 2018; Rubik, 2018; Skoczylas, 2019; Różańska, 2022). These studies clearly point out key trends: 1) an increase in the number of entities publishing non-financial disclosures (Fijałkowska, 2019) and 2) the growing importance of non-financial reporting for value creation and company evaluation (Bek-Gaik, Rymkiewicz, 2015; Fijałkowska, Zyznarska-Dworczak, 2017), as well as 3) the need to standardize these reports (Michalak, 2010; Tschopp, Nastanski, 2014; Erkens et al., 2015; Różanska, 2015). Non-financial reporting, like ESG, has become the subject of extensive academic research using meta-analyses (Manes-Rossi, 2018; Fijałkowska et al., 2019; Jackson et al., 2020; Turzo et al., 2022; Diwan, Sreeraman, 2023).

3. Methodology

For the purpose of this study, an in-depth analysis of selected scientific articles was carried out using umbrella review methodology (Belbasis et al., 2022; Bonczar et al., 2022; Cant et al., 2022; Choi, Kang, 2023). The main focus was put on the articles revolving around the research that uses bibliometric analysis methods, a systematic literature review and statistical analyses based on citations and keywords. Publications from the Web of Science Core Collection (WOSCC) database, indexed in: Social Science Citation Index (SSCI), Science Citation Index Expanded (SCIE), Arts & Humanities Citation Index (A&HCI) and Emerging Science Citation Index (ESCI). The critical analysis of the literature carried out allowed the identification of the main research problems and research directions related to ESG in the period from 2004 to 2021. The timeframe adopted for the analysis conducted is, as a starting year, the year in which the concept of ESG appeared in the 'Who Cares Wins' report (2004) and 2021, which was considered the last year for which it was possible to give significant academic visibility to the research findings. The time frame adopted for the analyses conducted is subjective, but based on the achievements of other Authors conducting research of a similar scope (Ellili, 2022; Galletta et al., 2022; Lim et al., 2022; Zhao et al., 2023), such a scope is justified. Given the need to present the most up-to-date state of the art, the sources used in the study are also later papers that used SLR and bibliometric analysis methods.

4. Results

An in-depth analysis of the content of scientific publications dealing with the topic of ESG and non-financial reporting made it possible to identify the main research directions. Table 1 presents the results obtained, detailing the main research problem, the specific research topic and examples of ongoing research - their authors.

Table 1.

Main ESG and non-financial reporting issues and examples of research 2004-2021

Main research problem	Topics	Examples of research conducted
Stakeholder involvement	Stakeholder interest	Ning et al. (2021), Gao, Zhang (2006)
	Inclusiveness	Farooq et al. (2021), Guix, Font (2020)
	Mitigating climate change	Haque et al. (2016), Siew et al. (2013)
	Sustainable development	Guix, Font (2020), Lokuwaduge, Heenetigala (2017), Murgula, Böhling (2013), Tokos et al. (2012), Maharaj, Herremans (2008)
ESG	Business performance	Danisch (2021), Buallay (2021), Sharma et al. (2020), Buallay et al. (2020), Rezaee, Tuo (2017)
	Integrated reporting	Gerwanski (2020), Bektur, Arzova (2020), Albitar et al. (2020), Mervelskemper, Streit (2017), Maniora (2017), Camilleri (2017)
Social impact	Culture of sustainability	Buallay (2021), Rezaee, Tuo (2019), Shrivastava, Addas (2014)
	Reducing the carbon footprint	Helmets et al. (2021), Goel (2019), Babin, Nicjolson (2011)
	Sustainable society	Woschnack et al. (2021), Trireksami, Djajadikerta (2016)
	Sustainability practices and reporting	Robertson, Samy (2020), Das et al. (2020), Akisik, Gal (2020), Antoncic (2020), Hossain et al. (2019)
	Institutional approach	Mahmood, Uddin (2020), Hassan et al. (2019), Camilleri (2018), Bu et al. (2017), Bice, Coates (2016), Herremans et al. (2009)
	Social and environmental responsibility and CSR practices	Donnell, Wickham (2020), Demir, Min (2019), Adel et al. (2019), Skouloudis et al. (2019), Akisik, Gal (2017), Hossain, Alam (2016), Looser, Wehrmeyer (2015), Weber et al. (2014), Mobus (2012), Breitbarth et al. (2010), Sutantoputra (2009)
	Ethics	Nobanee, Al.-Suwaidi (2021), Adel et al. (2019), Sabbaghi (2016), Weber et al. (2014), Mittal et al. (2008)
Corporate governance	Responsibility	Farooq et al. (2021), Haque et al. (2016), Euler (2014), Gill (2014), Thalassinou, Liapis (2011), Koh et al. (2007)
	Auditing	Velte, Stawinoga (2020), Bruckman et al. (2019), Abdullah et al. (2018), Safari (2017), Brown, Popova (2016), Godha, Jain (2015), Peters, Romi (2014), Gill (2013), Monen (2011)

Source: own compilation based on: (Diwan, Sreeraman, 2023).

The analysis of keywords related to ESG and non-financial reporting that constitute the chosen research problem can focus on the analysis of the frequency of co-occurring keywords and their centrality. Based on Li's research with his team (2021, pp. 7-8), the most frequently co-occurring keywords with ESG include corporate social responsibility, performance, sustainability, governance, financial efficiency, company, impact, social responsibility, leadership and strategy. The centrality analysis, which is a measure of the relevance of the nodes (keywords) in the network, indicates that the most relevant keywords studied so far were:

company, behaviour, influence, strategy, competitive advantage, corporate social responsibility, management, sustainability, leadership, organization. In doing so, it should be pointed out that the keywords that appeared earlier have already managed to ‘anchor’ themselves in the ground of ESG-related scientific theory, and their impact is therefore much greater than the themes raised relatively later. Statistics on the frequency of ESG-related keywords and their centrality are included in Table 2.

Table 2.
Frequency and centrality of ESG-related keywords

No.	Keyword	Year	Frequency	Centrality
1.	corporate social responsibility	2004	234	0,08
2.	performance	2004	140	0,06
3.	sustainability	2007	125	0,07
4.	management	2004	113	0,08
5.	financial performance	2006	83	0,06
6.	firm	2004	80	0,16
7.	impact	2004	80	0,12
8.	social responsibility	2007	80	0,06
9.	governance	2006	74	0,07
10.	Strategy	2007	71	0,10
11.	organization	2005	61	0,07
12.	framework	2004	61	0,06
13.	perspective	2006	44	0,07
14.	behavior	2004	38	0,13
15.	business	2007	37	0,04
16.	market	2005	33	0,04
17.	responsibility	2006	33	0,02
18.	company performance	2010	30	0,02
19.	value for shareholders	2011	29	0,03
20.	innovations	2007	29	0,03
21.	cost	2008	27	0,06
22.	identity	2011	27	0,04
23.	legitimacy	2005	27	0,03
24.	risk	2013	24	0,01
25.	institutional theory	2011	23	0,02

Source: (Li et al., 2021).

A tool that enables further investigation is burst terms analysis. It consists of identifying keywords related to the main research problem that are dynamically gaining importance, which is reflected in the number of publications using the keyword and the strength of their impact, which is derived from the frequency of co-occurrence with the primary term and the number of citations. A burst terms analysis conducted by Li and team (2021) identified the dominant ESG-related keywords between 2004 and 2020, and is presented chronologically in Table 3.

Table 3.
ESG-related burst terms 2004-2020

Burst term	Impact	Beginning	End	Duration	Range of years
company	4,36	2004	2009	5	●●●●●○○○○○○○○○○○○○○○○○○○○
framework	4,31	2005	2014	9	○●●●●●●●●●○○○○○○○○○○○○○○○○○○
technology	3,98	2006	2010	4	○○●●●●●○○○○○○○○○○○○○○○○○○○○
perspective	3,37	2006	2009	3	○○●●●●●○○○○○○○○○○○○○○○○○○○○
altruism	3,14	2006	2012	6	○○●●●●●●●○○○○○○○○○○○○○○○○○○
capability	2,99	2008	2011	3	○○○○●●●●●○○○○○○○○○○○○○○○○○○○○
competition	3,66	2010	2013	3	○○○○○○●●●●●○○○○○○○○○○○○○○○○○○
consumption	3,17	2012	2013	1	○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
choice	3,07	2012	2013	1	○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
stakeholders theory	2,97	2012	2013	1	○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
organization	3,28	2013	2014	1	○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
philanthropy	4,63	2015	2018	3	○○○○○○○○○○○○●●●●○○○○○○○○○○○○○○○○
self-regulation	4,32	2015	2018	3	○○○○○○○○○○○○●●●●○○○○○○○○○○○○○○○○
standard	3,00	2015	2016	1	○○○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
financial performance	4,75	2016	2017	1	○○○○○○○○○○○○●●○○○○○○○○○○○○○○○○○○
company value	3,67	2017	2020	3	○○○○○○○○○○○○○○●●●●○○○○○○○○○○○○○○○○
moderator role	3,2	2018	2020	2	○○○○○○○○○○○○○○○○●●●○○○○○○○○○○○○○○○○
incentive	3,18	2018	2020	2	○○○○○○○○○○○○○○○○●●●○○○○○○○○○○○○○○○○
director	2,91	2018	2020	2	○○○○○○○○○○○○○○○○●●●○○○○○○○○○○○○○○○○

Source: (Li et al., 2021).

The analysis of burst terms shows a high volatility of ESG-related keywords, which is characteristic of new research problems, theories and scientific concepts that are in a formative stage, are embedded in other theories and concepts and, above all, are dependent on legal regulations that determine the formal framework for the application of practical tools and instruments and are dependent on the broader context constructed by different interest groups. The first period of academic research on ESG is characterized by a strong association of the term with concepts that present a theoretical framework for the operation of ESG-using companies, hence the notions of a model (framework) to make sense of the company's activities in line with ESG objectives (e.g. through sustainability goals), technology - as a key area for the application of practical solutions, especially in the environmental area, a perspective related to the company's long-term strategy in which the company declares that it will achieve specific ESG-related results. Interestingly, one of the identified burst terms is altruism, which was a leading theme of academic research on ESG between 2006 and 2012, continuing, as it were, in the later period, where there was a ‘rash’ of studies addressing the issue of philanthropy. These threads have now been rendered obsolete due to the introduction of regulations requiring selected public companies to apply specific ESG regulations - most notably the non-financial disclosure obligation. The middle phase of ESG research is characterized by a short period of dominance of selected research threads, it is a period of searching for more niches, further structuring and systematization of ESG research theory. Finally, the last phase is a focus around the threads of financial efficiency, corporate value and the role of key influencers and accountability to different stakeholder groups.

Given the dynamic development of ESG and non-financial reporting in this area, it is also worth pointing out future potential research directions, which according to Li and his team (2023) include:

- clarifying key definitions related to the ESG concept,
- consolidating the theoretical layer,
- deepening the research problems explored so far,
- improving evaluation systems for ESG activities,
- detailed ESG practices of organizations.

Leaving aside the purely academic context and focusing on the practical aspect of ESG, it is worth pointing out other potential research areas related to ESG and non-financial reporting:

- the costs of implementing ESG and non-financial reporting and their distribution among different interest groups,
- good practices in ESG and non-financial reporting,
- ethical aspects of ESG and non-financial reporting,
- the differentiation of barriers and constraints to the implementation of ESG tools and reporting on the part of companies according to differentiating criteria such as sector of activity, company size, business profile,
- ESG and non-financial reporting and the availability of external capital.

The plurality of contexts, interconnections, scientific disciplines addressing the issue and, finally, the scientific efforts of researchers undoubtedly contribute to a better understanding of the nature and role of ESG and non-financial disclosure from the point of view of different interest groups. The development of available methods and tools of analysis that allow a different perspective on the issue and frame it in statistical analyses, as in the case of bibliometric analysis methods, is also not without significance. In addition to the frequency of co-occurrence of keywords, the number of citations, or the clusters and linkages generated in the form of graphical visualizations and maps, it is also important for the development of science related to ESG and non-financial disclosure that the output also bears the hallmarks of utilitarianism from the perspective of different audiences.

5. Discussion and conclusions

It is formally presumed that the concept of ESG came into circulation two decades ago. At the same time, it still represents a rich area of scientific exploration as a result of dynamically changing contexts in three main areas: environmental, social and corporate governance (Ellili, 2022). Literature research conducted using the methods of systematic literature review and

bibliometric analysis confirms the high level of diversity in academic research on ESG, which is reflected in the leading themes and research topics over the last several years. Academic research in the disciplines of economics and finance and management on ESG conducted in 2004-2021 is largely related to the issues of corporate social responsibility, business performance, corporate sustainability and financial performance, as evidenced by the results of the keyword co-occurrence frequency and burst terms analysis. The subject of ongoing scientific research on ESG has changed over time (Li et al., 2021). Not insignificant for the directions of ESG development and research is the issue of legal regulation, both at the international level (legal regulations of European Union bodies) and at the national level. Especially the level of national legal regulations covering ESG is an attractive area of interest due to the necessity to adapt and harmonize national regulations, their implementation, enforcement, supervision, which constitutes a complexity in the practical dimension of ESG application (Manes-Rossi et al., 2018; Kawacki, 2023). From a cognitive perspective, covering the achievements and results of companies applying ESG tools and instruments, an important area of research in the near future will be how companies cope organizationally with the implementation of guidelines arising from regulations and directives of EU bodies and acts of national law (e.g. the Accounting Act) (Primec, Belak, 2022). Given the above, ESG can be seen as another of the factors forcing companies to become more agile and flexible in their operations, often also taking an emergent approach to strategy building in key areas (Cosma et al., 2022). Further conclusion on the issue of ESG and non-financial reporting allows for a statement in which a picture of a positive impact on the companies and their stakeholders is created (Signori et al., 2021; Wong et al., 2021). There are fewer threads of the negative effect of ESG on, among other things, the financial performance of companies, operational costs associated with the implementation of ESG practices and non-financial reporting (operationalization of ESG strategies, performance monitoring, reporting, audits), the prospect of ESG costs being passed on to contractors and customers of companies (Gao et al., 2022; Xue et al., 2023). Many of the research threads on ESG and non-financial reporting are ‘ambivalent’ in nature, as evidenced by the ambiguous research findings on the correlation occurring between financial performance and ESG performance of companies. The question arises about the nature of this dilemma, a kind of paradox, does better ESG performance lead to better financial performance, or does better financial performance allow for better ESG performance? In light of today's research, the determination of this type of dilemma is still ambiguous. Given previous experiences with CSR or sustainable development issues, there are also pre-existing dilemmas, often linked to business ethics (Jackson et al., 2019). It can be speculated that as the environmental and social awareness of society increases, the importance of ESG and non-financial disclosure will grow, and there is no doubt that in this context, the transparency of companies' actions and their “agility” in adapting to change will be crucial.

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