administrative sciences

MDPI

Article

Sustainability Reporting and Environmental Responsibility: The Case of Romania

Cristian Dobre [1], Camelia Mirela Baba [2], Carmen Elena Anton [2], Alexandra Zamfirache [3] and Denisa Aldea [4,*]

[1] Department of Econometrics and Operations Research, Tilburg School of Economics and Management, 5037 Tilburg, The Netherlands; c.dobre@tilburguniversity.edu
[2] Department of Finance, Accounting and Economic Theory, Transilvania University of Brașov, 500036 Brasov, Romania; mirela.baba@unitbv.ro (C.M.B.); carmen.anton@unitbv.ro (C.E.A.)
[3] Department of Management and Economic Informatics, Transilvania University of Brașov, 500036 Brașov, Romania; alexandra.zamfirache@unitbv.ro
[4] Interdisciplinary Doctoral School, Faculty of Economic Sciences and Business Administration, Transilvania University of Brașov, 500036 Brasov, Romania
* Correspondence: denisa.chivu@unitbv.ro

Abstract: A detailed analysis of non-financial and sustainability reporting may indicate companies' attention to and responsibility regarding environmental, social, and economic aspects. This article investigates the correlation between environmental performance as a non-financial metric and financial performance. Simultaneously, it identifies the categories of environmental information provided by companies and the implicit responsibility with which they address environmental protection issues. Data were collected from the sustainability reports of 668 companies in Romania for the 2019–2021 period. The study uses, on the one hand, a diagnostic analysis method (the grid method) to determine the environmental performance (environmental score) of the companies. On the other hand, it uses a linear regression model to test the correlation between environmental performance and financial performance (including a tolerance analysis to identify multicollinearity, forward variable selection, backward variable selection, and the Durbin-Watson test). The study's findings underscore a positive correlation between environmental non-financial performance and financial performance. In particular, high turnover and advanced age of the company are associated with high non-financial performance.

Keywords: sustainability reporting; financial performance; ESG; environmental responsibility; environmental performance

Received: 13 November 2024
Revised: 18 February 2025
Accepted: 5 March 2025
Published: 14 March 2025

Citation: Dobre, C., Baba, C. M., Anton, C. E., Zamfirache, A., & Aldea, D. (2025). Sustainability Reporting and Environmental Responsibility: The Case of Romania. *Administrative Sciences*, *15*(3), 103. https://doi.org/10.3390/admsci15030103

1. Introduction

The release of non-financial information regarding the policies, results, and risks related to environmental, social, and governance (ESG) aspects that complement annual financial reports has become a necessity for all companies aiming to achieve positive performance indicators. Thus, not only the quantity of information matters, but also its quality (Ioannou & Serafeim, 2019), resulting from the transparency of disclosures to stakeholders. Enhancing credibility in a company's business model is supported by the communication of information regarding interest in the company's environmental impact, as well as an analysis of the influence of external factors on the organization within the value creation process.

There must be connectivity between sustainability information and performance indicators that meets stakeholders' requirements while ensuring high transparency in

communications (IFRS Sustainability, 2024). Companies are interested in reporting sustainability performance and choosing more sustainable business models, considering all the risks and opportunities they present. Taking into account the possibility of easier access to financing credits, knowing the requirements of partners throughout the value chain, securing the long-term future of the business by attracting new customers and investors, and the active involvement of stakeholders, it can be said that proactive acceptance of sustainability brings long-term benefits to any organization (Accountancy Europe, 2024).

Given that Eurobarometer surveys conducted in December 2019 show that 94% of citizens from all member states of the European Union pay special attention to environmental protection, and in Romania, the survey (conducted by interviewing 1081 people) revealed that 87% of Romanians agree that environmental issues are very important, all organizations are interested in achieving financial performance in line with fulfilling sustainability requirements (European Commission, 2023c).

Environmental protection aspects, as an important pillar of ESG (Environmental, Social, and Governance) issues, have come to the attention of companies as a factor influencing financial performance. According to Xue, the complex relationship between outcome-based environmental performance has implications for the adoption of managerial decisions in strategy and risk management, as well as in the development of environmental regulation policies (Xue et al., 2020).

The company's environmental performance considers the efforts it undertakes for the efficient and rational use of resources, reducing the impact of its activities on environmental objectives, and enhancing the quality of environmental management actions where the company operates. A study conducted by Ifada revealed that environmental performance has a significant positive effect on financial performance, resulting in organizations being more focused on environmental issues to strengthen their company's profitability (Ifada et al., 2021). Similarly, a study by Hanjani and Kusumadewi confirmed the existence of a positive relationship between environmental performance and financial performance, as well as between the actions of the Audit Committee, firm characteristics, ISO 14001 (ISO, 2021) Certification (International standard for environmental management systems -EMS), and environmental performance (Hanjani & Kusumadewi, 2023). Some studies have analyzed financial performance based on environmental issues (such as the effects of waste emissions, greenhouse gas reduction), with results varying according to the preferences of stakeholders. Thus, shareholders and investors focus on a company's long-term financial performance, while consumers and business partners are not interested in short-term environmental management (Iwata & Okada, 2011). Additionally, studies on the relationship between elements of corporate governance and financial and environmental performance suggest that these factors have a moderating effect on the relationship between financial and environmental performance (Nguyen et al., 2021). Empirically, most studies have focused on the effects of various variables related to ESG issues, either taken together or combined in pairs, on a company's financial performance. These studies have differently examined the relationship between sustainability and financial performance, most often considering financial performance as dependent variable, expressed through several profitability indicators. However, there are also studies that view environmental performance as a dependent variable in relation to predictors characterizing the governance structure. Based on the existing information in the specialized literature, as briefly presented above, the authors of this paper have identified a knowledge gap. Using diagnostic analysis (the evaluation grid method) to determine the non-financial (environmental) performance score brings added value and originality to our research. Environmental performance (environmental score) is less commonly used in the specialized literature as a dependent

variable, and the analysis of the correlation between it and financial factors was less widely addressed during the pandemic period (2019–2021).

The present study effectively addresses the knowledge gap in the existing literature by offering comprehensive insights into both financial and non-financial indicators that clarify the relationship between financial and non-financial (environmental) performance.

Sustainability and environmental responsibility reporting has become a crucial topic in the context of international regulations and investor requirements. European directives, such as Directive 2014/95/EU (European Union EUR-Lex, 2021) on non-financial reporting (NFRD) and EU Regulation 2022/2464 on corporate sustainability reporting (CSRD), have prompted companies in Romania to implement transparency practices when reporting their environmental impact (Mihai & Aleca, 2023). According to a study conducted by Mihai and Aleca, while the industrial sector is more sensitive to reporting requirements and faces greater challenges (Sierra-Garcia et al., 2018), research generally indicates that the industrial sector does not significantly influence corporate sustainability policies. This suggests that sustainability concerns are equally important for all companies. Aligning a sustainability strategy with a global business strategy and incorporating sustainability (non-financial) reporting requirements are key concerns for top companies in Romania (Petrescu et al., 2020). The academic literature provides diverse perspectives on sustainability reporting implementation (Pasko et al., 2021). On one hand, some authors argue that institutional pressures and legislative regulations are the primary drivers of adopting these practices (Marinescu, 2020b), while others contend that internal motivations, such as business reputation advantages and access to sustainable financing, play a significant role (Piciu, 2019). Government legislation, investor and stakeholder expectations, and voluntary international sustainability reporting initiatives have led to an increased demand for sustainability-related information (Fleacă et al., 2023). The importance of sustainability reporting frameworks is also reflected in the standardized reporting of general sustainability aspects related to business models, particularly from the perspective of the GRI reporting framework (Bunget et al., 2024). In Romania, the most frequently used frameworks are the GRI (Global Reporting Initiative) and EU standards (EFRAG, 2023). By taking proactive measures, companies can turn ESG compliance from a regulatory burden into a strategic advantage in terms of enhancing sustainability. Studies show an increasing ESG commitment among large Romanian companies, but there are still significant areas that require improvement (Dănilă & Nancu, 2023).

This study examines the relationship between environmental performance and financial performance using data from financial and sustainability reports of companies listed on the Bucharest Stock Exchange (BVB) and the listefirme.ro website. The analyzed period covers 2019 to 2021. Multiple regression analysis was used as a statistical method to evaluate the relationship between environmental performance and financial performance indicators, such as Return on Assets (ROA), Return on Equity (ROE), Solvency Ratio (SOLV), Asset Turnover Ratio (ATR), and Financial Leverage (DER), among others.

The purpose of the present paper is to calculate the environmental responsibility and performance of the companies included in the sample and examine the correlation between financial and non-financial performance (environmental performance).

In addition, the paper aims to answer research questions related to the categories of information included in sustainability reports, the performance indicators relevant to environmental performance, and the link between environmental policies and strategies and environmental performance.

Additionally, there is increased interest among the investigated firms to invest in retooling and modernization to achieve environmental objectives. There is also growing concern regarding the creation of environmental strategies. The present study's findings

are relevant to managers in Romania and beyond, providing them with the necessary framework to develop strategic plans for sustainable environmental strategies.

This paper includes five sections: Section 2 presents a literature review and some preliminary data; Section 3 presents the methods used, along with the research methodology, while Section 4 highlights the main results; Section 5 consists of discussions and conclusions. The final paragraph presents the limitations and further research.

2. Literature Review

2.1. The Regulatory Framework for Sustainability Reporting

Sustainability reporting has become increasingly important for companies worldwide, driven by growing pressure to balance financial performance with environmental responsibility. Romania, as a member of the European Union, faces both challenges and opportunities in terms of integrating sustainability into its corporate culture. This article examines sustainability reporting in Romania, focusing on environmental performance, the link between environmental and financial performance, and the role of the European Union in guiding these practices. Environmental performance, a key element of sustainability reporting, assesses how companies manage their impact on the environment, including resource use (energy, water, raw materials), waste, and emissions. Companies that demonstrate strong environmental performance can enhance their reputation and attract key stakeholders, such as consumers, regulators, and investors (Khatri & Kjærland, 2023; Papoutsi & Sodhi, 2020; Nugrahani & Artanto, 2022).

Environmental Social Governance (ESG) has emerged as a global trend in recent years, and the ESG framework has recently undergone innovative updates in terms of both regulation and sustainability standards. In Romania, the presentation of non-financial information was mandated with the transposition of Directive 2014/95/EU, which introduced the Non-Financial Reporting Rules (NFRD) (Directive 2014/95, 2023) into national legislation (Ministry of Public Finance, 2016, 2018). Thus, all companies with at least 500 employees on their most recent balance sheet, on an individual or consolidated level (regardless of whether the entity is public or private), are required to include significant ESG information in their annual report. This category also includes EU companies with branches in Romania.

It has been observed that many investors and other stakeholders have encountered difficulties in comparing ESG information among companies. In April 2021, the European Commission adopted a regulation amending the NFRD, namely, the Corporate Sustainability Reporting Directive (CSRD-2022/2464/EU) (European Union EUR-Lex, 2023). This need also arose from sustainable finance initiatives (SFRD—Sustainable Finance Disclosure Regulation) (European Commission, 2023a) and Taxonomy Regulation (European Commission, 2023b).

EU Taxonomy serves as a classification framework designed to assist companies and investors in pinpointing environmentally sustainable economic activities, thereby facilitating informed decisions when it comes to sustainable investments. Sustainable economic activities are those that create value while supporting the EU's climate and environmental goals. The CSRD seeks to broaden reporting obligations to encompass major corporations and those traded on regulated financial markets, introduce more comprehensive reporting requirements, and mandate sustainability audits.

Our analysis of the regulatory framework also outlines the answer to the first research question: "What information do publicly listed companies include in their sustainability reports?"

ESG refers to a set of environmental, social, and governance factors that organizations track to evaluate their effectiveness and influence on sustainability. These factors can

exert influence from within, impacting all areas related to ESG, and from the outside (environmental, social, governance aspects affecting the entity's activity). ESG issues are a component of an entity's operation and business model. The NFRD (Directive 2014/95, 2023) requires companies to present information that should include details about the entity's business model, a summary of the most relevant policies and outcomes regarding ESG aspects, identification of key risks and measures to mitigate their impact, the most relevant key performance indicators (KPIs), as well as aspects regarding the diversity of management bodies, their structure and size, etc. (Bucharest Stock Exchange, 2022a, 2022b).

There are certain assessment criteria through which the role of an activity in terms of achieving performance objectives related to ESG can be established, known as Technical Screening Criteria (TSC) (or performance thresholds). According to the Taxonomy Regulation (Regulation (EU) 2020/852), companies must provide information on two KPIs: turnover percentage derived from environmentally sustainable products or services, and the percentage of capital and operating expenditures aimed at acquiring assets or operational activities related to the environment. As stated by the same regulation, organizations have the option to report through a standalone environmental report or an integrated report, where financial performance is connected with sustainability performance. A sustainability report prepared in line with sustainability standards (Global Reporting Initiative (GRI) or Sustainability Accounting Standards Board (SASB)) guarantees the consistency and comparability of information communicated to stakeholders.

2.2. Present and Perspectives on Sustainability Reporting Standards

According to a study conducted by IFAC together with AICPA and CIMA ("The State of Play: Sustainability Disclosure and Assurance 2019–2022, Trends and Analysis"; International Federation of Accountants, 2024), sustainability reporting and assurance practices are improving, and companies are increasingly developing their sustainability information for stakeholders. The study, which included Romania along with six other European countries, revealed that in the 2019–2021 period, ESG information reporting in Romania followed the global trend. Thus, in 2021, approximately 88% of entities reported ESG information, but only 18% of them had their reports audited. In terms of report layout, the study revealed that 40% of them were sustainability reports, while only 4% were integrated reports, still reflecting the harmonious use of GRI and SASB standards in about 83% of companies. However, relative to other European countries, Romania needs to accelerate the implementation of sustainability standards and take a more serious approach to ESG information disclosures.

Despite progress in sustainability reporting, many European companies are not prepared for addressing sustainability according to the CSRD, as applicable from 2024. According to a study by Lefebvre Sarrut (Continuity Central.com, 2023) involving 744 European companies of various sizes and sectors, 40% of European companies are not familiar with ESG criteria, 43% have not established any benchmarks for ESG criteria, and 45% have not identified measures for implementing the requirements of the CSRD (Continuity Central.com, 2023). However, companies in the automotive, chemical, and manufacturing industries are taking serious actions to implement policies aimed at identifying risks and reducing impacts on ESG factors. Conversely, the services and consulting sectors are less committed to applying the CSRD. Awareness and understanding of the sustainability reporting framework requirements are crucial for creating value for all stakeholders and achieving a company's long-term viability. Reporting pursuant to the European Sustainability Reporting Standards (ESRS) includes requirements such as the comparability of reported sustainability information, applying the double materiality principle reporting

on the value chain, and issuing an integrated annual report (combining ESG information with financial reporting) (Wood, 2023).

The sustainable dimension of a business involves continuous monitoring of ESG criteria. The first criterion, "Environmental", considers the environmental consequences of a company's operations and its objectives regarding sustainable practices. Environmental objectives focus on carbon emissions, resource usage, waste management, pollution control, and adoption of renewable energy. The second criterion, "Social", examines a company's long-term effects on employees, customers, and society. It involves factors like labor rights, human rights, employee welfare and diversity, customer satisfaction, and product safety.

The last criterion monitors "Governance" and focuses on the structure and practices underlying the decision-making and oversight processes of a company. It includes elements like board independence, executive compensation, shareholder rights, transparency, and risk management.

ESG is perceived as a crucial determinant of long-term corporate performance, with companies increasingly focusing on integrating these pillars alongside their financial objectives. The literature on ESG and corporate performance explores how these factors interact and influence a company's financial success, stakeholder relationships, and overall sustainability.

These ESG factors are interconnected and contribute to an organization's corporate performance by improving operational efficiency, strengthening brand reputation, and mitigating risks related to social or environmental incidents. ESG's role in corporate performance has been recognized as a dynamic process in academic literature (Wang et al., 2025). Researchers have emphasized that ESG factors should be integrated into a company's overall strategy and operations. Companies with strong ESG frameworks tend to be better positioned for long-term sustainability, as they consider not only short-term profits but also the long-term implications of their environmental, social, and governance practices (R. Chen et al., 2023). The relationship between ESG practices and financial performance has been a key area of interest in management literature. Researchers have explored whether investments in ESG initiatives translate into improved financial returns for companies (Moussa et al., 2024).

Numerous studies have suggested a positive relationship between strong ESG performance and enhanced financial outcomes (S. Chen et al., 2023) supported by lower operating costs through energy efficiency and waste reduction. Attention to ESG factors drives value creation for stakeholders (Hoang, 2018) and provides a competitive advantage over competitors (Teng & Wu, 2018).

However, the literature also includes studies that question or highlight a neutral or negative relationship between ESG and financial performance. One reason for this divergence is the potential short-term costs associated with implementing robust ESG practices. For example, companies may face high initial costs when adopting green technologies or meeting social compliance standards. For smaller firms or those in emerging markets like Romania, immediate financial benefits may not justify these initial investments (Bahadır & Akarsu, 2024; Y. Xu & Zhu, 2024). The theoretical evolution of ESG and corporate performance initially focused on shareholder wealth maximization (1970–1980). Then, with the application of stakeholder theory (1980–1990), interest shifted toward creating value for all business stakeholders (Bridoux & Stoelhorst, 2022; Freeman, 1984), From 1997–2000 onward, the Triple Bottom Line (TBL) approach, introduced by John Elkington, formalized the concept of balancing environmental, social, and economic factors as part of business performance (Pasamar et al., 2023; Elkington, 1998).

The theoretical evolution of ESG literature and corporate performance reflects a growing recognition of the long-term value of sustainable practices, alongside concerns about the short-term costs of their implementation.

In recent years, researchers and practitioners have emphasized the need for integrated reporting, where financial performance and ESG factors are not treated separately but are incorporated into a comprehensive view of a company's long-term performance. This shift in perspective aligns with the increasing focus on long-term value creation rather than short-term profit maximization (Narula et al., 2023).

Empirical methods used in studies include quantitative analysis, such as regression analysis to examine the relationship between ESG performance and financial performance, case studies, meta-analyses aggregating results from multiple empirical studies to determine the overall strength of the ESG-financial performance relationship, and experimental models (Soedjatmiko et al., 2021; Pereira et al., 2023; Nguyen et al., 2021; Ifada et al., 2021; Fu & Li, 2023; Fink Babič et al., 2023). ESG performance leads to superior long-term financial results but involves high immediate financial costs and significant uncertainties.

At the EU level, the Corporate Sustainability Reporting Directive (CSRD) 2022/2462 extends ESG reporting to more categories of companies, impacting their business models. It also calls for the adoption and expansion of European sustainability reporting standards (ESRS). The CSRD application schedule is as follows: in 2025, it will include companies already applying non-financial reporting (NFRD) (over 500 employees) for the financial year 2024; in 2026, it will consist of large companies with more than 250 employees, a turnover of more than 40 million euros, and total assets of more than 20 million euros at the end of the 2025 financial year; in 2027, it will incorporate insurance companies, SMEs listed on the stock exchange, as well as credit institutions, for the financial year 2026; and in 2029, non-European companies with branches or subsidiaries in the European area will be inserted.

In Romania, the application schedule follows the directive's timeline and reports the ESG Strategy and action plan, as well as the method of achieving ESG objectives and targets, through the annual report, comprising qualitative, quantitative, retrospective, and prospective information (V. D. Dragomir et al., 2023).

The academic literature reveals a dynamic intersection of perspectives regarding the role of regulations, directives, federations, and stock exchanges in driving ESG performance. On one hand, mandatory regulations and directives are seen as essential tools for holding companies accountable and ensuring that ESG factors are systematically embedded in corporate governance (Eccles et al., 2014; Cicchiello et al., 2023).

On the other hand, there is recognition that the voluntary nature of market-based initiatives, such as those promoted by stock exchanges and federations, can complement regulatory efforts by encouraging firms to go beyond mere legal compliance (Krueger et al., 2023). The mixed nature of these frameworks—regulatory versus market-based—raises important questions about the most effective ways to encourage companies to adopt sustainable practices (Gafni et al., 2024; Aluchna et al., 2023).

The ongoing debate revolves around an optimal balance between mandatory and voluntary approaches. Proponents of regulations argue that as global sustainability challenges become more complex, they require a more rigorous legal framework (Bu et al., 2024; Kuzey et al., 2023), Meanwhile, others suggest that the flexibility offered by voluntary stock exchange frameworks allows firms to tailor their ESG strategies to their specific circumstances (Cheng & Huang, 2024; R. Chen et al., 2023; Ismaili & Kjøsnes, 2021).

This highlights the need for a holistic approach that integrates the strengths of both regulatory mandates and voluntary market mechanisms, ensuring that all firms, regardless of size or location, are encouraged to improve their ESG performance.

In conclusion, the literature offers a rich and diverse perspective on the role of regulations, directives, federations, and stock exchanges in promoting ESG integration within corporate strategy. The convergence of regulatory mandates, market-based mechanisms, and global sustainability initiatives creates a complex landscape in which companies must navigate competing pressures to meet growing stakeholder expectations (Ullah & Sun, 2021; Abeysekeraa & Fernando, 2020; van der Merwe & Al Achkar, 2022).

While evidence suggests that these frameworks can positively impact corporate performance, the debate over their relative effectiveness continues, with differing views on the appropriate balance between legal enforcement and voluntary adherence. Considering the provisions of reporting standards and the application method used by companies which are subject to these standards, the following research question arises: "What are the most relevant performance indicators associated with environmental performance?"

2.3. Empirical Literature

Alongside other studies, this work complements information regarding the relationship between environmental capabilities and various financial indicators grouped into profitability, liquidity, risk, and efficiency indicators.

Environmental capabilities enhance profitability through cost savings from energy efficiency, waste reduction, and resource optimization. Companies that implement green technologies can lower operational costs, improve margins, and access premium markets by offering eco-friendly products (Yang & Chen, 2022). Financial performance metrics include return on assets (ROA), return on equity (ROE), and net profit margin, while indicators for environmental capabilities include energy-efficient technologies and sustainable product offerings. Liquidity is another financial metric impacted by environmental capabilities, as cost reductions and minimized exposure to regulatory fines contribute to stronger cash flow.

Proactive environmental practices improve cash flow and protect companies from legal sanctions, making it easier to meet short-term financial obligations (Arco-Castro et al., 2023; K. Kim, 2018; Saleem et al., 2021). Environmental capabilities also mitigate risks, particularly environmental and regulatory risks. By adhering to environmental standards, companies avoid penalties, minimize climate-related disruptions, and safeguard their reputation (Y. Chen et al., 2021; Geng et al., 2017). The impact of environmental capabilities on financial performance often unfolds over a longer time frame (3–5 years), with short-term benefits primarily reflected in cost reductions.

In conclusion, environmental capabilities can positively influence profitability, liquidity, risk management, and operational efficiency. Proactive environmental practices lead to improved financial outcomes over time, although the full benefits may only be recognized after a longer evaluation period (Tyler et al., 2024; Saleem et al., 2021). Key financial performance measures include ROA, the current ratio, and stock price volatility, while energy efficiency, waste management, and environmental compliance are the main variables of environmental capability.

Research by Haninun et al. (2018) on 108 companies listed on the Indonesia Stock Exchange (BEI) showed that environmental performance is influenced by financial metrics such as return on assets (ROA) and return on equity (ROE). Similarly, an analysis of the impact of environmental performance and management on firm value, measured with return on assets as a financial mediator (ROA), was conducted on a sample of 144 manufacturing organizations listed on the Indonesia Stock Exchange (IDX) (Soedjatmiko et al., 2021).

Investigating the relationship between environmental performance and financial performance, as represented by indicators such as profit margin increases, market share growth, revenue growth, return on investment improvement, and overall financial performance

improvement, with environmental innovation as a mediator, highlighted the effect of environmental innovation in transforming environmental achievements into financial success (Ong et al., 2019). Studies have deepened the issue of environmental performance, connecting environmental strategy, reporting, and firm performance. Moreover, they have shown a positive impact of climate action plans on environmental management control system usage, as well as an indirect positive impact on environmental performance. Environmental governance itself positively influences environmental performance and, ultimately, economic progress (Petera et al., 2021).

As environmental reporting is voluntary, research has shown that there is no meaningful association between environmental performance and the qualitative environmental information in company reports (Fink Babič et al., 2023). However, it is worth noting that developed environmental consciousness affects environmental management performance and thus overall performance, suggesting that companies need to develop environmental awareness when disclosing environmental information (M. Kim & Ha, 2022).

In general, it is expected that organizations will improve their environmental performance and become more interested in communicating actions to stakeholders, as confirmed by a study by Rúbia Maria Pereira et al. (Pereira et al., 2023). This study showed that environmental disclosure is positively associated to environmental performance, indicating a revelatory positive correlation between the two. Some studies have identified factors that can have an influence on environmental disclosure and performance by analyzing the top 100 Fortune Global companies, showing that the region and level of environmental information disclosure are key factors (Bednárová et al., 2019). Environmental performance analyses have also been conducted across multiple countries to demonstrate success in achieving environmental sustainability goals (Wendling et al., 2022).

Corporate environmental practices influence environmental performance. Proactive environmental practices can lead to better environmental performance (K. Kim, 2018). In contrast, reactive environmental practices are correlated with poorer environmental performance. The distinction between proactive and reactive environmental practices is essential for assessing their impact on environmental performance. While proactive practices involve strategies that prevent ecological damage before it occurs, reactive practices are responses to existing environmental issues. These different approaches have significant implications for a company's sustainability and efficiency. Proactive environmental practices focus on innovative measures that lead to efficient production processes, waste and energy reduction, and pollution minimization. These include investments in green technologies and renewable energy sources, which improve environmental performance and operational efficiency while significantly reducing costs (Ahmed et al., 2021a; Ahmed et al., 2021b; Laguir et al., 2021; Galbreath et al., 2023; S. Zhang et al., 2019).

Additionally, integrating sustainability into corporate strategies through the adoption of the ISO 14001 environmental management standards enhances stakeholder trust (Eccles et al., 2014). Proactive measures reduce non-compliance risks, making companies more attractive to investors (Eccles et al., 2014). In contrast, reactive environmental practices are implemented in response to existing problems, such as regulatory compliance or ecological damage remediation. These practices are less effective in minimizing environmental impact and primarily focus on damage control (Arco-Castro et al., 2023; Y. S. Chen et al., 2016; Liston-Heyes & Vazquez Brust, 2016; Fazli et al., 2023; Bouwman & Berens, 2024), without driving significant innovation. They tend to prioritize short-term actions over long-term sustainability improvements. The measurement of environmental performance for reactive companies includes indicators such as high pollution levels, excessive waste production, and remediation costs. Performance is often assessed in the short term, typically in response to environmental crises or regulatory compliance requirements.

In conclusion, proactive practices based on prevention and innovation lead to long-term sustainable improvements in environmental performance. In contrast, reactive practices are associated with corrective measures and lower long-term efficiency, often proving costly and ineffective.

In Romania, companies' sustainability reports show continuous improvement in non-financial information disclosure, with companies focusing on sustainable processes and business models prioritizing ESG objectives (Marinescu, 2020a). This idea is supported by a study by Piret Tamm and Natalie Aleksandra Gurvitš-Suits (Tamm & Gurvitš-Suits, 2023), which concluded that non-financial information disclosed through environmental reports, CSR reports, and ESG reporting increases stakeholder credibility and contributes to creating value in sustainable business operations. ESG reporting aims to align with CSRD reporting requirements to ensure the comparability of the disclosed information, with a crucial role in producing high-quality reports being attributed to the education of specialists. Most research illustrates that a company's financial achievements are influenced by the complexity and quality of ESG reporting, and ESG performance positively impacts market capitalization (Janicka & Sajnóg, 2022).

The quality of sustainability report content can be highlighted through indicators grouped into domains such as Credibility (CRE), Content (CON), and Communication (COM) (Loza Adaui, 2020). Environmental disclosures focus on reducing electricity consumption, reducing water usage, decreasing carbon footprint, and waste recycling and management. They also analyze the existence of action plans for environmental incidents, provide information disclosures on environmental protection training programs, and summarize monitoring environmental progress.

Based on considerations regarding the nature of the information published in sustainability reports, as well as their diversity and quality, the research question arises: "What is the connection between environmental policies and strategies and environmental performance?"

Sustainability implementation is a complex process that encompasses the entire activity of an organization, requiring well-prepared structures to implement all initiatives dealing with environmental, social, and governance aspects. Evaluating the risks associated with environmental factors that can affect a business helps in developing an environmental policy aimed at reducing resource consumption and waste (International Federation of Accountants, 2023).

The increasing demand for information and stakeholders' expectations have led to the development of quality reports on sustainability disclosures. Continuous communication with stakeholders and the understanding of their information needs contribute to the clarification of an entity's priorities from both an economic strategy perspective and in terms of stakeholder expectations.

The general framework and structure of the information released within sustainability reports are outlined by the GRI Sustainability Reporting Standards (Global Reporting Initiative, 2022), including context for a better understanding of a business's environmental impact, activities, governance, policies, and the most relevant topics impacting the economy, environment, and employees. Communicating sustainability information can be harmoniously achieved through integrated reports where managers promote a high level of divulgence and transparency regarding economic activities, a view shared by several authors. (Băndoi et al., 2021).

A review of the literature showed that sustainability performance and external assurance are factors that determine the credibility of sustainability information (Misiuda & Lachmann, 2022).

According to GRI reporting, companies must explain their economic performance in relation to ecological concerns such as resource conservation, pollution management, waste control, etc., amid increasing stakeholder demands. Studies convey that 66% of the largest global companies adhere to GRI standards when reporting their environmental performance (Bednárová et al., 2019). In various sectors, performance indicators can be grouped into environmental impact, operational and safety, waste management, and public safety indices (Farouk et al., 2024).

Studies conducted at the EU level on factors influencing environmental performance reveal positive relationships between the EPI (Environmental Performance Index) and organic farming area, resource consumption, energy productivity, the ratio of active labor force participation between women and men, digitalization through internet use, eco-innovation, etc. (Stoian et al., 2022). Thus, ecological innovation within firms could impact the link between sustainable entrepreneurial motivation and environmental performance. An additional factor that may moderate the interconnection between ecological entrepreneurial motivation and green innovation is knowledge sharing (Al Shammre et al., 2023). The most commonly used performance indicator is return on assets (ROA), which reflects resource allocation efficiency, with studies demonstrating that ESG performance contributes to increased financial performance (Fu & Li, 2023).

The implementation of sector-specific development strategies, such as those in industrial sectors implemented by governments, can influence environmental performance through technological progress achieved via technology imports (Z. Zhao et al., 2023). Collaboration among government environmental policies, focused media attention, and investment preferences, contributes to the acknowledgement of environmental performance (D. Wu & Memon, 2022). Enterprises within the same sector can aim to align their environmental strategies and policies with the environmental standards set by policymakers and encourage innovation in green technology (Kong, 2024).

There is statistical evidence that there is a correlation between each country's environmental regulations and their implementation with the outcomes achieved regarding environmental performance. However, the degree of rigor in the implementation of these policies and their impact on environmental performance should also be examined in greater depth (Tian et al., 2023).

According to Kumar et al. (2021), most research highlights the relationship between sustainability and business strategy. One of the themes researched in the specialized literature is related to collaboration among firms for sustainability (C.-C. Dragomir & Foris, 2022; Bărbulescu et al., 2021).

Environmental regulations can impact technological innovation for sustainable development. Incorporating environmental principles and policies into business strategies ensures resilience to extreme events and adaptation to ecological developments (Y. Wu & Tham, 2023; Zhou et al., 2022). In the development of SMEs, an important relationship is constituted by social and environmental practices (Crossley et al., 2021).

An entity's strategy and sustainability objectives are described in its sustainability report, highlighting the company's policies and procedures that outline its commitments and actions to monitor both quantitative indicators and qualitative information. The integration of ESG factors is aligned with the entity's economic strategy, objectives, and key risks throughout the value chain. In the context of corporate sustainability, measuring financial and environmental performance is essential for evaluating a company's efficiency. Environmental and financial indicators are interconnected, and their selection depends on the company's strategic objectives, ranging from regulatory compliance to long-term sustainability. In this study, indicators from two categories were selected (Table 1): (1) Environmental strategies and policies, i.e., Definition of environmental objectives; Planning

actions to achieve the objectives; Procedure for environmental incidents; Training programs on environmental protection; and Involvement in the development of community environmental projects; and (2) Environmental performance, i.e., Improving air quality; Reducing electricity consumption; Reducing water consumption; Reducing carbon footprint; and Recycling and waste management (K. Kim, 2018).

Table 1. Analysis criteria.

Analysis Criteria for Sustainability Reports	Importance Coefficient pi
Environmental strategies and policies	**0.55**
Definition of the environmental objectives	0.15
Planning actions to achieve the objectives	0.15
Procedure for environmental incidents	0.05
Training programs on environmental protection	0.05
Involvement in the development of community environmental projects	0.15
Environmental performance	**0.45**
Improve air quality	0.07
Reduce electricity consumption	0.08
Reduce water consumption	0.08
Reduce carbon footprint	0.08
Recycling and waste management	0.14
Total	**1**

Source: realized by the authors.

The analysis of environmental reporting aims to reflect the relevance of these indicators (especially proactive environmental strategies) in relation to financial performance. This study contributes to environmental sustainability research by emphasizing the organizational system and adapting the business model to achieve compatibility with sustainability requirements (Junquera & Barba-Sánchez, 2018; Leonidou et al., 2015). The financial performance indicators used include return on assets (ROA) and return on equity (ROE), net profit margin, current ratio, and quick ratio, which measure the ability to meet short-term liabilities, as well as asset turnover ratio, among others. In conclusion, environmental and financial performance indicators are essential for ensuring a company's sustainability and long-term success. Proper measurement of these indicators supports the achievement of a balance between profitability and environmental responsibility, which is crucial for competitiveness in the green economy.

3. Materials and Methods

This study relies on data collected from the Bucharest Stock Exchange website (Bucharest Stock Exchange, 2022a), supplemented with data from website Romanian Companies (Romanian Companies, 2020). Based on the general objective of the paper, we selected companies with at least 500 employees which were mandated to address environmental, social, and employee-related aspects, as well as human rights and anti-corruption measures in the administrator's report when preparing financial statements (OMFP 3456/2018, point 8). For the financial year 2021, environmental reports had to address objectives such as climate change mitigation and adaptation to climate change (Ministry of Public Finance, 2024), as mentioned in Article 9(a) and (b) of Regulation (EU) 2020/852 of the European Parliament and the Council.

The database was composed of 675 companies from Romania, which were analyzed according to the research questions of this paper. Companies that presented incomplete or missing information were eliminated. For the remaining 668 Romanian companies, observations were converted into financial and non-financial indicators, such as Turnover,

Net profit, Debts, Fixed assets, Current assets, Equity, Employees, Total assets, for the 2019–2021 period. The establishment of these indicators was carried out using the SMART (Smarters, 2025) principle. Also, their availability in the databases, their relevance to the objectives established in the paper, and their publication in the specified time interval were prerequisites. The indicators used are those used in the literature, with the addition of extra indicators; the justification for their choice was also the criteria they met in addition to the SMART criterion, namely, applicability in all sectors of activity, transparency, their independent verifiability, their correspondence with the objectives pursued, and their compatibility with the specifics of the company. The companies are distributed by activity sectors as follows: Services (including a small number in financial services)—253 companies (37.48%); Production (Manufacturing and Industrial)—248 companies (36.47%); Trade—86 companies (12.74%); Transportation—42 companies (6.22%); Energy/Utilities—39 companies (5.78%); and Agriculture—7 companies (1.04%). This distribution demonstrates that the sample included diverse industries, with a balanced representation of manufacturing and service-oriented businesses. Financial and insurance companies represented only a small fraction of the service sector and did not significantly influence our findings.

By capturing a broad range of industries, the sample ensured that the insights derived from the analysis were not confined to a single sector but reflected cross-industry trends. However, we acknowledge that sectoral differences may have influenced specific outcomes, and we now explicitly discuss these implications in the revised manuscript.

The purpose of the chosen methodology is two-fold. On one hand, we sought to fit a statistical (linear regression) model that contained financial indicators as regressors and a score obtained from the non-financial indicators as a dependent variable. On the other hand, we attempted to explain the relationship between financial performance indicators and non-financial performance score (environmental performance).

To determine the environmental score, a diagnostic analysis method was used, specifically, the evaluation grid method. This involves:

- Setting up the analysis criteria and assigning grades between 1 and 5 in order to assess the state or gradual change of the procedural components;
- The allotment of importance coefficients for each criterion in conformity to its position in the analysis grid;
- Rating the generic state of the component as an average score

$$N_{med} = \Sigma\, n_i \; X \; p_i, \tag{1}$$

- where n_i is the grade awarded to each component and p_i is the importance coefficient (Achim & Borlea, 2009).

The criteria analyzed in each environmental report and the corresponding importance coefficient for each can be found in Table 1.

The conducted research used Environmental Performance (EP) as the main dependent variable and employed the content analysis method to measure EP, taking into account studies such as those of Ntim et al. (2013) and Ntim and Soobaroyen (2013).

Every effort was made to ensure that EP was a valid and reliable measure of environmental performance by reiterating the coding process three times.

In the first coding stage, two independent coders computed the environmental performance for an initial sample of 50 companies and then analyzed and discussed the criteria used by the scoring method and the allocated importance coefficients (Table 1).

In the second stage, the two coders eliminated inconsistencies from the coding process.

In the final coding round, following Krippendorff's (2004) recommendations, another 50 companies were coded by two independent coders and a new independent coder with experience in using content analysis and reading financial and non-financial reports.

No inconsistencies or mistakes were identified; therefore, the EP was considered as a valid and reliable measure reflecting the environmental performance reported by companies in Romania.

Based on the specialized literature and the coding process using the scoring method, EP included an analysis based on ten analysis criteria (Table 1). Each analysis criterion was rated between 1–5 based on the qualitative or quantitative reporting of environmental performance in the sample companies' annual and corporate social responsibility reports (Tîrnoveanu, 2018), and then the final EP value was determined. The score varied between each element due to differences in quantitative information. As a result, the optimal score was five and expressed a measure for EP (Nguyen et al., 2021).

After all these coding and pretesting stages, the authors created a database comprising 668 companies for the three analyzed years. Thus, 2004 valid observations emerged.

To understand the contribution of each financial indicator (or predictor) to the non-financial indicators combined to form the environmental performance score (EP), an economic explanation of these indicators is provided.

Return on Assets (ROA) refers to the efficiency of capital allocated in the total assets (fixed assets and current assets) of the company and reflects the company's profitability relative to its total assets. The calculation method of this indicator did not consider the sources of capital (equity or borrowed) and thus did not take into account the relevant financing policy (Țilică & Ciobanu, 2019).

Return on Equity (ROE) is a financial performance metric that highlights a company's ability to generate profit using its available equity. Since the difference between the value of total assets and liabilities represents equity, ROE signifies the profitability of net assets. Investors use ROE to assess whether their investment is profitable or not (Robu et al., 2014).

Financial Leverage (DER) signifies the degree of total indebtedness of a company relative to its equity. If the indicated value is greater than two, it reflects over-indebtedness of the company due to its use of external financing sources much more than internal (own) sources.

The Solvency Ratio (SOLV), determined by dividing total assets by total liabilities, should present a value larger than 0.3. A value below 0.3 indicates significant prudence from creditors, with the company's condition being semi-bankrupt.

The Asset Turnover Ratio (ATR), calculated by comparing total revenues to the total value of assets, signifies the efficiency in utilizing the company's assets (Niculescu, 2003). A company with a high asset turnover ratio indicates high operational efficiency compared to its competition.

A lower ATR signifies a company's potential inefficiency in leveraging its assets to generate revenue. It is crucial to acknowledge that the ATR can exhibit substantial variability across different industries. For example, retail businesses typically possess smaller asset bases yet achieve higher sales volumes, resulting in an elevated ATR. In manufacturing or construction enterprises, the value of assets is high, and they record much lower turnover.

The analyzed database included companies from various industries, and the average recorded for this indicator was 3.24 (in the retail sector, a ratio of 2.5 or higher is considered good) (GoCardless, 2022).

Labor Productivity (LP) is a dynamic economic indicator reflecting the efficiency with which labor is utilized. The extension of labor productivity hinges on three primary factors:

the accumulation and investment in physical capital, the advent of new technologies, and the development of human capital.

Capital Intensity (CAP) signifies the large capital input invested in a business process across different industries. The need for investments in fixed assets (land, buildings, installations, and equipment) is higher in special activities (oil extraction, chemical and oil plants, aircraft production, etc.). Industries requiring large capital investments are recognized as capital-intensive businesses.

The Equity Multiplier (EQM) represents the quantitative relation between a company's total assets and its equity, reflecting the portion of the company's assets financed by equity. An elevated ratio denotes increased financial leverage (total debt to equity), whereas a diminished ratio signifies reduced financial leverage.

The performance indicators (model variables) ROA, ROE, DER, SOLV, ATR, LP, CAP, and EQM were determined by using simple indicators (Turnover, Net Profit, Debt, Fixed Assets, Current Assets, Equity, Employees and Total Assets).

The initial hypothesized model chosen for the conducted regression analysis is:

$$\begin{aligned} EP = b_0 + b_1 * ST + b_2 * NoE + b_3 * TA + b_4 * ROA + b_5 * ROE + b_6 * DER + b_7 * SOLV + b_8 * ATR + \\ b_9 * LP + b_{10} * CAP + b_{11} * EQM + b_{12} * FA + e \end{aligned} \quad (2)$$

The variables are described in Table 2.

Table 2. Description of models' variables.

Variable	Coding	Measuring
EP (environmental performance)	EP	Score
Sales turnover	ST	Total sales
Number of employees	NoE	Average number of employees
Total assets	TA	Total assets
Return on assets	ROA	Net income/Total assets
Return on Equity	ROE	Net income/Equity
Debt-to-Equity Ratio (leverage)	DER	Total debt/Total equity
Solvency ratio	SOLV	Total assets/Total liabilities
Asset turnover ratio	ATR.	Turnover/Total assets
Labour productivity	LP	((Turnover/1000)/Number of employees
Capital intensity	CAP	Total assets/Sales Turnover
Equity multiplier	EQM	Total assets/Equity
Firm age	FA	Years since the foundation

Source: realized by the authors.

Our data analysis was performed utilizing the IBM SPSS Statistics software versione 26 (Howitt & Cramer, 2006), implementing an array of analytical methods (Malhotra, 2004). The chosen models and techniques for data analysis were meticulously aligned with the research objectives (Constantin, 2006; Jaba & Grama, 2004).

The following methods were employed: coefficient of variation analysis [cv], t-tests on the Beta (b_i) coefficients of the regression, coefficient of variation R Squared, F test on the set of the ten aforementioned regressors, Tolerance Analysis for identification of multicollinearity, forward variable selection, backward variable selection, as well as the Durbin Watson test (Bobbit, 2024).

4. Results

The study results indicated that the fit of the linear regression model with EP as a response variable and the ten indicators (turnover, number of employees, ROA, ROE,

DER, CAP, LP, SOLV, ATR, and FA) as explanatory variables was good (α = 0.01% and R = 0.21). This implies that the variability in the values of EP could be partially explained by the variability in the values of any of the ten indicators. Moreover, the findings of the study indicated a significant positive correlation between turnover and environmental performance, suggesting that increased turnover corresponds with higher environmental performance values.

For the application of the Durbin Watson Test, the tabulated values were d1 = 1.891 and d2 = 1.901 for the significance level α = 1%, and dcal = 0.75, so dcal < d1, resulting in the declining of the null hypothesis of residue independence, i.e., the errors exhibited autocorrelation.

According to the descriptive statistics (Table 3), there was a moderate variation in the score for the environmental performance (EP) indicator [10% < cv < 20%] and a high variation [cv > 20%] for the indicator's turnover, number of employees, total assets, ROA, ROE, DER, CAP, EQM, LP, SOLV, ATR, and FA.

Table 3. Descriptive statistics.

Variable	N Statistic	Range Statistic	Minimum Statistic	Maximum Statistic	Mean Statistic	Mean Std. Error	Std. Deviation Statistic
EP	2004	3	2	5	3.44	0.010	0.456
ST	2004	24,671,024,844	1239	24,671,026,083	822,327,295.77	42,604,382.579	1,907,230,285.9
NoE	2004	22,844	0	22,844	1211.19	42.574	1905.868
TA	2004	83,216,748,402	25,401	83,216,773,803	904,843,681.38	89,372,100.600	4,000,836,690.1
ROA	2004	3	−2	1	0.06	0.004	0.158
ROE	2004	340	−280	60	0.04	0.149	6.675
DER	2004	3556	−251	3306	5.20	1.806	80.868
CAP	2004	55,723	0	55,723	29.39	27.807	1244.789
EQM	2004	3561	−280	3281	6.57	1.813	81.162
LP	2004	2,459,929,135	0	2,459,929,135	54,173,298.68	4,565,975.919	204,400,745.41
SOLV	2004	122	0	122	3.22	0.120	5.359
ATR	2004	13	0	13	1.86	0.030	1.340
FA	2004	2011	−1980	31	15.28	1.734	77.644

Source: realized by the authors, using the results obtained from SPSS 26.

The descriptive statistics revealed several key characteristics of the dataset: Outliers and Extreme Values. Some variables exhibited a wide range and extreme values, particularly ROE (range: 340, minimum: −280, maximum: 60), DER (range: 3556, minimum: −251, maximum: 3306), and EQM (range: 3561, minimum: −280, maximum: 3281).

These extreme values suggest potential outliers that could have influenced regression estimates and require appropriate treatment.

Skewed Distributions: Several financial variables, such as ST (Short-term liabilities), TA (Total Assets), and LP (Liquidity Position), exhibited high standard deviations relative to their means. This suggests a right-skewed distribution, likely driven by a few large firms.

Negative Values: Variables like ROA, ROE, FA, and CAP included negative values, which may indicate financial distress or specific accounting treatments in certain firms. These values were carefully considered in our model specification to ensure that they did not introduce unintended biases.

Economic Implications: The solvency ratio (SOLV), with a maximum value of 122 and a mean of 3.22, suggests that while most firms maintained reasonable solvency, a few exhibited extremely high values, likely distorting the distribution. Similarly, the ATR (Asset Turnover Ratio) had a mean of 1.86 but reached a maximum of 13, implying variability in operational efficiency among firms.

To mitigate the potential impact of extreme values, we conducted further analyses by testing different thresholds for outlier exclusion. Additionally, we assessed model robustness until we reached the final regression model.

An important statistical indicator of interdependencies is the coefficient of variation (cv), proposed by K. Pearson. To study the potential associations among the economic-financial indicators, a correlation matrix was calculated (Table 4).

Table 4. Matrix of correlations.

Variable	EP	ST	NoE	TA	ROA	ROE	DER	CAP	EQM	LP	SOLV	ATR	FA
EP	1	0.164 **	0.093 **	0.040	−0.041	0.001	−0.003	0.003	−0.006	0.075 **	−0.034	−0.091 **	0.066 **
ST		1	0.436 **	0.423 **	−0.001	0.005	−0.011	−0.010	−0.013	0.244 *	−0.028	0.011	0.026
NoE			1	0.365 **	−0.056 *	−0.007	0.002	−0.003	0.002	−0.166 **	−0.018	−0.062 **	0.011
TA				1	−0.033	0.001	0.002	−0.003	0.004	0.097 **	0.101 **	−0.160 **	0.014
ROA					1	0.054 *	−0.027	−0.216 **	−0.028	0.039	0.043	−0.207 **	0.027
ROE						1	−0.895 **	0.000	−0.890 **	0.003	0.005	0.032	0.016
DER							1	−0.002	0.999 **	−0.011	−0.024	0.001	−0.015
CAP								1	−0.002	−0.0006	−0.012	−0.032	−0.003
EQM									1	−0.012	−0.019	−0.002	−0.014
LP										1	0.013	−0.044	0.016
SOLV											1	−0.226 **	0.028
ATR												1	−0.021
FA													1

* Correlation is significant at the 0.05 level (2-tailed). ** Correlation is significant at the 0.01 level (2-tailed). Source: realized by the authors, using the results obtained from SPSS.

Pearson's coefficient of variation assumes that the data are measured on a ratio scale with a meaningful zero point and that the underlying distribution is approximately normal when making inferential comparisons. However, in this analysis, model selection was employed to determine the most relevant regressors, ultimately defining the threshold for inclusion. At this stage, the primary purpose of the correlation table was to serve as an initial diagnostic tool for identifying potential collinearity among explanatory variables, rather than to assess the strength of individual relationships.

Upon examination of the correlation matrix, it was evident that there were statistically significant correlations among the variables studied, both positive and negative, as follows:

- EP was positively correlated with ST (sales turnover) (r = 0.16 ***), NoE (number of employees) (r = 0.09 ***), LP (labor productivity) (r = 0.07 ***), FA (firm age) (r = 0.07 ***) and negatively with: ATR (r = −0.09 ***);
- Sales turnover (ST) was positively correlated with Number of employees, Total assets (TA), LP (correlation coefficients range between 0.24 and 0.44);
- Number of employees was correlated with Total assets, ROA, LP and ATR, exhibiting both positive and negative associations;
- TA (Total assets) was correlated with LP, SOLV, ATR, involving positive as well as negative interconnections;
- ROA was correlated with ROE, CAP, and ATR, having bidirectional correlations;
- ROE is correlated with DER and EQM (very strong negative correlations);
- DER was positively correlated with EQM, indicating a strong straight connection between these two variables, implying a strong linear dependence;
- SOLV was negatively correlated with ATR.

The correlation matrix suggested high collinearity between EQM and DER and between EQM and ROE. Therefore, we eliminated the regressor EQM (Equity Multiplier) in the regression model, retaining DER and ROE to obtain:

$$\begin{aligned} EP = b_0 + b_1 * ST + b_2 * NoE + b_3 * TA + b_4 * ROA + b_5 * ROE + b_6 * DER + b_7 * SOLV + b_8 * ATR + \\ b_9 * LP + b_{10} * CAP + b_{11} * FA + e \end{aligned} \quad (3)$$

For the aforementioned equation, we then tested the analysis of variance of the response EP (Table 5).

Table 5. Variances for Examining Multiple Regression (Equation (1)—F-test).

ANOVA [a]					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	19.423	11	1.766	8.857	<0.001 [b]
Residual	397.128	1992	0.199		
Total	416.550	2003			

[a] Dependent Variable: EP [b] Predictors: (Constant), FA, CAP, NoE, DER, SOLV, LP, ROA, ATR, TA, ST, ROE.

The F-statistic (8.857) and the very low *p*-value (<0.001) suggested that the regression model was statistically significant. This means that the independent variables collectively explained a significant portion of the variance in the dependent variable.

The regression coefficient estimation is shown in Table 6.

Table 6. Regression coefficient matrix [a].

Variable	**Unstandardized B**	**Coefficients Std. Error**	**Standardized Coefficients Beta**	**t**	**Sig.**	**Collinearity Tolerance**	**Statistics VIF**
Constant	3.476	0.022		161.578	<0.001		
ST	3.745×10^{-11}	0.000	0.157	5.744	<0.001	0.644	1.554
NoE	1.074×10^{-5}	0.000	0.045	1.702	0.089	0.688	1.453
TA	-6.838×10^{-12}	0.000	−0.060	−2.373	0.018	0.749	1.336
ROA	−0.064	0.067	−0.022	−0.951	0.342	0.898	1.114
ROE	0.001	0.003	0.012	0.240	0.810	0.197	5.069
DER	4.885×10^{-5}	0.000	0.009	0.176	0.860	0.198	5.058
CAP	-1.401×10^{-6}	0.000	−0.004	−0.171	0.865	0.953	1.050
LP	1.022×10^{-10}	0.000	0.046	1.919	0.055	0.840	1.191
SOLV	−0.004	0.002	−0.048	−2.095	0.036	0.929	1.076
ATR	−0.035	0.008	−0.103	−4.380	<0.001	0.872	1.147
FA	0.000	0.000	0.061	2.783	0.005	0.997	1.003

[a] Dependent Variable: EP Source: realized by the authors, using the results obtained from SPSS.

The magnitude of the standardized coefficients reflects the importance of the independent variables in predicting the EP indicator. The larger the absolute value of the Beta coefficient, the stronger the effect of the corresponding independent variable on the dependent variable, while a positive Beta suggests a direct relationship and a negative Beta indicates an inverse relationship. In this case, ST is the most influential variable, followed by ATR (in the negative direction) with CAP having the least negative impact on EP.

The multiple correlation coefficient (R) (Table 7) signifies the extent of association between the dependent variable, environmental performance (EP), and the array of independent variables, with a recorded value of 0.216. An R value near 0 denotes an insignificant regression. Given that R often exaggerates the association between the variables, the more reliable metric is the coefficient of determination ($R^2 = 0.047$), which represents the square of the multiple correlation coefficient. For this model, 4.7% of the variance in EP could be explained by the independent variables (FA, CAP, NoE, DER, SOLV, LP, ROA, ATR, TA, ST, ROE). R^2 is equivalent to the F-test when it concludes whether the model is significant. R2 shows, however, the proportion of explained variance of the full model, which cannot be concluded from the t-tests for the regressors.

Table 7. Initial model summary.

Initial Model Summary [b]					
Model	**R**	**R Square**	**Adjusted R Square**	**Std. Error of the Estimate**	**Durbin-Watson**
1	0.216 [a]	0.047	0.041	0.446	0.756

[a] Predictors: (Constant), FA, CAP, NoE, DER, SOLV, LP, ROA, ATR, TA, ST, ROE [b] Dependent Variable: EP. Source: realized by the authors, using the results obtained from SPSS.

From the analysis of the regression coefficients (Table 6) related to the model, it can be observed that there were only five variables with a statistically significant influence, specifically, SOLV, FA and TA, ATR and Turnover on environmental performance (EP). Hence, we applied the forward selection method to identify and validate the previous results.

Consequently, the relevant information was consolidated within multiple correlation coefficient and Durbin-Watson test values (Table 8), F-test (Table 9), regression coefficients, and collinearity statistics (Table 10).

Table 8. Model summary [f].

Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	Durbin-Watson
1	0.164 [a]	0.027	0.026	0.450	
2	0.188 [b]	0.035	0.034	0.448	
3	0.197 [c]	0.039	0.037	0.447	
4	0.204 [d]	0.042	0.040	0.447	
5	0.209 [e]	0.044	0.041	0.446	0.753

[a] Predictors: (Constant), ST [b] Predictors: (Constant), ST, ATR [c] Predictors: (Constant), ST, ATR, FA [d] Predictors: (Constant), ST, ATR, FA, SOLV [e] Predictors: (Constant), ST, ATR, FA, SOLV, TA [f] Dependent Variable: EP Source: realized by the authors, using the results obtained from SPSS.

Table 9. Variances for Examining Multiple Regression (Equation (2)—F-test).

ANOVA [a]					
	Sum of Squares	**df**	**Mean Square**	**F**	**Sig.**
Regression	18.247	5	3.649	18.306	<0.001 [b]
Residual	398.303	1998	0.199		
Total	416.550	2003			

[a] Dependent Variable: EP [b] Predictors: (Constant), ST, ART, FA, SOLV, TA Source: realized by the authors, using the results obtained from SPSS.

The coefficient of determination (R^2) was then 0.044, so that 4.4% of the variance in EP could be explained by the five independent variables (ST, ATR, FA, SOLV, TA).

Corresponding to F-test, the linear relationship between the five variables and EP was statistically significant. The tabular value F0.01; 5; 1993 = 2.37 was below the F value calculated based on empirical data, Fcal = 18.306, thus supporting the hypothesis that the linear regression between EP, ST, TA, SOLV, ATR, and FA was a good fit.

The matrix helped us to understand which variables significantly impacted the dependent variable and assesses the presence of multicollinearity.

The ST variable showed the highest standardized beta (0.184), alongside a t-value of 7.556, with significance lower than 0.001 indicating a significant positive relationship with the dependent variable EP. Meanwhile VIF values were below 10, displaying no severe multicollinearity.

Table 10. Regression coefficients and collinearity statistics.

Model		Unstandarized B	Coefficients Std. Error	Standardized Coefficients Beta	t	Sig.	Collinearity Tolerance	Statistics VIF
1	Constant	3.411	0.011		311.581	<0.001		
	ST	3.917×10^{-11}	0.000	0.164	7.431	<0.001	1.000	1.000
2	Constant	3.469	0.018		196.877	<0.001		
	ST	3.941×10^{-11}	0.000	0.165	7.506	<0.001	1.000	1.000
	ATR	−0.031	0.007	−0.092	−4.207	<0.001	1.000	1.000
3	Constant	3.463	0.018		195.411	<0.001		
	ST	3.904×10^{-11}	0.000	0.163	7.445	<0.001	0.999	1.001
	ATR	−0.031	0.007	−0.091	−4.156	<0.001	0.999	1.001
	FA	0.000	0.000	0.060	2.715	0.007	0.999	1.001
4	Constant	3.486	0.020		173.771	<0.001		
	ST	3.870×10^{-11}	0.000	0.162	7.387	<0.001	0.999	1.001
	ATR	−0.035	0.008	−0.104	−4.605	<0.001	0.948	1.054
	FA	0.000	0.000	0.061	2.778	0.006	0.998	1.002
	SOLV	−0.005	0.002	−0.055	−2.441	0.015	0.948	1.005
5	Constant	3.491	0.020		173.075	<0.001		
	ST	4.388×10^{-11}	0.000	0.184	7.556	<0.001	0.811	1.233
	ATR	−0.038	0.008	−0.111	−4.878	<0.001	0.924	1.082
	FA	0.000	0.000	0.061	2.775	0.006	0.998	1.002
	SOLV	−0.004	0.002	−0.051	−2.254	0.024	0.940	1.064
	TA	-5.787×10^{-12}	0.000	−0.051	−2.060	0.040	0.788	1.269

Dependent Variable: EP Source: realized by the authors, using the results obtained from SPSS.

Regarding the linearity hypothesis, the relationships between the explanatory variables and the response variable were examined by plotting the unstandardized residuals against each explanatory variable. The resulting two-dimensional plots (Figure 1) suggested that the relationships exhibited linearity, supporting the appropriateness of our analytical approach.

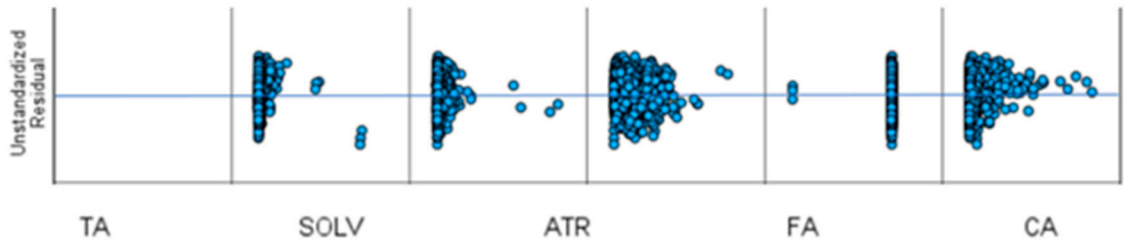

Figure 1. Unstandardized residuals plot.

A scatter plot of residuals (obtained after fitting the identified regression model) against each explanatory variable showed that the linear assumption was correct. In these figures, we noticed that the residuals were symmetrically distributed around zero over the range of the explanatory variable in the discussion (x axis).

The correlations between Sales turnover and EP and Firm age and EP were positive, meaning that a high turnover or age of the company was associated with a high EP value. Since the correlations between ST/FA and EP were statistically significant, increasing the turnover value or the age also increased the EP value, considering that all other variables remained unchanged. The correlations between SOLV/ATR/TA and EP were negative, meaning low values of these variables corresponded to high EP values, when all the other variables remained unchanged. So, decreasing solvency or assets turnover or total assets values increased EP values.

To test the linear relationship between each explanatory variable and the response variable (EP), the t-test was applied to each regression coefficient, demonstrating whether a linear relationship existed between the variables (in this case, ST, TA, SOLV, ATR, FA, and EP). Therefore, it was applied five times, once for each regression coefficient. The F-test in Table 9 combines these five tests into one, testing all five explanatory variables simultaneously to determine if at least one of them is not zero. The parameters in the preceding equation were estimated utilizing the least squares method.

Through the above regression equation, we aimed to see how non-financial and financial factors (ST, TA, SOLV, ATR, FA) influenced environmental performance (EP). This means that we were investigating the relationship among the five variables, i.e., turnover, number of employees, SOLV, ATR, FA, called explanatory variables, and EP, called the explained variable.

In conclusion, according to the F-test (Table 9), the regression equation was statistically significant at the $\alpha = 0.01\%$ level. The relationship among EP and the five variables (both non-financial and financial) could be assumed to be linear, as described by Equation (3).

The multiple correlation coefficient R (R = 0.209) was significant. The relationship between the five variables and environmental performance (EP) was robust, as indicated by the multiple correlation coefficient R (R = 0.209). The total coefficient of determination D = 0.04% [$D = R^2 \times 100 = 4.4\%$], which means that the variation in EP values between 2.0 and 4.65 was influenced by the five variables studied to the extent of 4.4%.

Collinearity denotes a significant correlation between the independent variables. In such cases, tolerance statistics are computed by solely considering the independent variables, excluding the dependent variable from the model. This leads to multicollinearity, where including one variable from the group in the model renders the remaining variables in the group insignificant. Simultaneously, there is an overestimation of the coefficient of determination and the dispersions of the estimated coefficients, which can distort the model interpretation and widen confidence intervals. Thus, there were two aspects to consider: determining multicollinearity and how to address multicollinearity if it existed (Table 10 Collinearity Statistics)

In Table 10, we show the standardized regression coefficients for each independent variable (Beta) and Tolerance for each variable x_i. A low tolerance value (ranging from 0 to 1) reflects a coefficient of determination close to 1, indicating a strong linear relationship between xi and the other independent variables. According to the tolerance values, multicollinearity was not indicated.

The variance inflation factor (VIF) measures the extent of multicollinearity. If the VIF value is below 0.2 or higher than 10, then multicollinearity is troublesome.

It was observed that VIF $\subset$ (0.2; 10) as it ranged between 1.00 and 1.269; thus, the absence of multicollinearity implied that there was no significant correlation between the variables.

The Durbin-Watson test was applied for the five variables as well (Table 8). The phenomenon of autocorrelation distorts not only the estimators—the partial regression coefficients—but also their variances, with unfavorable implications for accepting or rejecting a null hypothesis (H_0).

Thus, for a number of observations n = 2004 and a number $p = 5$ of independent variables (non-financial and financial indicators), the tabulated values for d were dL = 1.891 and dU = 1.901 at a significance level $\alpha = 1\%$ according to the Durbin-Watson significance table (Real Statistics Using Excel, 2023). The calculated d value dcal = 0.75 was less than d1, which means the hypothesis of residual independence could be rejected. Thus, the null hypothesis H_0 was rejected, indicating that errors exhibited autocorrelation. This case is common in situations involving time series data, such as the analyzed database.

We may therefore conclude that there were statistically significant positive correlations between sales turnover (ST) and environmental performance (EP), as well as between firm age (FA) and EP.

5. Discussion

Environmental Social Governance (ESG) is a phenomenon that has become global in contemporary times. Consequently, the inclusion of sustainability regulations and standards has become necessary. Building on this idea and analyzing sustainable reporting and environmental responsibility, a case study was developed for companies operating in Romania.

The relationship between environmental performance and financial performance, widely debated in the literature, does not always show the same influence, with existing studies often reaching contradictory conclusions. Some research highlights a positive impact of sustainable practices on firms' profitability (Pereira et al., 2023; Petera et al., 2021; Junquera & Barba-Sánchez, 2018), while others suggest that green investments can generate high costs, affecting short-term profitability (Fazli et al., 2023; Y. S. Chen et al., 2016; Y. Chen et al., 2021). In this context, the present study fills an important gap in the literature by analyzing not only the correlation among these variables but also the relationship between environmental financial performance and economic performance, expressed through ST, TA, SOLV, and ATR. The present research makes a theoretical contribution by expanding the conceptual framework regarding the relationship between environmental and financial performance by including multiple financial and performance indicators in the analysis.

The study provides statistical evidence on the impact of environmental performance on financial performance, using an extensive sample of companies from various economic sectors. The obtained results can guide managerial decisions regarding resource allocation for sustainability policies, demonstrating that well-managed ecological strategies can bring about significant economic benefits (Nishitani et al., 2017; Narula et al., 2023; Soedjatmiko et al., 2021). Therefore, in the long run, increasing environmental protection and improving environmental performance positively influence a company's financial performance (Song et al., 2017; Soedjatmiko et al., 2021; S. Zhang et al., 2019).

Empirically, existing studies provide mixed results. For example, a study conducted by Florina-Mădălina Mocanu investigated the relationship between financial performance and corporate governance practices in Romanian banking companies, highlighting the importance of corporate governance in achieving financial performance (Mocanu & Lungu, 2021). The impact of corporate governance practices on financial performance is also revealed by other studies (Nguyen et al., 2021; Ong et al., 2019; Y. Xu & Zhu, 2024; Nandini et al., 2022). The findings of this study have significant implications. Scientifically, they contribute to a deeper understanding of how environmental initiatives can influence financial performance, providing a foundation for future research. Practically, the results can serve as a basis for developing corporate policies and business strategies, encouraging companies to adopt sustainable practices that not only protect the environment but also enhance financial performance.

In conclusion, this research aims to clarify the complex relationship between environmental and financial performance, offering valuable insights for both the academic community and practitioners.

The study was designed as observational research aimed at identifying significant correlations among variables, which can provide valuable insights into underlying patterns and associations. Although no causal relationships were established, these findings serve as a foundation for future research that may employ experimental or longitudinal designs to investigate causality more rigorously. Establishing cause-and-effect relationships

would require additional methodological approaches, such as controlled experiments or instrumental variable techniques.

Machine Learning Models in general, and Linear Regression in particular, are all designed to provide accurate results (when statistical significance is present) both for observational and experimental settings. In this paper, an observational study was pursued. This means that association results were always declared and, in no case, causality was analyzed. This was because Pearson correlation is suitable for one explanatory variable, while a group of five explanatory variables was deemed crucial in our analysis. Furthermore, correlation-only analysis is not suitable for model selection. In conclusion, the use of a linear regression model with very strong model selection technique, under correct linear assumptions, was the key to the results of the paper.

Sustainability practices are becoming increasingly important on a global scale, but there are significant differences between trends specific to Romania and international trends. Analyzing these aspects in relation to applicable strategies for Romanian companies revealed that, in Romania, the implementation of sustainability standards is progressing slowly in most areas. Regarding renewable energy, global trends show a rapid increase in investments in solar and wind energy (Kurbatova & Perederii, 2020; X. Xu et al., 2019; Lanshina & Barinova, 2017; Nejat et al., 2013; J. Zhao et al., 2022), whereas in Romania, development in these categories is slow but growing (Dumitrașcu et al., 2019; Raboaca et al., 2020; Aceleanu et al., 2018). The same applies to the implementation of circular economy actions (Piontek, 2019; Holwerda et al., 2024; Topliceanu et al., 2023; Delcea et al., 2024). Regarding ESG reporting, it is mandatory at the global level (EU and USA), while in Romania, implementation is occurring gradually and unevenly. In two other categories of sustainability practices, i.e., sustainable transport and social responsibility, initiatives in Romania are limited, especially among SMEs. For Romanian companies to remain competitive and leverage global trends, they should adopt strategies aimed at optimizing energy consumption through investments in modernizing equipment for energy efficiency and installing solar panels. Additionally, they should develop circular economy practices, such as collaborating with suppliers using recycled materials and establishing product return and reuse schemes. In terms of alignment with ESG standards, companies should focus on publishing sustainability reports (even voluntarily for SMEs) and integrating clear corporate governance and ethics policies (Bunget et al., 2024; Dănilă & Nancu, 2023; Fleacă et al., 2023). Furthermore, increasing social responsibility through CSR projects in education and environmental protection, as well as partnerships with NGOs and local communities, is encouraged (Marinescu, 2020b; Petrescu et al., 2020; Mihai & Aleca, 2023).

In conclusion, while Romania is gradually adopting sustainable practices, the gap compared to global trends can be reduced through proactive strategies. Romanian companies that embrace sustainability will gain a competitive advantage and enjoy easier access to green financing and international markets.

6. Conclusions

This paper aimed to identify and analyze the relationship between firms' financial performance and non-financial performance (environmental performance) by employing a statistical model that adeptly integrates both financial and non-financial indicators. The study's contribution lies in correlating and providing a comprehensive overview of the analyzed relationship between financial and environmental performance, notably through the application of econometric models to substantiate the findings.

To achieve the paper's goal, a score for the dependent variable Environmental performance (criterion variable) EP was calculated and included in the model as dependent variable, along with the following financial indicators: ROA, ROE, Debt ratio, Indebt-

edness Degree, Capital intensity, Equity multiplier, Labor productivity (independent or predictor variables).

A key observation of this study was the statistically significant positive correlations between sales turnover and EP and firm age and EP, meaning that higher turnover or higher firm age is associated with to higher EP values. This may support the idea that as companies grow and develop, they can become more efficient in terms of resource use and innovate to reduce waste and emissions. Companies with a long history are often more aware of the importance of their reputation. They may adopt better environmental practices to protect their image and demonstrate social responsibility. Companies with higher sales are often under greater scrutiny and may be more motivated to comply with environmental regulations, leading to better environmental performance.

In summary, our analysis aimed to identify the financial indicators that significantly contribute to the environmental performance of companies subject to sustainability regulations. Thus, a model was constructed from the independent variables (predictors) that could best estimate the dependent variable (EP). In the description provided, this model was expressed by Formula (3). Collinearity among the independent variables was checked by determining tolerance statistics. In the determined model, it was acknowledged that all independent variables possessed sufficient accuracy in explaining the dependent variable. A detailed explanation of the influence of each financial indicator in the model on environmental performance (EP) supported the construction of the analysis model with the following indicators: Sales turnover (ST), Total assets (TA), Solvency ratio (SOLV), Asset turnover ratio (ATR), Firm age (FA).

The relation between SOLV and EP was negative, indicating that lower solvency corresponded to higher EP values, implying that decreasing solvency values might increase EP values. Considering that the solvency indicator refers to covering total debts from a company's assets, this negative relationship can be explained by the company's interest in spending more on retooling and modernization to achieve environmental goals (W. Zhang et al., 2021). Increasing concern for creating environmental strategies to improve climate conditions, reduce emissions, recycle waste, etc., leads to securing funding sources from investors or creditors. Under these circumstances, companies may register high debts in the short term. This is understandable for the analyzed period, given that the European Directive on sustainable reporting standards (CSRD) mandates their application starting from the 2024 fiscal year for entities with over 500 employees already applying non-financial reporting (NFRD).

The relation between ATR and EP was negative, meaning that lower ATR values correspond to higher EP values, indicating that decreasing ATR values might increase EP values. Similarly, the influence of the Asset Turnover Ratio (ATR) may be explained by investments in green technologies, which are more expensive and have a long lifespan. These investments increase the total value of assets but do not immediately generate additional revenue (Gu, 2021; Nishitani et al., 2017), thereby reducing asset turnover. Also, higher operational costs may occur when implementing environmental protection measures, like using recycled materials or less polluting production processes.

From the regression model, one can conclude that five out of the twelve financial indicators included in the model have a statistically significant influence on environmental performance (EP), namely SOLV, FA, TA (significant), ATR, and ST (very significant).

Therefore, it can be concluded that the proposed model is significant, effectively demonstrating the statistical relationship between the five aforementioned financial indicators and the non-financial (environmental) performance of the sample companies.

7. Limitations and Further Research

While this study has outlined several limitations, this does not imply that the analysis conducted is any less valuable. The study's results can be of real use to both the academic community and business representatives.

The calculation of an environmental performance (EP) score, utilizing the grid method, was conducted through a content analysis of sustainability reports released by companies. One limitation of this research is the potential collection of incomplete or unclear data and information. Furthermore, our analysis of the sustainability reports' information may have been subjective, and the EP score may have been influenced by factors not identified by the authors.

In future research, we intend to conduct comparative analyses of the EP score across various sectors. Additionally, the scope of this research could be broadened by examining the relationship between ESG and the financial performance of the examined companies.

The present study faced difficulties in defining and setting out the concepts of sustainability and environmental responsibility, as these notions are often interpreted differently in the literature. This conceptual ambiguity may affect the coherence of the theoretical framework and the comparability of our results with those of other research.

Limited access to updated and reliable data on sustainability reporting practices in Romania represented a significant constraint. Many companies do not publish detailed or standardized information, which complicates empirical analyses and may lead to incomplete or biased conclusions.

The sample selection may have suffered from reduced representativeness, especially given that it included only large or publicly listed companies, neglecting small and medium-sized enterprises. This approach could limit the generalization of our results to the entire corporate sector in Romania.

The application of econometric models may have encountered issues related to incorrect model specification, the omission of relevant variables, or the presence of multicollinearity. These factors can distort estimates and result interpretations, affecting the validity of the conclusions.

Moreover, the analysis was carried out on a single country, namely Romania, albeit with potential to expand it in the future to include data from other European countries. We believe that this research could also be improved by conducting a questionnaire-based analysis to identify managers' opinions regarding the specific strategies implemented for environmental protection.

In conclusion, while this article provides valuable insights into sustainability reporting and environmental responsibility in a Romanian context, it is essential for readers to be aware of these limitations to correctly interpret the study's results and implications

Author Contributions: Conceptualization, C.D., C.M.B. and C.E.A.; methodology, C.D., D.A. and A.Z.; software, D.A.; data curation, C.D., C.M.B., C.E.A. and D.A.; writing—original draft preparation, C.E.A. and A.Z.; writing—review and editing, C.E.A., A.Z. and D.A.; supervision, C.D. and C.M.B. All authors have read and agreed to the published version of the manuscript.

Funding: This research was funded by Transilvania University of Brașov.

Institutional Review Board Statement: Not applicable.

Informed Consent Statement: Not applicable.

Data Availability Statement: The original contributions presented in this study are included in the article. Further inquiries can be directed to the corresponding author(s).

Conflicts of Interest: The authors declare no conflicts of interest. The funders had no role in the design of the study; in the collection, analyses, or interpretation of data; in the writing of the manuscript; or in the decision to publish the results.

References

Abeysekeraa, P. A., & Fernando, S. C. (2020). Corporate social responsibility versus corporate shareholder responsibility: A family firm perspective. *Journal of Corporate Finance*, *61*, 101370. [CrossRef]

Accountancy Europe. (2024). *5 reasons why sustainability matters for SMEs*. Available online: https://accountancyeurope.eu/wp-content/uploads/2023/11/5-reasons-why-sustainability-matters-for-SMEs-.pdf (accessed on 15 December 2024).

Aceleanu, M. I., Șerban, A. C., Țîrcă, D. M., & Badea, L. (2018). He rural sustainable development through renewable energy: The case of Romania. *Technological and Economic Development of Economy*, *24*(4), 1408–1434. [CrossRef]

Achim, M., & Borlea, S. (2009). Modern models of general financial diagnosis of the entity in the current context of economic and financial accounting globalization. In *Theoretical and applied economics: Economic-financial analysis and evaluation of properties, Challenges in the Current Global Context, Scientific Symposium, Bucharest, Romania, May 29–31* (pp. 216–228). Theoretical and Applied Economics.

Ahmed, R. R., Kyriakopoulos, G. L., Streimikiene, D., & Streimikis, J. (2021b). Drivers of proactive environmental strategies: Evidence from the pharmaceutical industry of Asian economies. *Sustainability*, *13*, 9479. [CrossRef]

Ahmed, R. R., Streimikiene, D., & Zheng, X. (2021a). The impact of proactive environmental strategy on competitive and sustainable development of organizations. *Journal of Competitiveness*, *13*(4), 5–24. [CrossRef]

Al Shammre, A. S., Alshebami, A. S., Ali Seraj, A. H., Elshaer, I. A., & Al Marri, S. H. (2023). Unleashing environmental performance: The impact of green entrepreneurial motivation on small enterprises. *Frontiers in Environmental Science*, *11*, 1176804. [CrossRef]

Aluchna, M., Roszkowska-Menkes, M., & Kaminski, B. (2023). From talk to action: The effects of the non-financial reporting directive on ESG performance. *Meditari Accountancy Research*, *31*(7), 1–25. [CrossRef]

Arco-Castro, M. L., L'opez-P'erez, M. V., Macías-Guillén, A., & Rodríguez-Ariza, L. (2023). The role of socially responsible investors in environmental performance: An analysis of proactive and reactive practices. *Journal of Cleaner Production*, *419*, 138279. [CrossRef]

Bahadır, O., & Akarsu, S. (2024). Does company information environment affect ESG–financial performance relationship? Evidence from European markets. *Sustainability*, *16*, 2701. [CrossRef]

Băndoi, A., Bocean, C. G., Del Baldo, M., Mandache, L., Mănescu, L. G., & Sitnikov, C. S. (2021). Including sustainable reporting practices in corporate management reports: Assessing the impact of transparency on economic performance. *Sustainability*, *13*, 940. [CrossRef]

Bărbulescu, O., Nicolau, C., & Munteanu, D. (2021). Within the entrepreneurship ecosystem: Is innovation clusters' strategic approach boosting businesses' sustainable development? *Sustainability*, *13*, 11762. [CrossRef]

Bednárová, M., Klimko, R., & Rievajová, E. (2019). From environmental reporting to environmental performance. *Sustainability*, *11*, 2549. [CrossRef]

Bobbit, Z. (2024). *Statology*. Available online: https://www.statology.org/durbin-watson-test-spss (accessed on 12 July 2024).

Bouwman, J., & Berens, G. (2024). Proactive versus reactive issues management strategies and stakeholder support for a company. *Corporate Reputation Review*, *20*(4), 797–809. [CrossRef]

Bridoux, F., & Stoelhorst, J. W. (2022). Stakeholder theory, strategy, and organization: Past, present, and future. *Strategic Organization*, *20*(4), 797–809. [CrossRef]

Bu, M., Liu, X., Zhang, B., Hazaea, S. A., Fan, R., & Wang, Z. (2024). Governance of corporate greenwashing through esg assurance. *Systems*, *12*, 365. [CrossRef]

Bucharest Stock Exchange. (2022a). Available online: www.bvb.ro (accessed on 20 August 2022).

Bucharest Stock Exchange. (2022b). *Ghid pentru raportarea ESG*. Available online: https://bvb.ro/info/Rapoarte/Ghiduri/Ghid_privind_raportarea_ESG.pdf (accessed on 20 October 2023).

Bunget, O. C., Dumitrescu, A. C., Burcă, V., Bogdan, O., & Șocațiu, M. A. (2024). Comparative analysis regarding the sustainability reporting practice in Romania at the level of sustainability reports. *Audit Financiar*, *22*(4), 769–782. Available online: https://ideas.repec.org/a/aud/audfin/v22y2024i176p769.html (accessed on 20 October 2023). [CrossRef]

Chen, R., Liu, Y., Jiang, Y., & Liu, J. (2023). Does ESG performance promote vitality of capital market? Analysis from the perspective of stock liquidity. *Frontiers in Environmental Science*, *11*, 1132845. [CrossRef]

Chen, S., Song, Y., & Gao, P. (2023). Environmental, social, and governance (ESG) performance and financial outcomes: Analyzing the impact of ESG on financial performance. *Journal of Environmental Management*, *345*, 1188. [CrossRef]

Chen, Y. S., Chang, T. W., Lin, C. Y., Lai, P. Y., & Wang, K. H. (2016). The influence of proactive green innovation and reactive green innovation on green product development performance: The mediation role of green creativity. *Sustainability*, *8*, 966. [CrossRef]

Chen, Y., Singhal, V., & Zhu, Q. (2021). Environmental policies and financial performance: Stock market reaction to firms for their proactive environmental practices recognized by governmental programs. *Business Strategy and the Environment*, *30*, 1548–1562. [CrossRef]

Cheng, S., & Huang, S. (2024). ESG combined score effects on stock performance of S&P 500-listed firms. *Finance Research Letters*, *66*, 105686. [CrossRef]

Cicchiello, A. F., Ferdinando Marrazza, F., & Perdichizzi, S. (2023). Non-financial disclosure regulation and environmental, social, and governance (ESG) performance: The case of EU and US firms. *Corporate Social Responsibility and Environmental Management*, *30*, 1121–1128. [CrossRef]

Constantin, C. (2006). *Sisteme informatice de marketing: Analiza si prelucrarea datelor de marketing: Aplicatii in SPSS*. Informaket.

Continuity Central.com. (2023). *Many European companies have immature approaches to ESG*. Available online: https://www.continuitycentral.com/index.php/news/erm-news/8570-many-european-companies-have-immature-approaches-to-esg (accessed on 15 June 2023).

Crossley, R. M., Elmagrhi, M. H., & Ntim, C. G. (2021). Sustainability and legitimacy theory: The case of sustainable social and environmental practices of small and medium-sized enterprises. *Business Strategy and the Environment*, *30*, 3740–3762. [CrossRef]

Dănilă, A., & Nancu, D. (2023). Study on ESG practices in the Romanian food sector. *"Ovidius" University Annals, Economic Sciences Series*, *23*(1). Available online: https://stec.univ-ovidius.ro/html/anale/RO/2023-i1/Section%203/13.pdf (accessed on 3 March 2025).

Delcea, C., Nica, I., Georgescu, I., Chiriță, N., & Ciurea, C. (2024). Integrating fuzzy MCDM methods and ARDL approach for circular economy strategy analysis in Romania. *Mathematics*, *12*, 2997. [CrossRef]

Dragomir, C.-C., & Foris, T. (2022). The collaborative approach to sustainability: A Model of commissioning system intervention in supporting multi-stakeholder partnerships from national to global levels. *Sustainability*, *14*, 1536. [CrossRef]

Dragomir, V. D., Dumitru, M., Duțescu, A., & Perevoznic, M. F. (2023). Empirical assessment of carbon reduction and energy transition targets of European companies. In *Proceedings of the 17th International Conference on Business Excellence 2023* (pp. 718–727). Sciendo. [CrossRef]

Dumitrașcu, M., Grigorescu, I., Micu, D., Mocanu, I., Vrînceanu, A., Mitrică, B., Havriș, L., Șerban, P., Dumitrică, C., & Kucsicsa, G. (2019, September 29–October 2). *Renewable energy, climate change, and environmental challenges in Romania*. 2019 IEEE PES Innovative Smart Grid Technologies Europe (ISGT-Europe), Bucharest, Romania. [CrossRef]

Eccles, R., Krzus, M., & Ribot, S. (2014). *The integrated reporting movement: Meaning, momentum, motives, and materiality*. John Wiley & Sons.

EFRAG. (2023). *European financial reporting advisory group report*. European Sustainability Reporting Standards (ESRS).

Elkington, J. (1998). *Cannibals with forks: The triple bottom line of 21st-century business*. Capstone Publishing. Available online: https://www.sdg.services/uploads/9/9/2/1/9921626/cannibalswithforks.pdf (accessed on 20 January 2025).

European Commission. (2023a). *Corporate sustainability reporting*. Available online: https://finance.ec.europa.eu/capital-markets-union-and-financial-markets/company-reporting-and-auditing/company-reporting/corporate-sustainability-reporting_en (accessed on 20 March 2023).

European Commission. (2023b). *EU taxonomy navigator*. Available online: https://ec.europa.eu/sustainable-finance-taxonomy/ (accessed on 20 March 2023).

European Commission. (2023c). *Eurobarometru*. Available online: https://ec.europa.eu/commission/presscorner/api/files/document/print/ro/ip_20_331/IP_20_331_RO.pdf (accessed on 10 December 2023).

European Union EUR-Lex. (2021). *Directive—2014/95—EN—NFRD—EUR-Lex*. Available online: https://eur-lex.europa.eu/eli/dir/2014/95/oj (accessed on 20 June 2021).

European Union EUR-Lex. (2023). *Directive—2022/2464—EN—CSRD directive—EUR-Lex*. Available online: https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32022L2464 (accessed on 15 January 2023).

Farouk, A. M., Radzi, A. R., Romali, N. S., Farouk, M., Elgamal, M., Hassan, R., Omer, M. M., & Rahman, R. A. (2024). Performance indicators for assessing environmental management plan implementation in water projects. *Sustainability*, *16*, 3146. [CrossRef]

Fazli, H., Farooq, S., Yang, C., & Wæhrens, B. V. (2023). Proactive and reactive approaches towards sustainable practices in manufacturing companies: Emerging economies perspective. *Sustainability*, *15*, 12796. [CrossRef]

Fink Babič, S., Biloslavo, R., & Kodrič, B. (2023). Relationship between environmental reports and environmental performance: A case of the processing industry in the republic of Slovenia. *Organizacija*, *56*, 309–323. [CrossRef]

Fleacă, B., Fleacă, E., & Corocăescu, M. (2023). Sustainability information—Analyses of current trends in sustainability monitoring & reporting. *Entrepreneurship and Sustainability Issue*, *10*(3). [CrossRef]

Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.

Fu, T., & Li, J. (2023). An empirical analysis of the impact of ESG on financial performance: The moderating role of digital transformation. *Frontiers in Environmental Science*, *11*, 1256052. [CrossRef]

Gafni, D., Palas, R., Baum, I., & Solomon, D. (2024). ESG regulation and financial reporting quality: Friends or foes? *Finance Research Letters*, *61*, 105017. [CrossRef]

Galbreath, J., Chang, C. Y., & Tisch, D. (2023). The impact of a proactive environmental strategy on environmentally sustainable practices in service firms: The moderating effect of information use value. *Business Strategy and the Environment*. [CrossRef]

Geng, R., Mansouri, A., & Aktas, E. (2017). The relationship between green supply chain management and performance: A meta-analysis of empirical evidences in Asian emerging economies. *International Journal of Production Economics*, *183*, 245–258. [CrossRef]

Global Reporting Initiative. (2022). *Consolidated set of the GRI standards*. Available online: https://www.globalreporting.org/how-to-use-the-gri-standards/gri-standards-english-language/ (accessed on 20 August 2022).

GoCardless. (2022). Available online: https://gocardless.com/guides/posts/how-calculate-total-asset-turnover-ratio/ (accessed on 15 March 2022).

Gu, J. (2021). Spatial dynamics between firm sales and environmental responsibility: The mediating role of corporate innovation. *Sustainability*, *13*, 1684. [CrossRef]

Haninun, H., Lindrianasari, L., & Angrita, D. (2018). The effect of environmental performance and disclosure on financial performance. *International Journal of Trade and Global Markets*, *11*, 138–148. [CrossRef]

Hanjani, A., & Kusumadewi, R. K. A. (2023). Environmental performance and financial performance: Empirical evidence from Indonesian companies. *Corporate Social Responsibility and Environmental Management*, *30*, 1508–1513. [CrossRef]

Hoang, T. (2018). The Role of Integrated Reporting in Raising Awareness of Environmental, Social, and Corporate Governance (ESG) Performance. In *Stakeholders, governance and responsibility developments in corporate governance and responsibility* (Vol. 14, pp. 47–69). Emerald Publishing Limited. [CrossRef]

Holwerda, H., Haanstra, W., & Braaksma, J. (2024). Operationalizing the circular economy—A longitudinal study on sustained circular action. *Sustainability*, *16*(14), 5874. [CrossRef]

Howitt, D., & Cramer, D. (2006). *Introducere in SPSS pentru psihologie* (A. Popescu, & C. Popa, Trans.). Polirom.

Ifada, L. M., Indriastuti, M., Ibrani, E. Y., & Se-Tiawanta, Y. (2021). Environmental performance and environmental disclosure: The role of financial performance. *Journal of Asian Finance, Economics and Business*, *8*(4), 349–362. [CrossRef]

IFRS Sustainability. (2024). *Sustainability-related risks and opportunities and the disclosure of material information*. Available online: https://www.ifrs.org/content/dam/ifrs/supporting-implementation/issb-standards/issb-materiality-education-material.pdf (accessed on 20 December 2024).

International Federation of Accountants. (2023). *Small business sustainability checklist*. Available online: https://www.ifac.org/knowledge-gateway/small-and-medium-sized-practices-smps/publications/small-business-sustainability-checklist (accessed on 10 December 2023).

International Federation of Accountants. (2024). *The state of play: Sustainability disclosure & assurance 2019–2022, trends & analysis*. Available online: https://www.ifac.org/knowledge-gateway/contributing-global-economy/publications/state-play-sustainability-disclosure-assurance-2019-2022-trends-analysis (accessed on 20 March 2024).

Ioannou, I., & Serafeim, G. (2019). *The consequences of mandatory corporate sustainability reporting*. Available online: https://ssrn.com/abstract=1799589 (accessed on 20 December 2024).

Ismaili, O. B., & Kjøsnes, A. E. (2021). *ESG and stock market performance. Norwegian school of economics Bergen, fall 2021*. Available online: https://openaccess.nhh.no/nhh-xmlui/bitstream/handle/11250/2985544/masterthesis.pdf?sequence=2&isAllowed=y (accessed on 1 February 2025).

ISO. (2021). *ISO standards*. Available online: https://www.iso.org/standard/60857.html (accessed on 2 February 2025).

Iwata, H., & Okada, K. (2011). How does environmental performance affect financial performance? Evidence from Japanese manufacturing firms. *Ecological Economics*, *70*, 1691–1700. [CrossRef]

Jaba, E., & Grama, A. (2004). *Analiza statistică cu SPSS sub windows*. Polirom.

Janicka, M., & Sajnóg, A. (2022). The ESG reporting of EU public companies—Does the company's capitalisation matter? *Sustainability*, *14*, 4279. [CrossRef]

Junquera, B., & Barba-Sánchez, V. (2018). Environmental proactivity and firms' performance: Mediation effect of competitive advantages in Spanish wineries. *Sustainability*, *10*, 2155. [CrossRef]

Khatri, I., & Kjærland, F. (2023). Sustainability reporting practices and environmental performance amongst Nordic listed firms. *Journal of Cleaner Production*, *418*, 138172. [CrossRef]

Kim, K. (2018). Proactive versus reactive corporate environmental practices and environmental performance. *Sustainability*, *10*, 97. [CrossRef]

Kim, M., & Ha, B. C. (2022). Environmental consciousness and environmental management performance: The mediating effect of environmental information sharing. *Journal of Asian Finance, Economics and Business*, *9*(8), 57–70. [CrossRef]

Kong, F. (2024). The influences of multi-level environmental regulations on firm performance in China. *Economics*, *18*, 20220089. [CrossRef]

Krippendorff, K. (2004). Reliability in content analysis: Some common misconceptions and recommendations. *Human Communication Research*, *30*(3), 411–433. [CrossRef]

Krueger, P., Sautner, Z., Tang, D. Y., & Zhong, R. (2023). *The effects of mandatory ESG disclosure around the world. Swiss finance institute, research paper series N°21-44. working paper N° 754/2021*. Available online: https://www.ecgi.global/sites/default/files/working_papers/documents/kreugersautnertangzhongfinalfeb_0.pdf (accessed on 20 February 2025).

Kumar, S., Sureka, R., Lim, W. M., Mangla, S. K., & Goyal, N. (2021). What do we know about business strategy and environmental research? Insights from *Business Strategy and the Environment*. *Business Strategy and the Environment*, *30*, 3454–3469. [CrossRef]

Kurbatova, T., & Perederii, T. (2020, October 5–10). *Global trends in renewable energy development*. IEEE KhPI Week on Advanced Technology (KhPIWeek), Kharkiv, Ukraine. [CrossRef]

Kuzey, C., Al-Shaer, H., Karaman, S. A., & Uyar, A. (2023). Public governance, corporate governance and excessive ESG. *Corporate Governance—The International Journal of Business in Society*, *23*(7), 1748–1777. Available online: https://eprints.ncl.ac.uk/291317 (accessed on 3 March 2025). [CrossRef]

Laguir, I., Stekelorum, R., & El Baz, J. (2021). Proactive environmental strategy and performances of third-party logistics providers (TPLs): Investigating the role of eco-control systems. *International Journal of Production Economics*, *240*, 108249. [CrossRef]

Lanshina, T., & Barinova, V. (2017). The global governance of renewable energy: International trends and Russia. *International Organisations Research Journal*, *12*(1), 110–126. [CrossRef]

Leonidou, L. C., Fotiadis, T. A., Christodoulides, P., Spyropoulou, S., & Katsikeas, C. S. (2015). Environmentally friendly export business strategy: Its determinants and effects on competitive advantage and performance. *International Business Review*, *24*, 798–811. [CrossRef]

Liston-Heyes, C., & Vazquez Brust, D. A. (2016). Environmental protection in environmentally reactive firms: Lessons from corporate Argentina. *Journal of Business Ethics*, *135*, 361–379. [CrossRef]

Loza Adaui, C. R. (2020). Sustainability reporting quality of peruvian listed companies and the impact of regulatory requirements of sustainability disclosures. *Sustainability*, *12*, 1135. [CrossRef]

Malhotra, N. (2004). *Marketing research, an applied orientation* (4th ed., pp. 558–582). Chapter 19. Pearson Education LTD.

Marinescu, A. O. (2020a). Analysis on the compliance of sustainability reports of Romanian companies with the GRI conceptual framework. *Audit Financiar*, *XVIII*(2), 361–375. [CrossRef]

Marinescu, A. O. (2020b). Assessment of the environmental reporting practices of the companies indexed in the GRI Database. In R. Pamfilie, V. Dinu, L. Tăchiciu, D. Plești, & C. Vasiliu (Eds.), *6th BASIQ International Conference on New Trends in Sustainable Business and Consumption, Messina, Italy, June 4–6* (pp. 634–641). ASE. Available online: https://conference.ase.ro/papers/2020/20090.pdf (accessed on 10 February 2025).

Mihai, F., & Aleca, O. E. (2023). Sustainability Reporting Based on GRI Standards within Organizations in Romania. *Electronics*, *12*, 690. [CrossRef]

Ministry of Public Finance. (2016). *Order no 1938/2016 regarding the amendment and completion of some accounting regulations, Official Gazette 680/2016*. Available online: https://static.anaf.ro/static/10/Anaf/legislatie/OMFP_1938_2016.pdf (accessed on 20 June 2021).

Ministry of Public Finance. (2018). *Order no 3456/2018 regarding the amendment and completion of some accounting regulations, Official Gazette 942/2018*. Available online: https://static.anaf.ro/static/10/Anaf/legislatie/OMFP_3456_2018.pdf (accessed on 20 June 2021).

Ministry of Public Finance. (2024). *Order no 85/2024 for regulation of sustainability reporting issues, Official Gazette 75/2024*. Available online: https://static.anaf.ro/static/10/Anaf/legislatie/OMF_85_2024.pdf (accessed on 20 March 2024).

Misiuda, M., & Lachmann, M. (2022). Investors' perceptions of sustainability reporting—A review of the experimental literature. *Sustainability*, *14*, 16746. [CrossRef]

Mocanu, F. M., & Lungu, C. I. (2021). *Studiu empiric privind relația dintre performanța financiară și practicile de guvernanță corporativă*. Available online: https://cig.ase.ro/wp-content/uploads/2021/09/MOCANU-Studiu.pdf? (accessed on 10 February 2025).

Moussa, A. S., Elmarzouky, M., & Shohaieb, D. (2024). Green governance: How ESG initiatives drive financial performance in UK firms? *Sustainability*, *16*, 10894. [CrossRef]

Nandini, E. S., Sudharani, R., & Suresh, N. (2022). *A study on the impact of environmental accounting on profitability of companies listed in the Bombay Stock Exchange*. Available online: https://www.semanticscholar.org/reader/445576f5d22fb49958716db33797965a933d8989 (accessed on 5 February 2025).

Narula, R., Rao, P., & Rao, A. A. (2023). Impact of ESG on firm value: A conceptual review of the literature. *Journal of Social and Economic Development*, *25*(Suppl. S1), S162–S179. [CrossRef]

Nejat, P., Morsoni, A. K., Jomehzadeh, F., Behzad, H., Vesali, M. S., & Majid, M. Z. A. (2013). Iran's achievements in renewable energy during the fourth development program in comparison with global trends. *Renewable and Sustainable Energy Reviews*, *22*, 561–570. [CrossRef]

Nguyen, T. H. H., Elmagrhi, M. H., Ntim, C. G., & Wu, Y. (2021). Environmental performance, sustainability, governance and financial performance: Evidence from heavily polluting industries in China. *Business Strategy and the Environment*, *30*, 2313–2331. [CrossRef]

Niculescu, M. (2003). *Analiza ratelor de structură patrimonială in financial diagnosis* (Vol. 2, pp. 261–268). Economic Publishing House.

Nishitani, K., Jannah, N., Kaneko, S., & Hardinsyah. (2017). Does corporate environmental performance enhance financial performance? An empirical study of Indonesian firms. *Environmental Development*, *23*, 10–21. [CrossRef]

Ntim, C. G., Lindop, S., & Thomas, D. A. (2013). Corporate governance and risk reporting in South Africa: A study of corporate risk disclosures in the pre- and post-2007/2008 global financial crisis periods. *International Review of Financial Analysis*, *30*, 363–383. [CrossRef]

Ntim, C. G., & Soobaroyen, T. (2013). Black economic empowerment disclosures by South African listed corporations: The influence of ownership and board characteristics. *Journal of Business Ethics*, *116*(1), 121–138. [CrossRef]

Nugrahani, T. S., & Artanto, D. A. (2022). Sustainability reporting by disclosing economic, social, and environmental performance studies. *Business and Economics*, *17*(2). [CrossRef]

Ong, T. S., Lee, A. S., Teh, B. H., & Magsi, H. B. (2019). Environmental innovation, environmental performance and financial performance: Evidence from Malaysian environmental proactive firms. *Sustainability*, *11*, 3494. [CrossRef]

Papoutsi, A., & Sodhi, M. S. (2020). Does disclosure in sustainability reports indicate actual sustainability performance? *Journal of Cleaner Production*, *260*, 121049. [CrossRef]

Pasamar, S., Bornay-Barrachina, M., & Morales-Sanchez, R. (2023). Institutional pressures for sustainability: A triple bottom line approach. *European Journal of Management and Business Economics*. [CrossRef]

Pasko, O., Balla, I., Levytska, I., & Semenyshena, N. (2021). Accountability on sustainability in central and Eastern Europe: An empirical assessment of sustainability-related assurance. *Comparative Economic Research. Central and Eastern Europe*, *24*(3), 27–52. [CrossRef]

Pereira, R. M., Kroenke, A., Loch, G. V., & Hein, N. (2023). Relationship between environmental disclosure and environmental performance. *Revista GeSec*, *14*(2), 2189–2210. [CrossRef]

Petera, P., Wagner, J., & Pakšiová, R. (2021). The influence of environmental strategy, environmental reporting, and environmental management control systems on environmental and economic performance. *Energies*, *14*, 4637. [CrossRef]

Petrescu, A. G., Bîlcan, F. R., Petrescu, M., Oncioiu, I. H., Türkes, M. C., & Căpușneanu, S. (2020). Assessing the Benefits of the Sustainability Reporting Practices in the Top Romanian Companies. *Sustainability*, *12*, 3470. [CrossRef]

Piciu, G. C. (2019). Barriers to the implementation and functioning of the circular economy in Romania. *Journal of Romanian Literary Studies*. Issue 17. Available online: http://old.upm.ro/jrls/JRLS-17/Rls%2017%20B0.pdf (accessed on 3 March 2025).

Piontek, W. (2019). The circular plastics economy and the instruments to implement it. *Economics and Environment*, *70*(3), 18–33. [CrossRef]

Raboaca, M. S., Nasture, A. M., & Corbu, A. (2020, June 25–27). *SWOT of renewable energy sources in Romania*. 12th International Conference on Electronics, Computers and Artificial Intelligence (ECAI), Bucharest, Romania. [CrossRef]

Real Statistics Using Excel. (2023). *Durbin-watson table*. Available online: https://real-statistics.com/statistics-tables/durbin-watson-table (accessed on 10 December 2023).

Robu, V., Anghel, I., & Șerban, E. C. (2014). *Economic and financial analysis of the company* (pp. 349–368). Economic Publishing House.

Romanian Companies. (2020). Available online: https://www.listafirme.ro/ (accessed on 20 August 2020).

Saleem, F., Qureshi, S. S., & Malik, M. I. (2021). Impact of environmental orientation on proactive and reactive environmental strategies: Mediating role of business environmental commitment. *Sustainability*, *13*, 8361. [CrossRef]

Sierra-Garcia, L., Garcia-Benau, M. A., & Bollas-Araya, H. M. (2018). Empirical analysis of non-financial reporting by Spanish companies. *Administrative Sciences*, *8*, 29. [CrossRef]

Smarters. (2025). *Smarters*. Available online: https://smarters.ro/grow/indicatori-de-performanta/ (accessed on 16 February 2025).

Soedjatmiko, S., Tjahjadi, B., & Soewarno, N. (2021). Do environmental performance and environmental management have a direct effect on firm value? *Journal of Asian Finance, Economics and Business*, *8*(1), 687–696. [CrossRef]

Song, H., Zhao, C., & Zeng, J. (2017). Can environmental management improve financial performance: An empirical study of A-shares listed companies in China. *Journal of Cleaner Production*, *141*, 1051–1056. [CrossRef]

Stoian, M., Brad, L., & Zaharia, A. (2022). Drivers of the European Union's environmental performance. *Frontiers in Environmental Science*, *10*, 954612. [CrossRef]

Tamm, P., & Gurvitš-Suits, N. A. (2023). Development of non-financial reporting: The case of Estonian listed companies. *European Integration Studies*, *17*, 199–209. [CrossRef]

Teng, M. J., & Wu, S. Y. (2018). Sustainable development and competitive advantages—Utilizing matching to overcome sample selection bias. *Corporate Social Responsibility and Environmental Management*, *25*(4), 313–326. [CrossRef]

Tian, Z. H., Yang, W. S., & Tan, C. X. (2023). A statistical examination of the link between environmental performance and legal practices: An evaluation of China's strategies for residual legislative power allocation. *Frontiers in Environmental Science*, *11*, 1293595. [CrossRef]

Tîrnoveanu, G. (2018). *Corporate social responsibility in Romania. Mandatory?* Available online: https://www.lexology.com/library/detail.aspx?g=ef2a15d9-eaef-4ee9-9deb-b5625aabf8e2 (accessed on 12 August 2020).

Topliceanu, L., Puiu, P. G., Drob, C., & Topliceanu, V. V. (2023). Analysis regarding the implementation of the circular economy in Romania. *Sustainability*, *15*, 333. [CrossRef]

Tyler, B. B., Lahneman, B., Cerrato, D., Cruz, A. D., Beukel, K., Spielmann, N., & Minciullo, M. (2024). Environmental practice adoption in SMEs: The effects of firm proactive orientation and regulatory pressure. *Journal of Small Business Management*, *62*(5), 2211–2246. [CrossRef]

Țilică, E. V., & Ciobanu, R. (2019). Ratele de rentabilitate a capitalurilor. In *Finanțe și management financiar* (pp. 69–70). CECCAR Publishing House.

Ullah, S., & Sun, D. (2021). Corporate social responsibility and corporate innovation: A cross-country study of developing countries. *Corporate Social Responsibility and Environmental Management*, *28*, 1066–1077. [CrossRef]

van der Merwe, J., & Al Achkar, Z. (2022). Data responsibility, corporate social responsibility, and corporate digital responsibility. *Data & Policy*, *4*, e12. [CrossRef]

Wang, B., Wei, C., Shi, L., Cheng, X., & Shi, X. (2025). ESG and firm operational efficiency: Evidence from Chinese listed companies. *Environment, Development and Sustainability*, *27*, 681–714. [CrossRef]

Wendling, Z. A., Jacob, M., Esty, D. C., & Emerson, J. W. (2022). Explaining environmental performance: Insights for progress on sustainability. *Environmental Development*, *44*, 100741. [CrossRef]

Wood, A. (2023). *CSRD: What are the final European Sustainability Reporting Standards (ESRS)?* Workiva. Available online: https://www.workiva.com/uk/blog/csrd-what-are-final-european-sustainability-reporting-standards-esrs (accessed on 12 June 2023).

Wu, D., & Memon, H. (2022). Public pressure, environmental policy uncertainty, and enterprises' environmental information disclosure. *Sustainability*, *14*, 6948. [CrossRef]

Wu, Y., & Tham, J. (2023). The impact of environmental regulation, Environment, Social and Governance Performance, and technological innovation on enterprise resilience under a green recovery. *Heliyon*, *9*, e20278. [CrossRef]

Xu, X., Wei, Z., Ji, Q., Wang, C., & Gao, G. (2019). Global renewable energy development: Influencing factors, trend predictions, and countermeasures. *Resources Policy*, *63*, 101470. [CrossRef]

Xu, Y., & Zhu, N. (2024). The effect of Environmental, Social, and Governance (ESG) performance on corporate financial performance in China: Based on the perspective of innovation and financial constraints. *Sustainability*, *16*, 3329. [CrossRef]

Xue, B., Zhang, Z., & Li, P. (2020). Corporate environmental performance, environmental management, and firm risk. *Business Strategy and the Environment*, *29*, 1074–1096. [CrossRef]

Yang, M., & Chen, X. (2022). Green technology investment strategies under Cap-and-Trade policy. *IEEE Transactions on Engineering Management*, *71*, 3867–3880. [CrossRef]

Zhang, S., Wang, Z., & Zhao, X. (2019). Effects of proactive environmental strategy on environmental performance: Mediation and moderation analyses. *Journal of Cleaner Production*, *235*, 1438–1449. [CrossRef]

Zhang, W., Xu, R., & Wang, L. (2021). Investigating the complex relationship between financial performance and company's green behavior: A comparative analysis. *Discrete Dynamics in Nature and Society*, *2021*, 9979835. [CrossRef]

Zhao, J., Dong, K., Dong, X., & Shahbaz, M. (2022). How renewable energy alleviates energy poverty? A global analysis. *Renewable Energy*, *186*, 299–311. [CrossRef]

Zhao, Z., Sun, H., Han, D., & Zhao, Q. (2023). Development strategy, technological progress, and regional environmental performance: Empirical evidence from China. *Economic Change and Restructuring*, *56*, 3701–3732. [CrossRef]

Zhou, Z., Feng, H., Wang, H., & Wang, K. (2022). Influence of heterogeneous environmental regulation policies on the strategy of pollutant discharge for enterprise: An evolutionary game approach. *Environmental Research Communications*, *4*, 095002. [CrossRef]