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TIAGO AUGUSTO DO AMARAL CARNEIRO DO VAL

How E, S, and G scores impact S&P 500 firms' performance

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Tiago Augusto do Amaral Carneiro do Val

How E, S, and G scores impact S&P 500 firms' performance

Trabalho de Conclusão do Programa de Pós-Graduação em Administração para obtenção do título de Mestre em Administração da Universidade Federal de São Carlos. Gestão Financeira:

Orientação: Prof. Dr. Herick Fernando Moralles

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FOLHA DE APROVAÇÃO

Tiago Augusto do Amaral Carneiro do Val

How E, S, and G scores impact the S&P 500 firms' performance

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DEDICATÓRIA

À Camila, minha esposa, minha escolha número um em todos os dias. E à minha filha Mônica, minha melhor professora na vida.

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À minha família, a quem dedico esta dissertação, por sempre me apoiarem a buscar meus sonhos e por entenderem os vários dias de ausência com elas que precisei dedicar para alcançar o título de mestre.

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RESUMO

VAL, T. A. A. C.; MORALLES, H. F. **How E, S, and G scores impact S&P 500 firms' performance.** 2024. Dissertação (Mestrado em Administração) – Universidade Federal de São Carlos, Sorocaba, 2025.

Atualmente as organizações observam a performance ambiental e financeira como um binômio indissociável. Diante deste panorama, este estudo visa compreender o impacto individual dos pilares Ambiental, Social e Governança para o desempenho empresarial. Para tanto, esta dissertação é estruturada em dois artigos. No primeiro, executa-se uma revisão sistemática da literatura sobre o desempenho empresarial em diferentes *clusters*, oferecendo um panorama claro das tendências e indicando possíveis direções para futuras investigações. No segundo artigo, com base em um painel de empresas do S&P 500 (de 2018 a 2024), foram coletados os escores E (*environmental* / ambiental), S (social) e G (Governança), desenvolvidos pela Bloomberg. Os resultados mostram que apenas o score E (Ambiental) tem impacto positivo sobre a performance empresarial (ROA), enquanto o escore S tem impacto negativo e o G não se mostrou estatisticamente relevante. Os resultados obtidos estão entre os poucos estudos a dissociar ESG em seus diferentes pilares, de modo que os achados podem ser úteis no que se refere ao direcionamento de recursos e reavaliação das estratégias de S e G.

Palavras-chave: Performance financeira. ESG. S&P 500.

RESUMO EM LÍNGUA ESTRANGEIRA

Currently, organizations see environmental and financial performance as an inseparable binomial. Against this backdrop, this study aims to understand the individual impact of the Environmental, Social, and Governance pillars on business performance. To this end, this dissertation is structured into two articles. In the first, a systematic review of the literature on business performance in different clusters is carried out, providing a clear overview of trends and indicating possible directions for future research. In the second article, based on a panel of S&P 500 companies (from 2018 to 2024), the E (environmental), S (social), and G (Governance) scores developed by Bloomberg were collected. The results show that only the E (Environmental) score has a positive impact on corporate performance (ROA), while the S score has a negative impact, and the G score was not statistically relevant. The results obtained are among the few studies to dissociate ESG into its different pillars, so the findings may be useful in terms of directing resources and re-evaluating S and G strategies.

Keywords: Financial performance. ESG. S&P 500.

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LISTA DE ABREVIATURAS E SIGLAS

DKFE - Driscoll–Kraay method with fixed effects

DKRE - Driscoll–Kraay method with random effects

ESG - Environmental, Social, and Governance

FE - Fixed Effects

FFP - Firm Financial Performance

GLS - Generalized Least Squares

ICW - internal control weaknesses

MENA - Middle East and North Africa

RE - Random Effects

ROA - Return on Assets

RBV - Resource-Based View

SJR - Scimago Journal Rank

SME - Small and Medium-sized Enterprise

SUMÁRIO

CHAPTER 1 - DISSERTATION INTRODUCTION

Firm performance has been a central and persistent theme in academic research in business and economics, evidenced by thousands of articles published in recent years, as mapped in the first bibliometric study article of this dissertation. The relevance of this topic lies in its ability to explain the success of organizations depending on their activities related to environmental, social, and governance (ESG) impact in different contexts. Traditionally, companies' strategic focus was predominantly on maximizing shareholder value. However, in recent decades, this paradigm has expanded significantly to incorporate a broader range of corporate responsibilities, which transcend purely financial metrics and encompass companies' impact on their stakeholders.

This paradigm shift is embodied by the growing prominence of ESG factors, which reflect a company's commitment to sustainable and ethical practices. ESG considerations have moved from the margin to the center of corporate discussions in recent years, driven by growing stakeholder awareness, regulatory pressures, and the recognition of their potential influence on long-term value creation (Freeman, 2010). Investors, consumers, employees, and policymakers are increasingly examining corporate behavior through an ESG lens, leading companies worldwide to integrate sustainability into their operational and strategic frameworks.

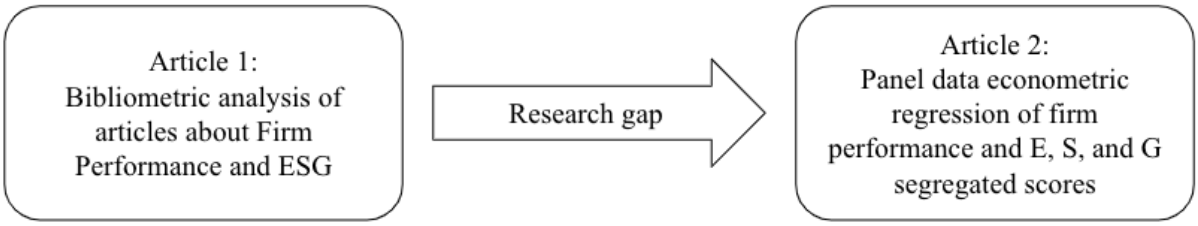
The theoretical basis for the relationship between ESG performance and companies' financial performance is diverse. Stakeholder theory postulates that addressing the concerns of multiple stakeholders—including employees, customers, society, and the environment—can lead to improved financial results, enhancing reputation, reducing risk, and fostering innovation (Freeman, 2010). Similarly, the Resource-Based View (RBV) suggests that robust ESG practices can represent inimitable resources or capabilities, providing a sustainable competitive edge (Barney, 1991). Legitimacy Theory, in turn, argues that companies engage in ESG activities to align their operations with social expectations, thus obtaining or maintaining a social license to operate (Suchman, 1995). On the other hand, Agency Theory raises concerns that ESG investments may be driven by management decisions rather than shareholder value, potentially leading to suboptimal financial performance (Jensen and Meckling, 1976).

Despite compelling theoretical arguments, empirical evidence on the relationship between ESG and firm performance remains complex and sometimes inconclusive, fueling ongoing academic debate. While a substantial body of literature suggests a positive association (Bahadori, Kaymak, and Seraj, 2021; Habib and Mourad, 2023; Huang, 2021; Maji and Lohia, 2023; Veeravel, Sadharm, and Kamaiah, 2024), the strength and direction of this relationship often vary depending on the context, methodology, and specific ESG dimensions examined.

For example, some studies find a positive, statistically significant, but economically modest link (Huang, 2021), while others highlight the importance of specific ESG pillars, noting that environmental, social, and governance aspects can have different impacts on performance (Hanaysha and Al-Shaikh, 2022; Maji and Lohia, 2023).

Given one of the research gaps identified in the first article that points to the direction of how E (environmental), S (social), and G (governance) scores separately affect firm performance, and the complex nature of ESG with its multifaceted interaction with corporate performance, a comprehensive understanding requires ongoing empirical investigation across a variety of scenarios and analytical approaches. Therefore, the second article in this dissertation analyzes how Bloomberg's segregated E, S, and G scores impact the performance of companies listed in the S&P 500 index between 2018 and 2024. Besides this connection between the two articles in this dissertation, the first article also contributed to the literature review presented in the second article, in which the focus was beyond the relationship between ESG pillars to firm performance, but also on the methodology used in such articles.

Figure 1: Article's organization



Source: authors.

After extracting Bloomberg data from all 503 companies in the index, econometric regression methods were applied in STATA software with the companies' ROA (return on assets) as dependent variables, the E, S, and G scores, in addition to a series of control variables such as company age, total assets, debt ratio (total debt to total assets), net fixed assets ratio (net fixed assets to total assets), investment ratio (investment to total assets), average board age, percentage of women on the board, and percentage of independent executives.

This dissertation is structured as follows: after this introduction, the following chapter presents the first article with a detailed review of the existing literature on ESG and corporate performance; then, the next chapter contains the second article that describes the dataset and the selection of variables used to construct the hypotheses and the regression equation for the econometric models with the results found; and, finally, a section that consolidates the final

considerations of both articles, concluding the dissertation, including contributions to the literature, limitations, and suggestions for future research.

The expectations with this dissertation are to first contribute to the academic discussion on how companies' sustainability efforts relate to their performance. As mentioned, this is far from having an ending conclusion, which varies depending on the context. Beyond the academic impact, this dissertation also seeks to contribute to managerial decision-making for executives on their companies' ESG efforts and potential investments.

CHAPTER 2 - ARTICLE 1: FIRM PERFORMANCE: A SYSTEMATIC LITERATURE REVIEW WITH A FOCUS ON ESG

2.1. INTRODUCTION

Firm performance is an important subject of study in the academic world, with 2,157 published articles that mention it in the title between January/2019 and June/2024, indexed by Scopus and Web of Science, a number that could be an indicator of how important this subject is for business academic research. The purpose of this paper is to analyze these articles and find different moderating variables used in the literature to explain firm performance in different contexts.

These contexts may be geographical, like the whole world (Jung and Yoo, 2023), or segmented by regions, like the Middle East, and North Africa (Abdulla & Jawad, 2024), emerging markets (Bahadori, Kaymak and Seraj, 2021; Bilyay-Erdogan and Öztürkkal, 2023), Latin America (Enriquez-Perales et al., 2023; Marquez-Cardenas, Gonzalez-Ruiz and Duque-Grisales, 2022) or even by country, such as the US (Habib and Mourad, 2023; Nguyen, Hoang and Tran, 2022; Shahzad et al., 2022), the UK (Ahmad, Mobarek and Raid, 2023), China (Pu, 2023) or India (Maji and Lohia, 2023; Mendiratta et al., 2023; Veeravel, Murugesan and Narayanamurthy, 2024).

Other contexts include different moderating variables used to explain firm performance, like ESG capabilities (Bissoondoyal-Bheenick et al., 2023; Rahman et al., 2023; Lee et al., 2023; Nguyen et al., 2022), diversity (Walton & Tribbitt, 2023; Pham & Lo, 2023; Suherman et al., 2021; Ocak, 2021), innovation (Ferreira, Fernandes and Veiga, 2024; Li and Vermeulen, 2021; Montani et al., 2023; Wei et al., 2022), accounting (Tran et al., 2022; Badulescu et al., 2021; Cui et al., 2021; Susanto & Meiryani, 2019), marketing intensity (Markovitch, Huang and Ye, 2020; Semenov and Randrianasolo, 2023; Ullah, 2021), and many others. And there

are published articles that use more than one variable in the firm performance nexus, like HR metrics and accounting (Arseneault and Gagnon, 2024); energy efficiency, innovation, and accounting (Sinaga *et al.*, 2019); sustainability, and innovation (Khanchel, Lassoued, and Baccar, 2023); ownership structure, and ESG (Fuadah *et al.*, 2022); marketing innovation (Peng, Q, and Tang, 2021); or sustainable products and marketing resource intensity (Ullah, 2021).

With this large universe of different research paths that one may endeavor to better understand firm performance, it is necessary to conduct a bibliometric study in order to map it out. Thus, the 6-step framework proposed by Mathieu Templier and Guy Paré (2015) was used to review the literature, and the analyses suggested by Donthu et al. (2021) for bibliometric studies. The question that this article aims to answer is:

How has "firm performance" and "ESG" been researched in the business literature from 2019 to 2024?

The objective is to find potential research gaps and indicate further quantitative research to dive deeper into the matter. This article contributes to the literature by analyzing what has been published about this subject in the past five years, as well as clustering them by the different nexuses used to explain firm performance.

The article is structured by this introduction showing the context, the research question, and the objective of this study; followed by a 6-step method used to analyze the articles; then, the authors present the results, and discuss them from different perspectives; and, finally, they make their final considerations with the indication for further research about this subject.

2.2. METHOD

Templier and Paré's (2015) 6-step framework presented for literature review includes the following: (1) formulating the problem; (2) searching the literature; (3) screening for inclusion; (4) assessing quality; (5) extracting data; (6) analyzing and synthesizing data.

2.2.1. Formulating the problem

The problem that kicked off this article is to better understand how firm performance has been researched in the business academy over the past five years. As aforementioned in the introduction, there are several ways to segment the research of firm performance: by geography, by mediating variables, or by both, like the relationship between firm performance, and innovation in China (Wu et al., 2024; Xiong, Wang and Zhao, 2020; Xiong-Feng, Jing and Xin-

Nan, 2019), diversity in UK listed companies (Marques and Pascaru, 2023), or corporate governance in India (Nashier and Gupta, 2023; Sanan, Jaisinghani and Yadav, 2019). Given the vast work published in recent years, it seems necessary to make a bibliometric analysis to organize these articles in a way that contributes to further publications in this matter.

2.2.2. Searching the literature

To find the initial sample of 2,157 articles for this study, Scopus and Web of Science were selected as the two database sources, given the quality and the broad coverage of these databases for published articles (Schlögl, Boric, and Reichmann, 2024). The authors chose to use “firm performance" mentions in the titles as the main research criteria to get a large sample without deviating from the main subject, and the past five years to understand how it has been researched recently. In Table 2.1, you may find the search results in each platform, as well as the criteria of inclusion, exclusion, and the final amount included in the initial sample, to better understand how it was built.

2.2.3. Screening for inclusion

The search was made deliberately to match the narrowed research question on the term "firm performance" in the title to ensure that this is the main topic of the articles found, and the time frame "since 2019". The other filters made for inclusion were that only published articles in English entered the sample. Finally, given that two different sources were used (Scopus and Web of Science), the duplicated articles found in both were removed from the sample.

2.2.4. Assessing quality

The criteria used to assess the quality of each article were by the quality of its journal. Only articles published in quartiles one or two according to Scimago Journal Rank (SJR) in 2023 were considered in the final sample. Thus, 117 articles published in Q4 journals, 257 in Q3 journals, and 288 published in journals that weren't in any quartile were removed from the final sample, leaving it with 1,495 articles.

2.2.5. Extracting data

The articles' data were extracted according to the query, criteria of inclusion, and exclusion presented in Table 2.1 from Scopus and Web of Science. Then, in a spreadsheet, both databases were combined following Scopus' structure to find the duplicated articles by the DOI number. This spreadsheet had all the articles' information on columns such as Author, Author's

full names, Author(s) ID, Title, Year, Source title, Volume, Issue, Art. No., Page start, Page end, Page count, Cited by, DOI, Link, Affiliations, Authors with affiliations, Abstract, Author Keywords, Index Keywords, References, Correspondence Address, Editors, Publisher, ISSN, ISBN, CODEN, PubMed ID, Language of Original Document, Abbreviated Source Title, Document Type, Publication Stage, Open Access, Source, and EID.

Table 2.1 – Queries used to find the initial article sample

Platform	**Scopus**	**Web of Science**
Query	TITLE ("firm performance"), and PUBYEAR > 2018, and PUBYEAR < 2025, and (LIMIT-TO (DOCTYPE , "ar")), and (LIMIT-TO (SUBJAREA , "BUSI") OR LIMIT-TO (SUBJAREA , "ECON")), and (LIMIT-TO (LANGUAGE , "English")), and (LIMIT-TO (EXACTKEYWORD , "Firm Performance"))	TI=("firm performance"), and DT=(Article), and LA=(English), and WC=(Business, Finance OR Business & Economics OR Business)
Criteria of inclusion	Articles, in English, published between 2019 and 2024	
Criteria of exclusion	None	Articles that were already in the sample from Scopus
Number of articles	1,579	578

Source: authors, 2024

On another spreadsheet, the authors put the journal's information extracted from Scimago Journal & Country Rank, selecting the subject areas "Business, Management, and Accounting" and "Economics, Econometrics, and Finance" categories in 2023. This information was used to assess the quality of the articles by the quartile of the publication, as mentioned in the previous subsection.

2.2.6. Analyzing and synthesizing data

Given the importance of this step as the main purpose of this article, this will be discussed in the next section, following the analyses suggested by Donthu et al., (2021) for bibliometric studies.

2.3. RESULTS AND DISCUSSION

Donthu et al. (2021) separated the main bibliometric analysis techniques by performance analysis and science mapping. The following subsections will follow this framework to organize the different analyses made, using the enrichment techniques suggested by these authors for visualization and clustering.

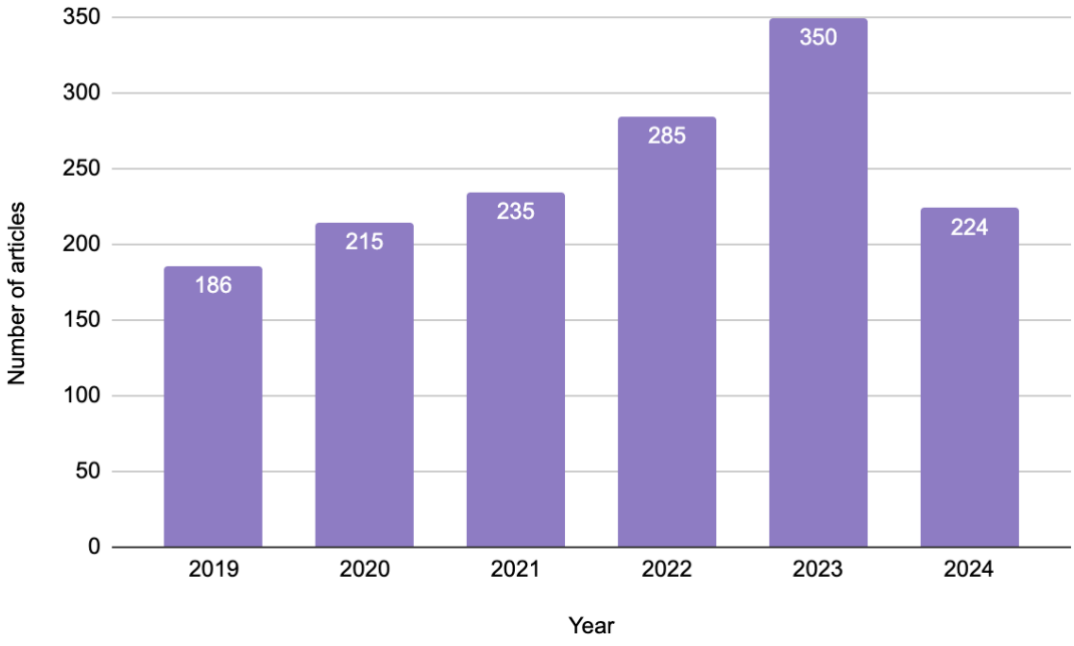
2.3.1. Performance analysis

According to Donthu et al. (2021), to analyze the performance of authors and publications, "the most prominent measures are the number of publications, and citations per year or per research constituent, wherein publication is a proxy for productivity, whereas citation is a measure of impact, and influence" (p. 288).

2.3.1.1. Publication-related metrics

The 1,495 articles were published in the years shown in Figure 2.1, with 2024 being considered until June. It's possible to see a speeding trend, which suggests that this is a topic that is getting the researchers' attention recently. The 11 main journals in the sample have more than 18 articles published in each, as listed in Table 2.2.

Figure 2.1 – Articles published per year



Source: authors, 2024

Table 2.2 – Main sources in the sample with more than 18 articles published:

Rank	Source Title	Number of articles
1	Journal of Business Research	73
2	Journal of Risk and Financial Management	38
3	Cogent Business and Management	28
4	Corporate Social Responsibility and Environmental Management	26
5	Management Decision	26
6	Corporate Governance (Bingley)	24
7	International Journal of Emerging Markets	20
8	Journal of Cleaner Production	20
9	Business Strategy and The Environment	18
10	Global Business Review	18
11	Uncertain Supply Chain Management	18

Source: authors, 2024

The sample gathers a total of 4,552 authors. Looking at sole-authored publications, 142 articles were published by only one of the 135 authors, leading to the conclusion that some authors have published more than one article in the sample. They are Aloulou W.J., Ayinaddis S.G., Ilmudeen A., Jain R., Kalash I., Siriram R., and Uppal N., each of whom has published two articles in the sample. The other 1,353 articles were co-authored by two or up to nine authors.

2.3.1.2. Citation-related metrics

In total, the articles in the sample were cited 28,460 times, with an average of 19 citations per article. The most cited articles in the sample were about artificial intelligence: the first is “Artificial intelligence capability: Conceptualization, measurement calibration, and empirical study on its impact on organizational creativity and firm performance” by Patrick Mikalef and Manjul Gupta (2021), with 369 citations; followed by “Influence of artificial intelligence (AI) on firm performance: the business value of AI-based transformation projects”, by Serge-Lopez Wamba-Taguimdje, Samuel Fosso Wamba, Jean Robert Kala Kamdjoug, and Chris Emmanuel Tchatchouang Wanko (2020), cited 294 times.

2.3.1.3. Citation-and-publication-related metrics

The number of cited publications in the sample is 1,284. Among the 211 articles that were not cited, as expected, the majority, 131 articles, were published in 2024. Then, there are 67 articles from 2023, nine from 2022, and only two from 2021, and two more from 2020. This leads to a proportion of cited publications of 85.89%. The average journals' H-index in the sample is 70.10, ranging from 6 to 375, and the median of 73.

2.3.2. Science mapping

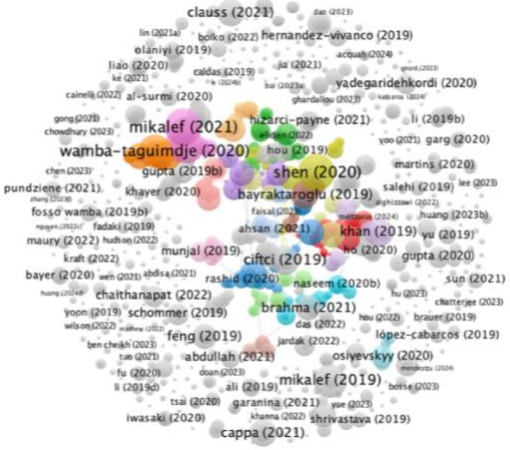
In this section, it will be presented the relationship between the articles in the sample. The software VOSviewer was used to analyze the CSV file generated with all 1,495 articles selected for the sample from Scopus and Web of Science, following the Scopus file structure mentioned in section 2.2.5.

2.3.2.1. Citation analysis

The top five countries in the sample are China, with 219 articles, followed by the USA with 210, India, 118, the UK, 110, and Australia, 70.

The author citation analysis in Figure 2.2 shows a vast number of grey articles that were not clustered in the colored categories. This suggests that firm performance is so vast that not all papers can be easily clustered, leaving out potentially interesting research topics.

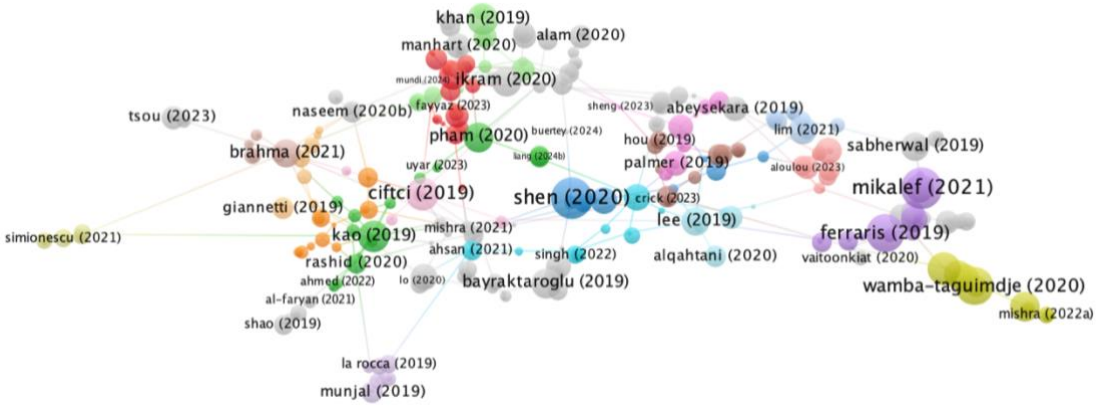
Figure 2.2 – Citation analysis by documents: 1,000 articles selected by VOSviewer



The result of the citation analysis considering only the 349 articles that have connections shown in the previous image can be found in Figure 2.3. The articles in yellow from the left-hand side of the image cover the diversity and firm performance nexus, which connect to the light pink ones, where "Brahma (2021)" can be seen in the image, which researched the board

diversity. Then, the orange articles cover corporate governance. These are linked to the middle green ones that researched the ownership structure.

Figure 2.3 - Citation analysis by documents: 349 articles with connections



From here, there's a central pink step identified as "ciftci (2019)" that researched firm performance, and corporate governance in emerging markets, which leads to the top part of the image, with a universe of the corporate social responsibility (CSR), and environment, social, and governance (ESG) ratings to firm performance. The big blue central circle gathers articles that researched the impact of the COVID-19 pandemic on firm performance. Going to the right-hand side of the image, the light blue, dark pink, and brown bubbles cluster papers that researched the impact of entrepreneurial orientation, and different types of innovations on firm performance. Finally, the far right purple and yellow papers researched big data and AI.

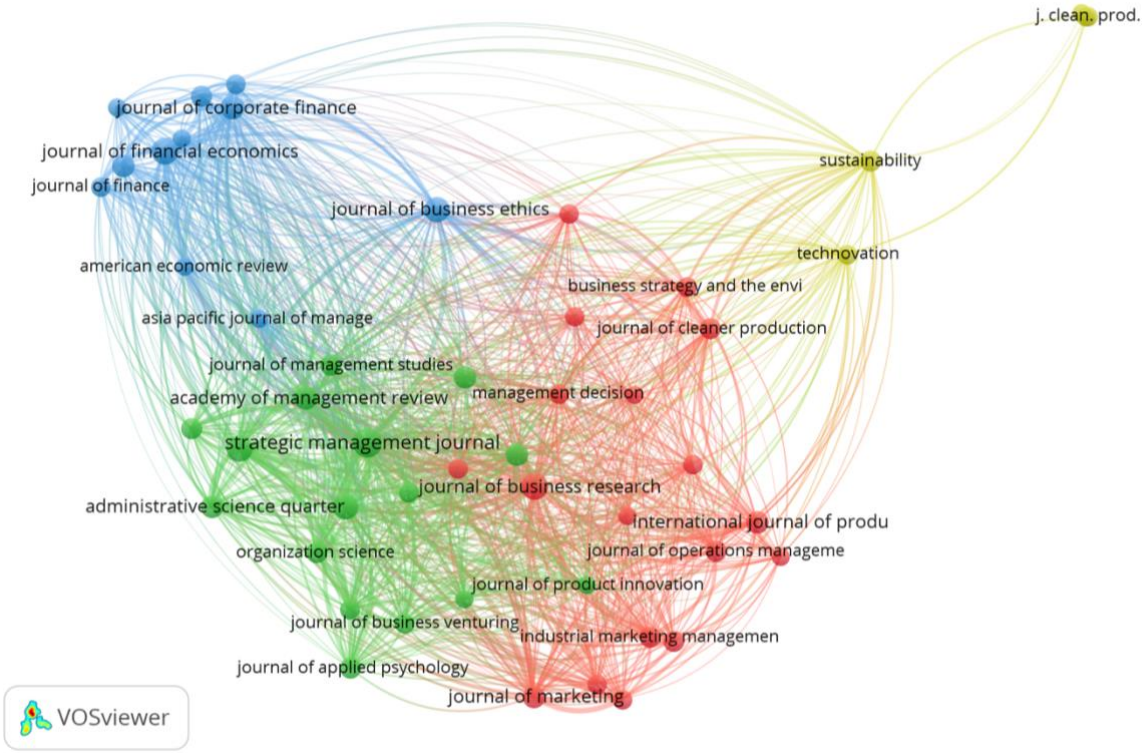
From left to right, telling this same story in a text-organized way, it is possible to list these clusters as connecting firm performance to: 1. diversity; 2. corporate governance; 3. ESG; 4. COVID-19; 5. innovation; and 6. technology.

2.3.2.2. Co-citation analysis

To help find the main topics and influential publications (Donthu *et al.*, 2021), a co-citation analysis was conducted by cited sources, presented in Figure 2.4. Using the journals' names as proxies of the themes covered in the articles given their editorial approach, there were found four clusters in this analysis: the yellow covers sustainability, and innovation; the blue ones are financial, accounting or economic journals; the green ones are management related sources, which include international business, entrepreneurship, psychology, human resources, and others; and the red ones are business related sources, including marketing, product, supply chain, operations, technology, etc.

It is possible to see some relation to the clusters identified in the citation analysis by documents, and in the co-citation by cited source, like sustainability, innovation, and finance.

Figure 2.4 – Co-citation by cited source: the 50 most cited sources



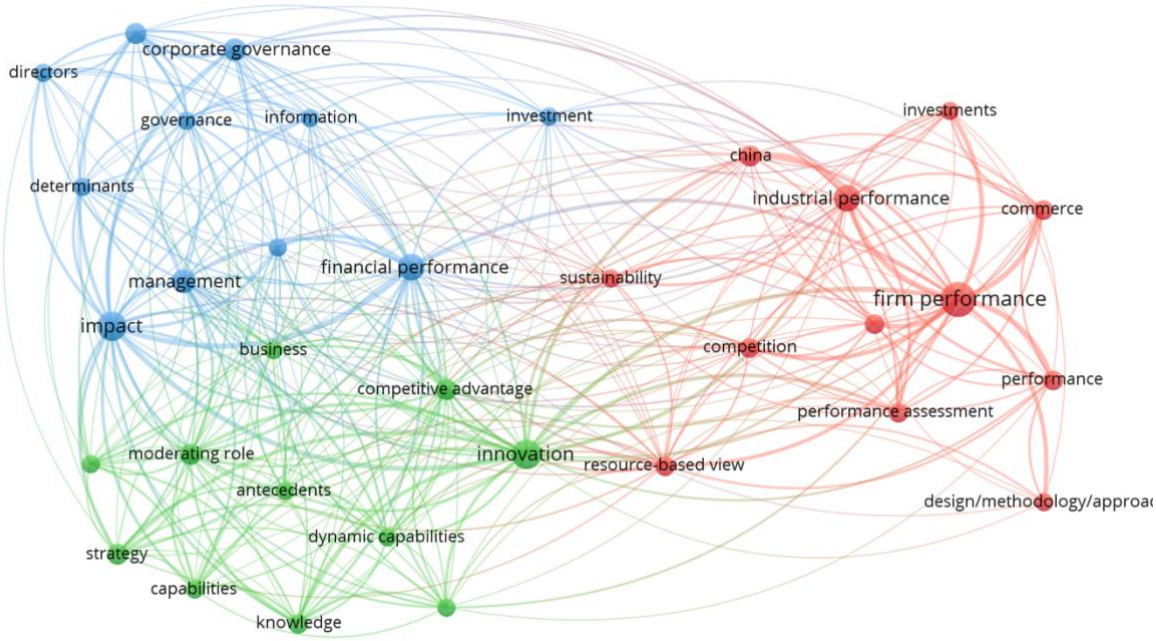
2.3.2.3. Co-word analysis

The co-word analysis was used to better understand the clusters identified in the previous subsection (Donthu et al., 2021). Figure 2.5 shows the result of it, considering the co-occurrence analysis available in VOSviewer for the source keywords, chosen to rely on the sources' standardization to index the articles, and a minimum of 20 occurrences of a keyword. Three clusters found were: the red one was the expected "firm performance" related keywords, with different variations, like "industrial performance" or "performance assessment", and very close to "sustainable development", which leads to the central "sustainability"; the blue ones are financial related keywords, like "financial performance", "investment", that lead to "governance", "directors", "corporate responsibility", and "ownership"; and the green ones are "competitive advantage", and "innovation" that connect to "moderating role", "capabilities", and "strategy".

As per Barney (2020) research findings, that many commonly used performance measures originate from accounting and finance, it was expected to have "financial performance" strongly connected to "firm performance". What was very interesting to find is

that "sustainability" is in the middle of these key words, suggesting that this is a very important topic that is being researched recently, with "firm performance" and "moderating role" among the many topic-related keywords, making it look like this is an important approach in this research field.

Figure 2.5 – Co-occurrence of index keywords: 20 as the minimum number of occurrences of a keyword

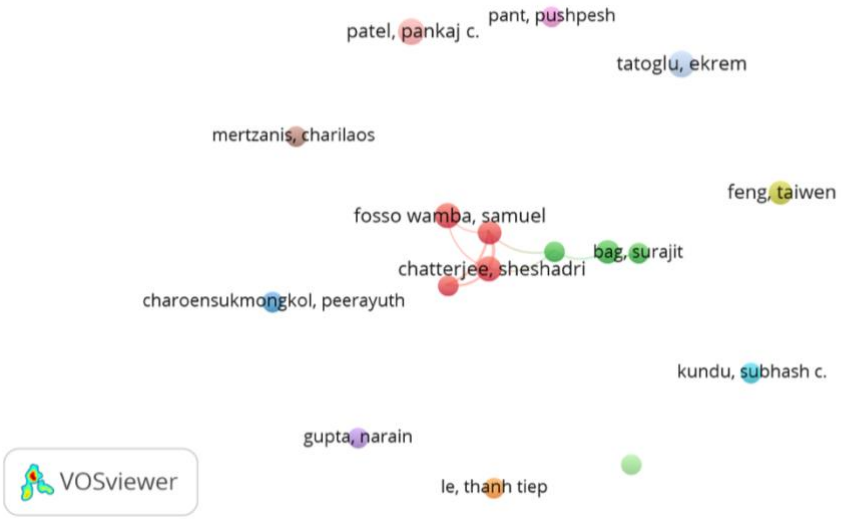


2.3.2.4. Co-authorship analysis

The co-authorship analysis was used to find who participated in more publications in the sample. Considering the authors with 5 or more documents published as the threshold resulted in the clusters shown in Figure 2.6, with 17 authors. It is possible to see connections between Fosso Wamba, S., Chaudhuri, R., Chatterjee, S., and Vrontis, D. who researched the firm performance-information management nexus, which includes artificial intelligence (AI), and big data. That cluster of authors has a connection to Mikalef, P., Gupta, S., and Bag, S. who researched the same themes. All other authors are independently shown. Starting at the top and moving in a clockwise direction, Pant, P. participated in researches connecting firm performance to supply chain, to internet of things (IoT), and to the covid-19 pandemic; Tatoglu, E. to corporate governance; Feng, T. to sustainability; Kundu, S.C. to HR practices; Tarigan, Z.J.H. to supply chain only; Le, T.T. to innovation; Gupta, N. to sustainability, and innovation; Charoensukmongkol, P. to entrepreneurship; Mertzanis, C to social efforts; and Patel, P.C. to C-level executives, and legislation.

The low number of authors who have participated in more than five articles in such a large sample, and the broad range of the topics covered, suggest that firm performance is a vast theme to be researched, and different angles can be used to dive deeper into this major topic.

Figure 2.6 – Co-authorship analysis by authors with 5 or more articles published in the sample



Source: authors, 2024

2.4. RESEARCH GAPS: AVENUES FOR FUTURE STUDIES

The bibliometric analysis conducted in the previous section confirms the high relevance and growing interest in the field of firm performance. However, the systematic review disclosed several critical gaps in the literature, which serve as the foundation for a future research agenda.

2.4.1. Disaggregated Analysis of ESG Components

Given the importance of sustainability in explaining firm performance, the primary research gap identified is the need to move beyond the analysis of aggregated ESG scores and focus on the independent contribution of the individual E, S, and G pillars to firm performance. A company may excel in one pillar (e.g., robust governance) while lagging in another (e.g., social responsibility or environmental footprint).

The keyword analysis in the current study notably featured Governance and its related keywords as a theme, but did not show sufficient co-occurrence of keywords related to Environmental (E) or Social (S) pillars, indicating a lack of granular understanding of their isolated impacts on firm performance.

External research reinforces this need for separation, as the individual components demonstrate varying and sometimes unstable effects on performance across different contexts. This disparity necessitates models that treat the E, S, and G factors as distinct mechanisms that impact firm performance.

2.4.2. Methodological and Conceptual Inconsistencies

A core issue highlighted in the literature is the conflicting and paradoxical relationship between different factors to explain firm financial performance. This lack of consensus is frequently attributed to the heterogeneity of terminology and methodologies across studies, including differences in the definition, how performance is measured, and the specific data analysis approaches used.

Taking sustainability as an example, ESG disclosures and scorings suffer from a lack of standardization, which introduces comparability challenges and may lead to inconsistent empirical results. Future research must aim to unravel these contradictions by employing more rigorous, mixed-method approaches, such as combining bibliometrics with meta-analysis.

There is also a strong call for research to uncover the mediating and moderating mechanisms of "how" and "when" different variables may impact firm performance, helping firms' leaders to prioritize and make decisions that create corporate value.

2.4.3. Contextual and Geographical Expansion

Finally, a major geographical imbalance exists, with the majority of studies focusing on large companies in large economies. This limits the generalization of the findings, creating a significant knowledge deficit regarding firm performance in smaller companies across the globe, including in the largest economies, making the literature deficient in research that addresses it in the SME (Small and Medium-sized Enterprise) sector. The possible reason for this limitation is how difficult it is to get comparable data from companies that are not publicly traded, usually a characteristic of larger corporations.

2.5. QUALITATIVE ANALYSIS

To support the science mapping presented in section 2.3, and anticipating the theme of the next article in this dissertation about the firm performance and ESG nexus, it was conducted a qualitative analysis in the articles that separately analyzed the three pillars of ESG on firm performance, based on the first research gap presented in section 2.4.1.

In total, 43 articles in the sample were identified as related to ESG pillars, either by the title, keywords, or abstract. A total of 22 were removed from this qualitative sample as they didn't focus on all three pillars, but touched on specific topics, such as top management commitment, cultural aspects, diversity, ownership structure, innovation, or had no significant results, or were even too specific, like studies conducted during the first year of the covid-19 pandemic, or about the impact of Buddhism in firm performance, or focused on one specific sector of a country (i.e. oil companies in Nigeria).

Out of the 21 articles that remained in this qualitative sample, 11 combined different parts of the world, like international evidence from 17 different countries (Shaikh, 2021), or from emerging markets (Bahadori, Kaymak and Seraj, 2021; Bilyay-Erdogan and Öztürkkal, 2023; Narula et al., 2024), or from the Middle East and North Africa (Abdulla and Jawad, 2024), the USA non-financial firms present in the S&P 500 stock index (Nguyen, Hoang and Tran, 2022), India (Maji and Lohia, 2023; Malik and Kashiramka, 2024; Mendiratta et al., 2023; Veeravel, Murugesan and Narayanamurthy, 2024), China (Pu, 2023), and the UK (Ahmad, Mobarek and Raid, 2023). All of these articles bring different regional perspectives and findings on how ESG factors impact firm performance.

But the other 10 articles deserve a special highlight, given that not only are their findings as relevant as the previous 11 mentioned, but the methodology used in them also contributed to the second article of this dissertation. Jung and Yoo (2023) studied the moderating effect of market competition in the ESG-Firm Performance nexus through a panel data regression analysis, just like in the next article presented in this dissertation. While the next article focus on S&P500 companies from 2018 to 2024, Jung and Yoo (2023) studied listed companies from over 50 countries from 2017 to 2021, finding a non-linear relationship between firm performance and ESG factors when the first is measured by market capitalization, but a positive linear relationship when it's measured by profit margin or return on assets (ROA). On the moderating role of market competition, they found that the greater the competition is, the weaker the impact of ESG on firm performance.

The other articles that also deserve highlighting are Huang (2021) and Khan (2022) with systematic reviews that contributed to this first article in this dissertation, with the former finding a positive relationship between firm performance and ESG activities in its systematic review, just like the author expected, but the latter found a statistically insignificant evidence in that relationship through bibliographic and meta-analysis.

On the panel data studies that used variables to mediate or moderate the ESG impact on firm performance, the underscored studies include Albitar et al. (2020) for implementing

Ordinary Least Squares (OLS) and firm-fixed effects models in a panel dataset of FTSE 350 companies from 2009 to 2018, finding a positive relationship before and after the implementation of integrated reporting in 2013, with it being the moderating variable in the study; Boulhaga et al. (2023) found that internal control weakness negatively and significantly moderates this relationship, as expected by the authors; Bissoondoyal-Bheenick, Brooks and Do (2023) used data from companies in G20 countries between 2007 and 2020 to study the role of size and media channels on ESG and firm performance, finding that larger firms get economies of scale when promoting ESG activities due to stakeholders' pressures, while firms with better media coverage can make smaller ESG investments as their stakeholders can access information about the company in an easier way, with both variables leading to better performance because of the smaller costs; and Shahzad et al. (2022) intellectual capital as the mediating variable in this relationship in over 2,000 companies from the USA, finding that it partially mediates corporate social responsibility (CSR) and firm performance.

On the opposite direction of these positive (or partially positive findings), there are studies such us Lee, Raschke and Krishen (2023) that make harsh statements like that “rating agency weighting methodologies may unknowingly be encouraging firm greenwashing” after finding that the greater the ESG scores are, the lower are the firm performance; and Khandelwal, Sharma, and Chotia (2023) that found a negative premium for investing in companies with higher ESG disclosures, contrasting with many other studies that suggest positive ESG disclosures premia.

2.6. FINAL CONSIDERATIONS

This article fulfills its initial purpose to organize the recent scientific production about firm performance in a meaningful way. As usually happens in business publications, firm performance is often related to financial performance, and as aforementioned in the keyword analysis, it was enlightening to find that sustainability is closely related to firm performance research. And it caught the authors' attention the fact that "mediating role", a keyword not related to the topic, but to the research method, was among the highlighted ones.

In the co-citation by cited source analysis (Figure 2.4), there were several marketing journals in the red area, but there were no mentions of “marketing” in the keyword analysis (Figure 2.5). This suggests that combining marketing with firm performance and sustainability could be a fertile field to be researched, resulting in a research gap found by this bibliometric article.

Another path for future research is to try to understand how ESG impacts firm performance. This is a very broad concept that is sometimes summarized as just "sustainability". But this is so extensive that it has three different pillars in it, which might be related to one another, or not. A company could have good governance with an independent board and an external audit, for example, but no corporate social responsibility or prioritization of its ecological footprint. Therefore, an analysis that separates how environmental, social, and governance *independently* contribute to firm performance is also a trail to be followed. Another evidence of this need is that only governance is one of the ESG pillars shown in the keyword analysis of Figure 2.5, leaving space to better understand how environmental and social pillars impact firm performance. The main topic of the second article in this master's degree dissertation is the dismantling of ESG in its three pillars and how they impact firm performance.

The limitations of this article include all the decisions made to narrow down the sample, like the time frame explicitly used to look at recent years, the use of Scopus and Web of Science only, the qualitative focus to only use Q1, and Q2 classification of journals by SJR, the subject areas only related to business, management, and economics, and, as any bibliographic analysis, lots of inferring was made, which does not necessarily lead to conclusions. The indicators used may not be conclusive, like citations may not represent influence, or co-occurrence of keywords may not indicate that the articles that mention them together are really similar to one another, or the journals' titles cannot necessarily represent what an article covers.

CHAPTER 3 – ARTICLE 2: HOW E, S, AND G BLOOMBERG SCORES IMPACT S&P 500 FIRMS' PERFORMANCE

3.1. INTRODUCTION

In recent decades, the traditional focus of firms' strategy, primarily centered on maximizing shareholder value, has broadened significantly to include a wider range of corporate responsibilities extending beyond purely financial metrics to include their impact on stakeholders. This paradigm shift is encapsulated by the growing prominence of Environmental, Social, and Governance (ESG) factors, which reflect a company's commitment to sustainable and ethical practices. ESG considerations have moved from the periphery to the core of business discourse, driven by increasing stakeholder awareness, regulatory pressures, and a growing recognition of their potential influence on long-term value creation (de Silva Lokuwaduge and de Silva, 2022). Investors, consumers, employees, and policymakers are increasingly

scrutinizing corporate behavior through an ESG lens, prompting firms worldwide to integrate sustainability into their operational and strategic frameworks.

The theoretical underpinnings for the relationship between ESG performance and firm financial performance (FFP) are diverse. Stakeholder theory posits that addressing the concerns of various stakeholders – including employees, customers, society, and the environment – can lead to improved financial outcomes by enhancing reputation, reducing risks, and fostering innovation (Freeman, 2010). Similarly, the Resource-Based View (RBV) suggests that strong ESG practices can represent inimitable resources or capabilities, providing a sustainable competitive advantage (Barney, 1991). Legitimacy theory further argues that firms engage in ESG activities to align their operations with societal expectations, thereby gaining or maintaining social license to operate (Suchman, 1995). Conversely, agency theory raises concerns that ESG investments might be driven by managerial discretion rather than shareholder value, potentially leading to suboptimal financial performance (Jensen and Meckling, 1976).

Despite the compelling theoretical arguments, the empirical evidence on the relationship between ESG and FFP remains complex and, at times, inconclusive, fostering an ongoing academic debate. While a substantial body of literature suggests a positive association (Bahadori, Kaymak, and Seraj, 2021; Habib and Mourad, 2023; Huang, 2021; Maji and Lohia, 2023; Veeravel, Sadharma, and Kamaiah, 2024), the strength and direction of this relationship often vary depending on the context, methodology, and specific ESG dimensions examined. For instance, some studies find a positive, statistically significant, but economically modest link (Huang, 2021), while others highlight the importance of specific ESG pillars, noting that environmental, social, and governance aspects may have differential impacts on performance (Hanaysha and Al-Shaikh, 2022; Maji and Lohia, 2023).

Moreover, recent research has delved into the nuanced factors that moderate this relationship. The quality of internal controls (Boulhaga *et al.*, 2023), the level of market competition (Jung and Yoo, 2023), firm size, and the influence of media channels (Bissoondoyal-Bheenick, Brooks, and Do, 2023) have all been identified as significant contextual variables. The impact of external shocks, such as the COVID-19 pandemic, has also been explored, revealing that firms with stronger ESG practices may exhibit greater resilience during crises (Habib and Mourad, 2023). Furthermore, geographic and economic contexts play a crucial role, with studies focusing on emerging markets providing unique insights into how ESG practices affect performance in different institutional environments (Abdulla and Jawad, 2024; Bahadori, Kaymak and Seraj, 2021; Bilyay-Erdogan and Öztürkkal, 2023; Hanaysha and

Al-Shaikh, 2022; Maji and Lohia, 2023). Some research even suggests non-linear relationships, indicating that the benefits of ESG engagement might not be linear across all levels of ESG performance (Pu, 2023).

The increasing emphasis on ESG disclosure, often driven by integrated reporting frameworks, is seen as a mechanism to enhance transparency and accountability, potentially influencing investor perceptions and firm valuation (Albitar et al., 2020; Veeravel, Murugesan and Narayanamurthy, 2024). However, the effectiveness of such disclosures and their ultimate impact on financial outcomes remain subjects of ongoing investigation.

Given the multifaceted nature of ESG and its complex interplay with firm performance, a comprehensive understanding requires continuous empirical investigation across diverse settings and analytical approaches. This article aims to contribute to this evolving topic of research by analyzing how ESG segregated scores impact a firm's performance in a panel dataset with all companies in the S&P 500 stock index from 2018 to 2024. Thus, this article aims to answer the following question:

How do Environmental (E), Social (S), and Governance (G) individually impact firm performance?

It was extracted data from Bloomberg from all 503 companies from the S&P 500 index from 2018 to 2024 to run econometric regression methods in STATA. This article is structed by this introduction; followed by a detailed review of the existing literature on ESG, and firm performance; then, the following section presents the dataset, and variable selections used to build the hypothesis, and the regression equation to run the econometric models in STATA; the results, and discussion are presented in the second-last section; and lastly, the final considerations wraps up the article with its contributions to the literature, limitations, and suggestions for future research.

3.2. LITERATURE REVIEW

This literature review synthesizes recent empirical evidence on the relationship between ESG factors and FFP. While a consensus on a universally positive relationship remains elusive, the reviewed studies offer nuanced insights into the complex interplay, highlighting the influence of individual ESG pillars, various moderating and mediating variables, and diverse regional contexts.

3.2.1. The Overall Relationship: Mixed Evidence and Nuances

The overarching question of whether ESG engagement translates into superior financial performance has yielded mixed results across studies. A significant portion of the literature suggests a positive association. Huang (2021) provides a comprehensive review, concluding that empirical evidence generally indicates a positive, statistically significant, though economically modest, link between ESG performance and corporate financial performance. This positive relationship is further supported by studies in diverse geographical contexts. Bahadori et al. (2021) find that firms in emerging markets with higher ESG scores experience greater profitability. Similarly, Habib and Mourad (2023) demonstrate that heightened ESG practices correlate with better performance measures for US firms, even during the coronavirus crisis, suggesting ESG as a resilience factor. Maji and Lohia (2023) also find a positive and significant impact of ESG performance on FFP in emerging markets, emphasizing the importance of integrating ESG considerations into business strategies. Veeravel et al. (2024) provide further evidence from India, showing that ESG disclosure positively influences firm performance.

However, not all studies report a uniformly positive relationship. Some research points to an insignificant or even negative impact, particularly when examining specific dimensions or contexts. For example, Fernando et al. (2022) find an insignificant impact of ESG disclosure on firm performance in countries from the ASEAN region, although the coefficient shows a positive sign. ESG expenditures might be perceived as a misuse of resources, as Pu (2023) identified a non-linear, U-shaped relationship in China, suggesting that while ESG activities can improve firm performance, the relationship is not always positive and linear.

3.2.2. Dissecting the ESG Pillars: segregated E, S, and G pillars

The aggregated ESG score often masks the differential impacts of its components: Environmental (E), Social (S), and Governance (G). Several studies delve into these distinct effects. Shaikh (2021), in an international study, finds that the environmental dimension appears to have an intimidating effect across accounting and market-based firm performance, while the social dimension contributes adversely, and governance positively affects operational efficiency. This highlights that investments in each pillar might yield varying returns. Maji and Lohia (2023) also note that Indian firms focus more on governance and social parameters than environmental ones, with ESG scores and individual dimensions, except social, significantly impacting FFP. And Díaz-Peña et al. (2022) found that the social component was the most significant in the regression models they used to examine the ESG-FFP nexus in a sample of

listed companies from what they called “green countries” (Sweden, UK, France, Denmark, New Zealand, and Hungary).

Boulhaga et al. (2023) examine ESG ratings and firm performance, finding that both internal control weaknesses (ICW) and ESG ratings positively influence performance, but ICW negatively and significantly moderate the relationship between ESG ratings and corporate performance. This emphasizes the crucial role of robust internal governance in leveraging ESG benefits. Abdulla and Jawad (2024) find that, in the Middle East and North Africa (MENA) non-financial listed firms, there is a negative impact on performance from an operational and financial perspective, but a positive impact on market performance, with climate risk moderating this relationship.

3.2.3. Moderating and Mediating Factors

The relationship between ESG and FFP is rarely direct; it is often influenced by a range of moderating and mediating variables.

Corporate governance mechanisms frequently moderate the ESG-Financial Performance nexus. Albitar et al. (2020) find that ownership concentration, gender diversity, and board size moderate the relationship between ESG disclosure and firm performance in UK FTSE 350 firms. Their study also suggests that firms voluntarily adopting integrated reporting tend to achieve better financial performance. Ahmad et al. (2023) show that ESG, firm size, and corporate governance are significant moderators in the relationship between the global financial crisis and firm financial performance in UK firms. Dong et al. (2023) investigate board diversity and ESG activities in China, finding that board diversity is positively associated with firm performance, and ESG activities also have a positive coefficient, but board diversity negatively impacts ESG efforts, suggesting they might be substitutes in driving performance. Bilyay-Erdogan and Öztürkkal (2023) show that institutional and foreign ownership moderate the positive impact of ESG on firm performance in emerging markets.

External factors, such as economic crises and policy uncertainty, also play a significant role. Ahmad et al. (2023) reveal that both financial and ESG performance of UK firms declined during the global financial crisis (2007-2010), and ESG, firm size, and corporate governance moderated this negative impact. Habib and Mourad (2023) specifically examine the coronavirus crisis, concluding that firms with heightened ESG practices demonstrated better performance, suggesting resilience during uncertain times. Similarly, Díaz-Peña et al. (2022) explore the impact of the COVID-19 pandemic, finding that ESG disclosure helps firms survive or even thrive during the crisis. Persakis (2023) finds that climate policy uncertainty positively affects

ESG performance but negatively affects firm performance and carbon dioxide emissions, with ESG performance not moderating these effects.

Corporate efficiency and innovation are also increasingly recognized as mediating pathways. Abdulla and Jawad (2024) highlight that corporate efficiency mediates the relationship between ESG integration and financial outcomes, suggesting that ESG practices lead to better financial performance through enhanced efficiency. Cabaleiro-Cerviño and Mendi (2024) find that ESG-driven companies have better future innovation performance than non-ESG-driven firms.

3.2.4. Regional and Industry-Specific Insights

The impact of ESG on firm performance is not monolithic across different regions or industries, underscoring the importance of contextual analysis. Bahadori et al. (2021) specifically focus on emerging markets, finding a positive association between ESG scores and profitability in a multi-industry sample from 24 leading emerging markets. Shaikh (2022) provides international evidence, noting that ESG compliance is more pronounced in European companies, while Asian firms are more disciplined in the energy sector, and the Asia-Pacific counterpart leans towards technology firms. Maji and Lohia (2023) provide evidence from India, showing that ESG performance has a positive and significant impact on FFP in this emerging market. Bilyay-Erdogan and Öztürkkal (2023) offer cross-country evidence from 22 emerging economies, reinforcing the positive link between ESG engagement and firm performance, and exploring the moderating role of different ownership types.

Studies focusing on specific countries further illuminate these regional nuances. For instance, Albitar et al. (2020) and Ahmad et al. (2023) provide insights into the UK context. Pu (2023) and Dong et al. (2023) contribute to the understanding of the ESG-Firm Performance nexus in China, with Pu revealing a non-linear relationship. Fernando et al. (2022) examine countries from the ASEAN region, while Abdulla and Jawad (2024) focus on MENA firms, revealing varied impacts depending on the financial performance measure. And Persakis (2023) investigated 2,640 US Fortune 1,000 companies spanning from 2008 to 2018, demonstrating a positive correlation between climate policy uncertainty and ESG performance, yet a negative correlation with both firm performance and carbon dioxide emissions.

3.3. RESEARCH METHOD

3.3.1. Data Sources and Variables

Given all this context presented in the previous section of ambiguous evidence, segregated E, S, and G scores, different mediating and moderating variables, both internal and external to companies, and regional and industry specifics, it will now be outlined how the sample of this study was selected.

Besides these factors, assessing ESG information from companies may be difficult for various reasons. Among them, there might be the lack of standardization on how companies should report these expenses on their financial statements; the high costs related to financial reporting, or the secrecy that involves these activities; or industry effects that could potentially make some sectors more transparent than others (Markovitch, Huang and Ye, 2020). Because of these difficulties that it was decided to run this study with companies from the S&P 500 stock index because, as listed companies, they must disclose their financial statements. Bloomberg consolidates this information, including overall ESG scores and ESG segregated scores, besides all other financial and diversity data mentioned below. The final data panel gathered year-end information from 2018 to 2024 from all 503 companies present in the S&P 500 index in 2025. Therefore, equation (1) displays the proposed model aimed at assessing the research question.

The variables used were, firstly, ROA (return on assets) as the dependent variable that sums up firm performance. Then, Bloomberg's overall ESG score for each firm, as well as E, S, and G segregated scores, were used as the independent variables. As the control variables in the regression, firm age, total assets, total debt to total assets ratio, net fixed assets to total assets ratio, investments to total assets, board average age, percentage of women in the board, and percentage of independent executives were used. To tie up the results with ROA, it was conducted econometric regressions with a second and third dependent variables: Tobin's Q and market capitalization, respectively, to assess market-based firm performance (Jung and Yoo, 2023).

$$(1)\ ROA_{it} = \beta_0 + \beta_1 E_{it} + \beta_2 S_{it} + \beta_3 G_{it} + \beta_4 FA_{it} + \beta_5 TA_{it} + \beta_6 DR_{it} + \beta_7 NFAR_{it} + \beta_8 IR_{it} + \beta_9 BAA_{it} + \beta_{10}\%WOB_{it} + \beta_{11}\%IE_{it} + \varepsilon_{it}$$

Where,

ROA is the Return on Assets

E is the environmental specific score

S is the social specific score

G is the governance specific score

FA is the firm age

TA is the firm's total assets

DR is the debt ratio (total debt to total assets ratio)

NFAR is the net fixed assets ratio (net fixed assets to total assets ratio)

IR is the investment ratio (investments to total assets ratio)

BAA is the board's average age

%WoB is the percentage of women on the board

%IE is the percentage of independent executives

Given that the estimation equation uses variables with different natures, such as absolute numbers (e.g. E, S, and G scores, and age), percentages (e.g. debt ratio, net assets ratio, and percentage groups of employees), and amount of money (e.g. total assets), all variables were truncated within each one to have a minimum value of zero, and a maximum of one.

3.3.2. Econometric Model and Estimation Strategy

As this is an exploratory paper, different types of regression in STATA were used to verify the linear model presented in equation 1: generalized least squares (GLS) with traditional fixed effects (FE); random effects (RE); followed by the Driscoll–Kraay (DK) with fixed (DKFE), and random effects (DKRE) (Onody *et al.*, 2022) because of non-spherical disturbances present in panel datasets (Driscoll and Kraay, 1998).

These four regression methods were used to estimate equation (1). Nonetheless, we also employ the full ESG score to compare the results with its individual building blocks as described in equation (2) as follows.

(2) $$ROA_{it} = \beta_0 + \beta_1 ESG_{it} + \beta_2 FA_{it} + \beta_3 TA_{it} + \beta_4 DR_{it} + \beta_5 NFAR_{it} + \beta_6 IR_{it} + \beta_7 BAA_{it} + \beta_8 \%WoB_{it} + \beta_9 \%IE_{it} + \varepsilon_{it}$$

Where:

ESG is the overall score for environmental, social, and governance.

3.4. RESULTS

Taking the first step to validate that ESG overall scores impact firm performance measured by ROA in S&P 500 firms in a positive way, all four regression methods were used on equation 2, bringing the results presented in Table 3.1. As the results show, this initial step

was validated by the generalized least squares regression with random effects, where the ESG score positively impacts firm performance with a 10% significance level. Besides that, some of the control variables, such as firm age, total assets, and debt ratio, showed up to have different statistically significant levels on the same regression method, proving their value to be part of the equation.

Table 3.1 – Regressions with ESG overall score

VARIABLES	RE	FE	DKRE	DKFE
ESG	0.0132*	0.0116	0.0132	0.0116
	(0.00695)	(0.0120)	(0.00884)	(0.00859)
FA	-0.0142*	0.0454	-0.0142	0.0454
	(0.00739)	(0.144)	(0.00733)	(0.0935)
TA	-0.0938***	-0.0545	-0.0938***	-0.0545
	(0.0260)	(0.0346)	(0.0244)	(0.0393)
DR	-0.0540*	-0.147***	-0.0540	-0.147**
	(0.0303)	(0.0410)	(0.0444)	(0.0509)
NFAR	-0.00857	0.0386	-0.00857	0.0386**
	(0.00773)	(0.0332)	(0.00583)	(0.0140)
IR	0.0339	0.0498	0.0339	0.0498***
	(0.0213)	(0.0341)	(0.0189)	(0.0132)
BAA	0.00747	0.00590	0.00747	0.00590
	(0.0174)	(0.0186)	(0.0216)	(0.0161)
%WoB	0.00252	0.00260	0.00252	0.00260
	(0.00881)	(0.0113)	(0.00452)	(0.00523)
%IE	0.0152	0.0145	0.0152**	0.0145*
	(0.0112)	(0.0122)	(0.00440)	(0.00648)
Constant	0.316***	0.297***	0.316***	0.297***
	(0.0165)	(0.0430)	(0.0144)	(0.0205)
Observations	3,314	3,314	3,314	3,314
R-squared		0.028		
Number of IDs	497	497	497	497

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

Then, the same regression was run, but with the E, S, and G independent scores instead of the ESG overall score. The results are presented in Table 3.2. In this case, only the environmental score showed up to have a positive relationship with ROA, and is statistically relevant at a level of 5% with fixed effects, both in GLS and DK methods, and 1% with random effects in both methods. Social score showed an inverse relationship to firm performance in methods with random effects at a 5% significance level, and only in DKFE at a 10% level; and governance score was not statistically relevant in any of the methods used. About the control variables, they pretty much kept the same behavior as in the first regression, meaning firm age was relevant only in GLS with RE at a 10% significance level; total assets showed a negative

relationship with firm performance at a 1% significance level with random effects, and 10% in GLS with FE; debt ratio was significant with FE in both methods, with 1% in GLS, and 5% in DKFE, but 10% in GLS RE; and net fixed assets ratio, and investment ratio both generate positive impact in firm performance at a 1% significance level with DKFE method.

Table 3.2 – Regression with E, S, and G segregated scores

VARIABLES	RE	FE	DKRE	DKFE
E	0.0208***	0.0210**	0.0208***	0.0210**
	(0.00653)	(0.0103)	(0.00501)	(0.00854)
S	-0.0120**	-0.00927	-0.0120**	-0.00927*
	(0.00552)	(0.00761)	(0.00381)	(0.00410)
G	0.0206	0.0131	0.0206	0.0131
	(0.0227)	(0.0231)	(0.0244)	(0.0183)
FA	-0.0139*	0.0279	-0.0139	0.0279
	(0.00759)	(0.145)	(0.00778)	(0.0782)
TA	-0.0968***	-0.0640*	-0.0968***	-0.0640
	(0.0260)	(0.0335)	(0.0242)	(0.0413)
DR	-0.0526*	-0.145***	-0.0526	-0.145**
	(0.0302)	(0.0407)	(0.0432)	(0.0480)
NFAR	-0.00764	0.0366	-0.00764	0.0366**
	(0.00761)	(0.0334)	(0.00564)	(0.0138)
IR	0.0338	0.0482	0.0338	0.0482***
	(0.0215)	(0.0347)	(0.0212)	(0.0125)
BAA	0.00946	0.00650	0.00946	0.00650
	(0.0163)	(0.0169)	(0.0200)	(0.0156)
%WoB	-0.00165	-0.000279	-0.00165	-0.000279
	(0.00824)	(0.0111)	(0.00528)	(0.00307)
%IE	0.0124	0.0132	0.0124*	0.0132
	(0.0129)	(0.0129)	(0.00552)	(0.00814)
Constant	0.304***	0.296***	0.304***	0.296***
	(0.0172)	(0.0455)	(0.0147)	(0.0221)
Observations	3,314	3,314	3,314	3,314
R-squared		0.032		
Number of IDs	497	497	497	497

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.4.1. Robustness Analysis

Changing the independent variable to Tobin's Q to verify the impact on the firms' market performance (Veeravel, Sadharma and Kamaiah, 2024), none of the E, S, and G independent scores showed up to be statistically relevant. But when it was used market capitalization as the firm performance independent variable because it is a market-based indicator of firm performance (Jung and Yoo, 2023), the results were pretty similar to the regression with ROA, resulting in only the environmental score being statistically relevant with

random effect, as presented in Table 3.3. In this case, firm age, total assets, debt ratio, net fixed assets ratio, board average age, and percentage of women on board were found to be control variables statistically relevant in different methods, concluding on how ESG pillars can impact firm performance depending on the angle you're looking at it.

Table 3.3 – Market capitalization as the dependent variable for firm performance:

VARIABLES	RE	FE	DKRE	DKFE
E	0.0184***	-0.00302	0.0184**	-0.00302
	(0.00514)	(0.00612)	(0.00601)	(0.00304)
S	-0.00266	-0.00622	-0.00266	-0.00622
	(0.00615)	(0.00893)	(0.00641)	(0.00765)
G	-0.0113	-0.0218	-0.0113	-0.0218**
	(0.0151)	(0.0214)	(0.00788)	(0.00873)
FA	-0.0233*	0.515***	-0.0233	0.515***
	(0.0132)	(0.117)	(0.0240)	(0.0707)
TA	0.302***	0.463**	0.302**	0.463**
	(0.114)	(0.204)	(0.102)	(0.149)
DR	-0.0519**	-0.0683**	-0.0519	-0.0683**
	(0.0229)	(0.0302)	(0.0353)	(0.0259)
NFAR	0.0144	0.0412*	0.0144*	0.0412*
	(0.00888)	(0.0246)	(0.00736)	(0.0190)
IR	-0.0164	-0.0465	-0.0164	-0.0465
	(0.0252)	(0.0399)	(0.0260)	(0.0261)
BAA	0.0256*	0.0207*	0.0256***	0.0207***
	(0.0132)	(0.0115)	(0.00684)	(0.00450)
%WoB	0.0242	0.00383	0.0242***	0.00383
	(0.0148)	(0.0151)	(0.00608)	(0.00400)
%IE	0.00371	0.00766	0.00371	0.00766
	(0.00740)	(0.00911)	(0.00465)	(0.00613)
Constant	-0.00128	-0.152***	-0.00128	-0.152***
	(0.0103)	(0.0358)	(0.0158)	(0.0235)
Observations	3,314	3,314	3,314	3,314
R-squared		0.085		
Number of IDs	497	497	497	497

Robust standard errors in parentheses
*** p<0.01, ** p<0.05, * p<0.1

3.5. DISCUSSION

Connecting the first article of this dissertation with the results of this second article, it's possible to see that they coincide with some published studies mentioned in the previous article. As mentioned before, the results vary a lot depending on the context of each study: methods and variables used, how they're used (if mediators or moderators), and the context (region, firm size, or even the time window used).

These findings are partially in line with Nguyen, Hoang and Tran (2022) as they studied 57 non-financial companies listed on the S&P500 from 2018 to 2020 through Two-Stage Least Squares estimation, concluding that firm performance measured by ROA, ROE, and Tobin's Q is positively impacted by ESG combined efforts. The difference to this current article is related to the results using Tobin's Q, but it seeks and delivers a broadening of the study aforementioned, as it analyzes all the companies presented in the same stock index in a wider time window, with similar conclusions that the ESG combined score positively impacts firm performance when it's measured by ROA.

The findings are also in line with what Jung and Yoo (2023) found with global evidence from 2,115 listed companies from 53 countries from 2017 to 2021, where they found positive linear relationship between ESG and ROA, differing from this study for including the mediating role of market competition to their analysis, finding interesting evidence that "these relationships are negatively moderated by the number of competitors in the market". This points to a relevant direction to deepen the findings of this article to better understand the negative effect of Social independent score on firm performance and the non-significance of Governance score in the context studied in here. On the latter, it is important to highlight that the sample used in this article has the largest listed companies in the USA, leading to an interpretation that these companies have the highest standards of governance, and, therefore, this score doesn't impact firm performance, which doesn't mean that it's not important, quite the opposite: this is the plain vanilla needed to be among the largest, and most important companies in the index.

Lee, Raschke and Krishen (2023) proposed a very innovative approach to this same research field in the same context of big companies from the USA by proposing quantitative and qualitative ways to combine segregated E, S, and G scores from different sources into one combined ESG score, and then evaluate its impact on 562 US firms from the Forbes 2000 ranking. Their findings conclude that the balanced weighted ESG scores they created are associated with firm performance, and "the greater the positive percent difference between rating agency ESG scores and balanced ESG scores, the lower the firm performance". In this current study, only Bloomberg's ESG segregated scores were used, leaving the possibility to double-check these findings with other rating sources.

Finally, discussing the findings of similar papers, but on different regional contexts, as expected, some conclusions are in the same direction and some are not. For example, Lunawat and Lunawat (2022) studied the impact of E, S and G scores in firm performance in Indian listed companies from 2012 to 2019, and found that the impact of ESG and its subcomponents on financial performance could not be established except for the governance score, the complete

opposite of this article, that found E scores with positive impact, S with negative, and G with no relevant impact on firm performance when measured by financial indicators. In the same direction, Bilyay-Erdogan and Öztürkkal (2023) used a sample with companies from 22 emerging markets from around the globe and found that the ESG three pillars enhance firm performance measured by ROA and Tobin's Q.

3.6. CONCLUSIONS

This article contributes to scientific research as it analyzes a period of US exceptionalism in the stock market, with a bull market, despite the COVID-19 pandemic that occurred in the middle of the period analyzed. Besides, given the importance of the S&P 500 stocks in global traded equities, this work also has its importance for analyzing such an important stock market.

As known from the existing literature, the results could be ambiguous, and were, in fact, just partially as expected, leading to a conclusion that accepts just one third of the hypothesis: only the environmental score, one out of three, positively impacts firm performance, and a negative relationship with the social score being the main counterintuitive finding of this paper, that didn't completely fulfill its central proposition. As stated before, this doesn't mean that governance is not important to S&P 500 companies. It's quite the opposite: these companies are so large and professionalized, with really high G standards that don't contribute to firm performance. Which doesn't mean that they can let go of governance – in fact, due to listed companies' regulations, they must have high standards of disclosures.

Recently, the US market has seen a shift away from ESG analysis, putting it on a second level of importance to the North American investors' decision-making process. This is related to a cultural belief and government policies that ESG practices mean more cost without the certainty of better performance. On the opposite direction, European companies have doubled down on sustainability efforts, both in regulations and investment decisions, being currently a safe haven that keeps ESG relevant nowadays.

A follow up research could be with European companies during the same period to check if ESG segregated scores contribute to firm performance in this regional context; or to check how the segregated scores behave among different sectors: for example, if oil and gas sector has a greater impact of environmental score than other sectors, or if social has positive relationship to firm performance in any sector, or even if governance scores are statistically relevant in any of the different sectors in the US stock market. And finally, a third suggestion

is on how ESG scores impact performance on firms in the same sectors, but in different stock markets.

CHAPTER 4 - DISSERTATION'S FINAL CONSIDERATIONS

The purpose of this dissertation was to understand the relationship between Environmental, Social, and Governance (ESG) factors and corporate performance. This was achieved by structuring the work into two distinct articles. The first article, a systematic literature review, mapped out the recent landscape of research on firm performance and identified a key research gap: the need to understand the individual impact of the E, S, and G pillars on firm performance. Building upon this gap, the second article conducted an empirical study using segregated Bloomberg ESG scores to analyze their impact on the performance of S&P 500 firms.

The empirical analysis in the second article revealed nuanced findings regarding the individual ESG pillars: (i) the environmental E score was found to have a positive and statistically significant impact on a firm's performance, as measured by Return on Assets (ROA), making it consistent with a robustness check using market capitalization as a performance metric; (ii) the social S score demonstrated an inverse relationship with firm performance (ROA), indicating a negative impact; and the governance G score did not show a statistically significant relationship with firm performance, attributing this finding to the fact that S&P 500 companies likely already adhere to the highest governance standards, making it a non-differentiating factor for firm performance among this specific group of large, publicly traded US companies.

This dissertation contributes to the academic literature in three ways. Firstly, the systematic literature review provides a comprehensive overview of the research on firm performance and its connection to various factors, including diversity, corporate governance, ESG, COVID-19, innovation, and technology. It highlights the vast and diverse nature of this field, with numerous research gaps still to be explored.

Secondly, the empirical study addresses a specific gap by analyzing the individual impact of the E, S, and G scores on firm performance. The results, showing a positive impact of the Environmental score and a negative impact of the Social score, are among the few studies to dissociate ESG into its pillars.

Finally, beyond the academic contributions, this work also offers practical implications for managerial decision-making. The findings suggest that resources directed toward

environmental efforts may have a positive return on a firm's financial performance. Conversely, the negative impact of the social score calls for a re-evaluation of S strategies to ensure they are aligned with financial goals and do not inadvertently hinder performance.

This dissertation has several limitations that provide opportunities for future research, such as the fact that the study on the second article relies on Bloomberg's ESG scores, which may not capture the full scope of a company's ESG efforts. Future research could explore the use of different ESG ratings and data sources, or even qualitative data, to broaden the analysis. The negative correlation between the social score and firm performance suggests that further investigation is needed - future studies could use a qualitative approach to better understand the nuances of this relationship. And finally, the non-significance of the governance score with S&P 500 companies' performance makes it needed to replicate this study in different contexts, such as smaller companies or in emerging markets, where governance practices may not be as standardized as in listed companies, and could therefore have a significant impact on firm performance.

Beyond the ESG limitation, although the study used a wide range of control variables, other factors, such as industry-specific regulations or macro-economic conditions, could be included to provide a more robust analysis. And, finally, the study was focused on the US market during a bull market period despite the COVID-19 pandemic. Future research could investigate the relationship between segregated ESG scores and firm performance in different geographical regions or during economic downturns to see if the findings remain the same.

REFERENCES

ABDULLA, Y.; JAWAD, A. Do MENA firms consider climate risks? Evidence from the relationship between ESG and firm performance. **Journal of Sustainable Finance and Investment**, 2024.

AHMAD, N.; MOBAREK, A.; RAID, M. Impact of global financial crisis on firm performance in UK: Moderating role of ESG, corporate governance and firm size. **Cogent Business and Management**, v. 10, n. 1, 2023.

ALBITAR, K. *et al.* ESG disclosure and firm performance before and after IR: The moderating role of governance mechanisms. **International Journal of Accounting and Information Management**, v. 28, n. 3, p. 429–444, 2020.

ARSENEAULT, R.; GAGNON, J. Managerial accounting practices, HR metrics, and firm performance. **ADVANCES IN ACCOUNTING**, v. 64, mar. 2024.

BADULESCU, D. *et al.* Accounting Policies, Institutional Factors, and Firm Performance: Qualitative Insights in a Developing Country. **JOURNAL OF RISK AND FINANCIAL MANAGEMENT**, v. 14, n. 10, out. 2021.

BAHADORI, N.; KAYMAK, T.; SERAJ, M. Environmental, social, and governance factors in emerging markets: The impact on firm performance. **Business Strategy and Development**, v. 4, n. 4, p. 411–422, 2021.

BARNEY, J. Firm Resources and Sustained Competitive Advantage. **Journal of Management**, v. 17, n. 1, p. 99–120, 1 mar. 1991.

BARNEY, J. B. Measuring Firm Performance in a Way that Is Consistent with Strategic Management Theory. **Academy of Management Discoveries**, v. 6, n. 1, p. 5–7, mar. 2020.

BILYAY-ERDOGAN, S.; ÖZTÜRKKAL, B. The Role of Environmental, Social, Governance (ESG) Practices and Ownership on Firm Performance in Emerging Markets. **Emerging Markets Finance and Trade**, v. 59, n. 12, p. 3776–3797, 2023.

BISSOONDOYAL-BHEENICK, E.; BROOKS, R.; DO, H. X. ESG and firm performance: The role of size and media channels. **Economic Modelling**, v. 121, 2023.

BOULHAGA, M. *et al.* Environmental, social and governance ratings and firm performance: The moderating role of internal control quality. **Corporate Social Responsibility and Environmental Management**, v. 30, n. 1, p. 134–145, 2023.

CABALEIRO-CERVIÑO, G.; MENDI, P. ESG-driven innovation strategy and firm performance. **Eurasian Business Review**, v. 14, n. 1, p. 137–185, 2024.

CUI, L. *et al.* Accounting conservatism and firm performance during the COVID-19 pandemic. **ACCOUNTING AND FINANCE**, v. 61, n. 4, p. 5543–5579, dez. 2021.

DÍAZ-PEÑA, L. D. C.; CASTILLO DELGADILLO, V. M.; MARIO IVÁN, C.-V. Financial firm's performance: a comparative analysis based on ESG metrics and net zero legislation. **Journal of Sustainable Finance and Investment**, 2022.

DONG, Y.; LIANG, C.; WANYIN, Z. Board diversity and firm performance: impact of ESG activities in China. **Economic Research-Ekonomska Istrazivanja**, v. 36, n. 1, p. 1592–1609, 2023.

DONTHU, N. *et al.* How to conduct a bibliometric analysis: An overview and guidelines. **Journal of Business Research**, v. 133, p. 285–296, 1 set. 2021.

DRISCOLL, J. C.; KRAAY, A. C. Consistent Covariance Matrix Estimation with Spatially Dependent Panel Data. **Review of Economics and Statistics**, v. 80, n. 4, p. 549–560, nov. 1998.

ENRIQUEZ-PERALES, S. *et al.* Formal institutions, ICSID arbitration and firm performance: evidence from Latin America. **Eurasian Business Review**, v. 13, n. 2, p. 429 – 464, 2023.

FERNANDO, K.; NURCHOLIFAH, S.; PULUNGA, A. H. Disclosure of Environmental, Social, and Governance on Firm Performance Pre and Post Introduction of Integrated Reporting: Evidence from ASEAN Countries. **International Journal of Energy Economics and Policy**, v. 12, n. 6, p. 377–382, 2022.

FERREIRA, J. J. M.; FERNANDES, C. I.; VEIGA, P. M. The effects of knowledge spillovers, digital capabilities, and innovation on firm performance: A moderated mediation model. **TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE**, v. 200, mar. 2024.

FREEMAN, R. E. **Strategic Management**. [s.l.] Cambridge University Press, 2010.

FUADAH, L. L. *et al.* The Ownership Structure, and the Environmental, Social, and Governance (ESG) Disclosure, Firm Value and Firm Performance: The Audit Committee as Moderating Variable. **Economies**, v. 10, n. 12, 2022.

HABIB, A. M.; MOURAD, N. The Influence of Environmental, Social, and Governance (ESG) Practices on US Firms' Performance: Evidence from the Coronavirus Crisis. **Journal of the Knowledge Economy**, 2023.

HANAYSHA, J. R.; AL-SHAIKH, M. E. An Examination of Entrepreneurial Marketing Dimensions and Firm Performance in Small and Medium Enterprises. **Sustainability (Switzerland)**, v. 14, n. 18, 2022.

HUANG, D. Z. X. Environmental, social and governance (ESG) activity and firm performance: a review and consolidation. **Accounting & Finance**, v. 61, n. 1, p. 335–360, 12 mar. 2021.

JENSEN, M. C.; MECKLING, W. H. Theory of the firm: Managerial behavior, agency costs and ownership structure. **Journal of Financial Economics**, v. 3, n. 4, p. 305–360, out. 1976.

JUNG, Y. L.; YOO, H. S. Environmental, social, and governance activities and firm performance: Global evidence and the moderating effect of market competition. **Corporate Social Responsibility and Environmental Management**, v. 30, n. 6, p. 2830–2839, 2023.

KHAN, M. A. **ESG disclosure and Firm performance: A bibliometric and meta analysisResearch in International Business and Finance**Elsevier Ltd, , 1 out. 2022.

KHANCHEL, I.; LASSOUED, N.; BACCAR, I. Sustainability and firm performance: the role of environmental, social and governance disclosure and green innovation. **Management Decision**, v. 61, n. 9, p. 2720–2739, 2023.

KHANDELWAL, V.; SHARMA, P.; CHOTIA, V. ESG Disclosure and Firm Performance: An Asset-Pricing Approach. **Risks**, v. 11, n. 6, 2023.

LEE, M. T.; RASCHKE, R. L.; KRISHEN, A. S. Understanding ESG scores and firm performance: Are high-performing firms E, S, and G-balanced? **Technological Forecasting and Social Change**, v. 195, 2023.

LI, X.; VERMEULEN, F. HIGH RISK, LOW RETURN (AND VICE VERSA): THE EFFECT OF PRODUCT INNOVATION ON FIRM PERFORMANCE IN A TRANSITION ECONOMY. **ACADEMY OF MANAGEMENT JOURNAL**, v. 64, n. 5, p. 1383–1418, out. 2021.

LUNAWAT, A.; LUNAWAT, D. Do Environmental, Social, and Governance Performance Impact Firm Performance? Evidence from Indian Firms. **Indonesian Journal of Sustainability Accounting and Management**, v. 6, n. 1, 27 jun. 2022.

MAJI, S. G.; LOHIA, P. Environmental, social and governance (ESG) performance and firm performance in India. **Society and Business Review**, v. 18, n. 1, p. 175–194, 2023.

MALIK, N.; KASHIRAMKA, S. "Impact of ESG disclosure on firm performance and cost of debt: Empirical evidence from India". **Journal of Cleaner Production**, v. 448, 2024.

MARKOVITCH, D. G.; HUANG, D.; YE, P. Marketing intensity and firm performance: Contrasting the insights based on actual marketing expenditure and its SG&A proxy. **Journal of Business Research**, v. 118, p. 223–239, 2020.

MARQUES, A.; PASCARU, O. Voluntary Gender Diversity Targets and Their Impact on Firm Performance and Firm Value. **JOURNAL OF INTERNATIONAL ACCOUNTING RESEARCH**, v. 22, n. 3, p. 157–173, 2023.

MARQUEZ-CARDENAS, V.; GONZALEZ-RUIZ, J. D.; DUQUE-GRISALES, E. Board gender diversity and firm performance: evidence from Latin America. **Journal of Sustainable Finance and Investment**, v. 12, n. 3, p. 785 – 808, 2022.

MENDIRATTA, A. *et al.* ESG Controversies and Firm Performance in India: The Moderating Impact of Government Effectiveness. **Global Business Review**, 2023.

MONTANI, F. *et al.* Managers' compassionate goals, innovation, and firm performance: an examination of mediating processes, and boundary conditions in small- and medium-sized enterprises. **R & D MANAGEMENT**, v. 53, n. 1, p. 97–114, jan. 2023.

NARULA, R. *et al.* ESG scores and firm performance- evidence from emerging market. **International Review of Economics and Finance**, v. 89, p. 1170–1184, 2024.

NASHIER, T.; GUPTA, A. Ownership Concentration and Firm Performance in India. **GLOBAL BUSINESS REVIEW**, v. 24, n. 2, p. 353–370, abr. 2023.

NGUYEN, D. T.; HOANG, T. G.; TRAN, H. G. Help or Hurt? The Impact of ESG on Firm Performance in S&P 500 Non-Financial Firms. **Australasian Accounting, Business and Finance Journal**, v. 16, n. 2, p. 91–102, 2022.

OCAK, M. Do females in audit firm governance affect firm performance? Findings from Turkey. **GENDER IN MANAGEMENT**, v. 36, n. 3, p. 386–409, abr. 2021.

ONODY, V. DA S. M. *et al.* Corruption and FDI in Brazil: Contesting the "Sand" or "Grease" Hypotheses. **Sustainability**, v. 14, n. 10, p. 6288, 21 maio 2022.

PENG, J.; QIN, Q.; TANG, T. The influence of marketing innovations on firm performance under different market environments: Evidence from china. **Sustainability (Switzerland)**, v. 13, n. 18, 2021.

PERSAKIS, A. The impact of climate policy uncertainty on ESG performance, carbon emission intensity and firm performance: evidence from Fortune 1000 firms. **Environment, Development and Sustainability**, 2023.

PHAM, T.-D. T.; LO, F.-Y. How does top management team diversity influence firm performance? A causal complexity analysis. **TECHNOLOGICAL FORECASTING AND SOCIAL CHANGE**, v. 186, n. B, jan. 2023.

PU, G. A non-linear assessment of ESG and firm performance relationship: evidence from China. **Economic Research-Ekonomska Istrazivanja**, v. 36, n. 1, 2023.

RAHMAN, H. U.; ZAHID, M.; AL-FARYAN, M. A. S. ESG and firm performance: The rarely explored moderation of sustainability strategy and top management commitment. **Journal of Cleaner Production**, v. 404, 2023.

SANAN, N. K.; JAISINGHANI, D.; YADAV, S. Corporate governance, firm performance, and business group affiliation: evidence from India. **Management Decision**, v. 59, n. 8, p. 1863 – 1876, 2019.

SCHLÖGL, C.; BORIC, S.; REICHMANN, G. Publication and citation patterns of Austrian researchers in operations research and other sub-disciplines of business administration as indexed in Web of Science and Scopus. **Central European Journal of Operations Research**, v. 32, n. 3, p. 711–736, 1 set. 2024.

SEMENOV, A. V; RANDRIANASOLO, A. Advertising intensity and firm performance: the influences of firm age and cultural communication styles. **International Marketing Review**, v. 40, n. 2, p. 265–289, 2023.

SHAHZAD, F. *et al.* Does intellectual capital efficiency explain corporate social responsibility engagement-firm performance relationship? Evidence from environmental, social and governance performance of US listed firms. **Borsa Istanbul Review**, v. 22, n. 2, p. 295–305, 2022.

SHAIKH, I. ENVIRONMENTAL, SOCIAL, AND GOVERNANCE (ESG) PRACTICE AND FIRM PERFORMANCE: AN INTERNATIONAL EVIDENCE. **Journal of Business Economics and Management**, v. 23, n. 1, p. 218–237, 2021.

SILVA LOKUWADUGE, C. S. DE; SILVA, K. M. DE. ESG Risk Disclosure and the Risk of Green Washing. **Australasian Business, Accounting and Finance Journal**, v. 16, n. 1, p. 146–159, 2022.

SINAGA, O. *et al.* The role of management accounting systems, energy efficiency and organizational innovation in driving competitive advantage and firm performance. **International Journal of Energy Economics and Policy**, v. 9, n. 3, p. 395 – 402, 2019.

SUCHMAN, M. C. Managing Legitimacy: Strategic and Institutional Approaches. **The Academy of Management Review**, v. 20, n. 3, p. 571, jul. 1995.

SUHERMAN *et al.* The Effect of Gender Diversity and the Business Expertise of Female Directors on Firm Performance: Evidence from the Indonesia Stock Exchange. **INTERNATIONAL JOURNAL OF BUSINESS**, v. 26, n. 3, p. 38–52, 2021.

SUSANTO, A.; MEIRYANI. The impact of environmental accounting information system alignment on firm performance and environmental performance: a case of small and medium enterprises s of Indonesia. **International Journal of Energy Economics and Policy**, v. 9, n. 2, p. 229 – 236, 2019.

TEMPLIER, M.; PARÉ, G. A framework for guiding and evaluating literature reviews. **Communications of the Association for Information Systems**, v. 37, p. 112–137, 2015.

TRAN, V. T. *et al.* Factor affecting the implementation of responsibility accounting on firm performance - Empirical analysis of listed textile firms. **COGENT BUSINESS & MANAGEMENT**, v. 9, n. 1, dez. 2022.

ULLAH, Z. Sustainable product attributes and firm performance: The moderating role of marketing resource intensity. **Business Strategy and the Environment**, v. 30, n. 8, p. 4107–4120, 2021.

VEERAVEL, V.; MURUGESAN, V. P.; NARAYANAMURTHY, V. Does ESG disclosure really influence the firm performance? Evidence from India. **Quarterly Review of Economics and Finance**, v. 95, p. 193–202, 2024.

VEERAVEL, V.; SADHARMA, E. K. S.; KAMAIAH, B. Do ESG disclosures lead to superior firm performance? A method of moments panel quantile regression approach. **Corporate Social Responsibility and Environmental Management**, v. 31, n. 1, p. 741–754, 2024.

WALTON, R.; TRIBBITT, M. A. Examining the impact of gender power and gender diversity within the top management team on firm performance and firm risk. **AMERICAN JOURNAL OF BUSINESS**, v. 38, n. 1, p. 22–37, mar. 2023.

WEI, F. *et al.* How Do Innovation Types and Collaborative Modes Drive Firm Performance? An FsQCA Analysis Based on Evidence From Software Ecosystems. **IEEE TRANSACTIONS ON ENGINEERING MANAGEMENT**, v. 69, n. 6, p. 3648–3659, dez. 2022.

WU, Z. *et al.* The Impact of Digital Economy on Firm Performance: Evidence from China. **EMERGING MARKETS FINANCE AND TRADE**, v. 60, n. 7, p. 1407–1431, maio 2024.

XIONG, Z.; WANG, P.; ZHAO, Y. RE-INNOVATION FROM FAILURE, INSTITUTIONAL ENVIRONMENTAL DIFFERENCES, AND FIRM PERFORMANCE: EVIDENCE FROM CHINA. **AMFITEATRU ECONOMIC**, v. 22, n. 53, p. 197–219, fev. 2020.

XIONG-FENG, P.; JING, Z.; XIN-NAN, K. Research on influence effect of R&D expenditure structure on firm performance: An analysis based on the panel data of China listed companies; [R&D 经费支出结构对企业绩效的影响效应研究： 基于中国上市公司的面板数据分析]. **Journal of Industrial Engineering and Engineering Management**, v. 33, n. 3, p. 47 – 51, 2019.