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A Meta-Analysis of ESG Disclosure and Company's Economic Performance

Adrian BANCU*
Bucharest University of Economic Studies, Bucharest, Romania
**Corresponding author, bancuemil17@stud.ase.ro*

Abstract. *The growing concern of all UN member states to respond to global challenges, such as ending poverty, developing the health and educational systems, economic growth, reducing the impact of climate change, and preserving oceans and forests, has made ESG disclosure a necessity for companies. This study intends to analyze the relationship between ESG disclosure and company's performance. The overall company's performance was evaluated based on the corporate sustainability performance (CSP) framework, namely economic, environmental, and social (EES) performance. A sample of 80 articles taken from the Web of Science and Scopus databases, published in 50 journals, and reporting 742 effects, was relevant to meta-analyses the correlation between ESG disclosure and company's economic performance. The results support the positive correlation between ESG disclosure and company's economic performance. ESG disclosure is for more than just transparently reporting relevant ESG information, but also contributes to the consolidation of better economic performance through the degree of efficiency and effectiveness of the economic strategies of the business. In terms of practical implications, management of companies should consider ESG information disclosure through a long-term management strategy. These findings being timely especially in the case of companies for which no legislative constraints for ESG disclosure.*

Keywords: ESG Disclosure, Corporate Sustainability Performance (CSP), EES performance, Company's Economic Performance, meta-analysis, correlation coefficients.

Introduction

The interest shown by all UN member states since 1999, during the WEF held in Davos (Pollman, 2022), until most recently, when it was adopted the 2030 Agenda at the UN Sustainable Development Summit held in New York in 2015 regarding the 17 SDGs (UN, 2015), led international organizations, such as the GRI, to support ESG disclosure guidelines (Pollman, 2022). According to other research, analysis of ESG disclosure regarding companies' ability to transparently report their relevant ESG information (Pollman, 2022; Alsayegh et al., 2020; Jitmaneeroj, 2016), is performed in correlation with company's performance, evaluated based on the CSP framework (Ali & Jadoon, 2022; Alsayegh et al., 2020).

In line with Khlif and Chalmers (2015), who highlight integrated reporting as an emerging research area for meta-analysis, this study focused on the application of their findings considering ESG disclosure. The objective of this study was to explore the theoretical and practical implications of ESG disclosure in correlation with overall company's performance. Considering the CSP framework, three research hypotheses were developed to investigate the relationship between ESG disclosure and company's economic performance (RH_1), environmental performance (RH_2), and social performance (RH_3) respectively.

This research is based on a sample of 241 eligible articles that were content analyzed. Out of these, only 80 articles published in 50 journals and reporting 742 effects were found to be relevant for the meta-analysis of the investigated relationship between ESG disclosure and

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company's performance. To conduct the meta-analysis with correlation coefficients as effect size measures, IBM SPSS Statistics was used. .

On the one hand, the results support the positive correlation of ESG disclosure on company's economic performance. This conveys to companies that information disclosure on ESG is for more than just transparently reporting relevant ESG information, but also contributes to the consolidation of better economic performance. Accounting-based measures of company's economic performance and key company's economic performance indicators, which were also positively associated with ESG disclosure, contributed to these results. On the other hand, the findings reveal that research hypotheses regarding the relationships between ESG disclosure and company's environmental performance and company's social performance respectively cannot be validated or invalidated by this study. These results were supported by the fact that no relevant units of measurement were identified in this study for investigating the relationships.

This study contributes to the literature in the field by developing meta-analytic findings on the relationship between ESG disclosure and company's economic performance. In addition, this study outlines future research directions for academic area and practical implications for business.

This paper is structured as follows. After the Introduction, the literature review argues for research hypotheses development in Section 2. Next, Section 3 presents the sample selection process, literature coding, and meta-analysis approach, with the results of meta-analysis discussed in Section 4. Finally, Section 5 presents the study's conclusions, research limitations, and future research directions.

Literature review

ESG disclosure went through multiple stages in the process of international application in corporate reporting. According to Pollman (2022), the key moment in supporting the need for ESG information disclosure is associated with the World Economic Forum (WEF) held in Davos in 1999, when all UN member states and businesses were urged to support a sustainable global economy. In line with WEF appreciation, the Global Reporting Initiative (GRI) stands out as the first organization that offers companies guidelines on ESG information disclosure since the 2000s.

After a decade and a half, all 193 member states adopted the 2030 Agenda at the UN Sustainable Development Summit held in New York in 2015. Member states consider 17 Sustainable Development Goals (SDGs) to be applied by governments and companies, all contributing to global challenges, such as ending poverty, developing the health and educational systems, economic growth, reducing the impact of climate change, and preserving oceans and forests (UN, 2015). According to Barta et al. (2023), Huang (2023), and Kostoska and Kocarev (2019), the 17 SDGs are divided into ESG disclosure components, namely environment, social, and governance.

Broadly speaking, ESG disclosure refers to companies' ability to transparently report their relevant ESG information. The first component, the Environmental Pillar disclosure, includes the measures of the company's of resource use, emissions, pollution, waste, biodiversity, climate challenges facing the company, and innovation with environmental impact. The Social Pillar disclosure focuses on workforce, product responsibility, human rights, and community, which suggests the need for information disclosure related to employee diversity, career development, working conditions, health and safety at work, as well as maintaining responsibility in production through quality and responsible marketing, protecting human rights and respecting the community of which the company is a part. Furthermore, the Governance Pillar disclosure covers strategic and

tactical information about the structure and compensation of management, CSR strategy, or shareholder rights (Pollman, 2022; Alsayegh et al., 2020; Jitmaneeroj, 2016).

Corporate sustainability is understood as an appropriation of present consumption activities that do not affect the possibility of future generations to fulfill their own needs considering economic, environmental, and social concerns (Ali & Jadoon, 2022). According to Ali and Jadoon (2022) and Alsayegh et al. (2020), the overall company's performance is evaluated based on the corporate sustainability performance (CSP) framework (economic, environmental, and social; EES). In addition to ESG disclosure which boils down to companies' level of transparency, the CSP framework relies on companies' ability to incorporate EES performance into their business strategy, in line with the corporate sustainability objective (Rahi et al., 2023; Ali & Jadoon, 2022; Alsayegh et al., 2020). From this perspective, the EES performance of a company aims at developing strategies regarding the company's economic stability, reducing the impact on the environment, or aligning strategic objectives with social ones (Alsayegh et al., 2020).

On the one hand, considering country-level factors, Rahi et al. (2023) investigate the influence of CSP on some institutional factors, such as the Worldwide Governance Indicators. Their main results show positive relationships between CSP and institutional quality in the European context for the period 2015-2020. Instead, other authors focus on the analysis of company-level factors. For instance, Ali & Jadoon (2022) highlight the association between CSP and company's value, and Alsayegh et al. (2020) analyze the relationship between CSP and ESG disclosure of companies in Asia. The authors' results show a positive relationship between the company's market value and CSP for a sample of companies from industrial groups (Ali & Jadoon, 2022). Furthermore, Alsayegh et al. (2020) show, in the context of Asian companies for the period 2005-2017, that ESG disclosure is positively associated with CSP, namely with each element of EES performance.

From a meta-analytic perspective, investigations are focused on reviewing the accounting literature (Khlif & Chalmers, 2015), or meta-analyzing the relationships between environmental sustainability practices and firm performance (Nogueira et al., 2023), sustainable supply chain management and firm performance (Wang et al., 2023), ESG disclosure and firm performance Khan (2022).

This paper endeavors to expand knowledge about the relationship between ESG disclosure and company's performance from a meta-analytical perspective, with a focus on all components of the CSP framework, namely EES performance. Thus, the research question is proposed as follows:

RQ. **How does ESG disclosure influence corporate sustainability performance (CSP)?**

In line with the three components of CSP, namely EES performance used by Ali and Jadoon (2022) and Alsayegh et al. (2020), the following research hypotheses are developed:

RH_1. There is a significant positive correlation between ESG disclosure and company's economic performance.

RH_2. There is a significant positive correlation between ESG disclosure and company's environmental performance.

RH_3. There is a significant positive correlation between ESG disclosure and company's social performance.

Methodology

The relationship between ESG disclosure and company's performance is investigated by meta-analysing the literature in the field. Field and Gillett (2010) mention several purposes of using meta-analysis research method such as studying mean and variance of effects in the population, reporting variability in effects across studies to characterize distribution of effect sizes, and exploring variability in effect sizes through moderator variables. Khlif and Chalmers (2015) analyze the use of meta-analysis in accounting research (auditing, corporate governance, financial reporting, management accounting, miscellaneous) in the period 1985-2014 and find an increasing trend. In addition, they appreciate the scarcity of meta-analytic reviews in the field of management accounting and taxation, but also identify the integrated reporting as an emerging research area for meta-analysis.

The relevant articles for this research were identified and collected from the Web of Science (WOS) and Scopus databases. Khan (2022) who analyses ESG disclosure and firm performance and Nogueira et al. (2023) focusing on environmental sustainability practices and firm performance have used the same databases to conduct their meta-analytic studies.

Sample selection process

Selection of sample for the meta-analysis is based on four steps. First, all articles from WOS and Scopus databases were selected based on specific keywords: "performance" and "Environmental, Social, and Governance" or "performance" and "ESG". Searching for mentioned keywords is conducted for each article included in the sample, looking over title, article's keywords and abstract. This first stage is completed by several restrictions: Language = English, Document Type (WOS) = Article / Article; Book Chapter, Document Type (Scopus) = Article / Book / Book Chapter. The extraction was performed on October 29, 2023, without any time limitation.

Second, articles published in both databases were identified, then duplicates were removed and the total number of unique articles was established. This step was performed using Microsoft Excel, then the remaining articles were manually checked to ensure sampled paper uniqueness.

Third, articles' abstracts were analyzed by considering four relevant criteria for the research question: (1) to refer to *ESG disclosure* ("Environmental, Social, and Governance" or "ESG"), (2) to measure *company's performance* ("financial performance" or "economic performance" or "environmental performance" or "social performance" or "company performance" or "company's performance" or "performance of companies" or "companies' performance" or "firm performance"), (3) to address *sustainability reporting* ("report*" or "reporting" or "disclosure*" or "evaluation*" or "assessment*"), and (4) to look for *relationship between ESG disclosure and company's performance* ("relationship" or "relations" "correlation*" or "associat*" or "effect*" or "impact*" or "influence*"). Words marked with an asterisk (*) show that all the forms found were considered in making the selection of sampled articles. Each sampled paper must include at least one keyword for each criterion, if not, they were excluded. Articles excluded in the stage of abstract analysis are rather conceptual, qualitative, or irrelevant to the research question.

Finally, selection of the sample ended by excluding articles without full-text access. For the reaming articles, a content analysis is undertaken. Papers with no measures provided for the measurement of specific relationship between ESG disclosure and performance of companies or those that did not contain data on correlation between main variables were also excluded. *Figure 1* shows the process of selecting the sampled articles.

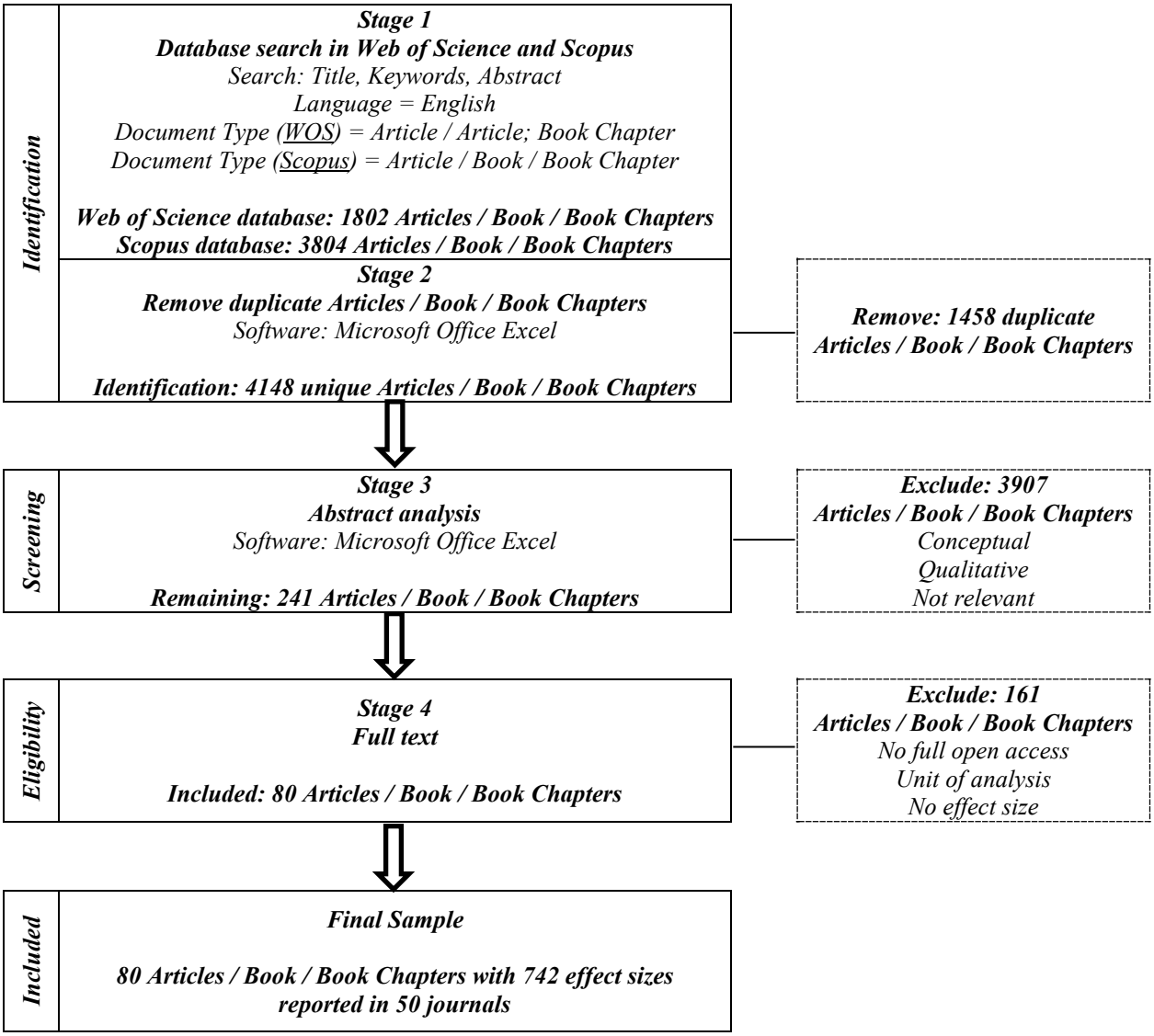

Figure 1. Sampling process

Source: Author's own research results.

Considering the relationship between ESG disclosure and company's performance, 241 eligible articles were content analyzed. In the fourth stage of papers` eligibility, 39 were excluded because of no full-text access and 122 were found irrelevant to meta-analysing the correlation between ESG disclosure and company's performance. Thus, a sample of 80 articles published in 50 journals and reporting 742 effects was found in the case of the relationship between ESG disclosure and company's performance.

Literature coding

To explore the relationship between ESG disclosure and company's performance, ESG disclosure and CSP were considered, with a focus on all components of the CSP framework, namely economic, environmental, and social (EES) performance (Alsayegh et al., 2020; Jitmaneeroj, 2016). Firstly, ESG disclosure was measured considering a dummy variable (1 if ESG information is disclose, and 0 otherwise), as well as ESG scores provided by Refinitiv Eikon, Bloomberg, and

Compustat databases (Khan, 2022) showing the level of ESG information disclosure. Secondly, the selection of relevant units of measurement for the company's economic performance focused on the efficiency and effectiveness of the economic strategies of the business, targeting the financial indicators from the accounting statements, market measures, or key indicators. The company's environmental performance was measured in terms of the efficiency and effectiveness of its ecological footprint, water footprint, and carbon footprint. In addition, the company's social performance was based on measures quantifying the level of support given to communities or employees, as well as investments in workplace health and safety, professional support, and social balance (Alsayegh et al., 2020).

However, some relevant units of measurement were identified for the relationship between ESG disclosure and company's economic performance across the 241 eligible articles (RH_1). Regarding RH_2 and RH_3, no relevant units of measurement were identified for the relationship between ESG disclosure and company's environmental performance, respectively the relationship between ESG disclosure and company's social performance across the 241 eligible articles. This result prompted the continuation of this study considering the potential correlation between ESG disclosure and company's economic performance.

Wang et al. (2023) use firm performance consisting of operational, economic, environmental, social, and innovation performance, while Nogueira et al. (2023) combine accounting, market, cost, and operational-based measures of performance to analyze firm performance. Accordingly, the relevant measures for the meta-analysis conducted to investigate the relationship between ESG disclosure and company's economic performance are shown in *Table 1*. Articles with no units of measurement specific to the relationship were excluded in the fourth stage of the sampling process.

Table 1. Measures for meta-analysis

Constructs	Representative measures
Panel A: Measures of ESG disclosure	
ESG disclosure	Environmental, Social, Governance, or ESG Dummy (0/1); Environmental, Social, Governance, or ESG Disclosure; Environmental, Social, Governance, or ESG Score (0-100); other similar measures
Panel B: Measures of the company's economic performance	
Accounting-based measures of company's economic performance	Return on Assets; Return on Equity; Return on Capital; Leverage; Cash flow; Liquidity; Profitability; Sales; Costs; Earnings Before Interest and Taxes; Assets; Liability; Equity; other similar measures
Market-based measures of company's economic performance	Tobin Q; Market to book value; Excess stock market returns; Free float as a percentage of shares; other similar measures
Key company's economic performance indicators	Number of employees; Research and development expenditure; Sustainable tax strategies; Economic Value Added; other similar measures

Source: Author's own research results.

A coding manual to record the description of eligible articles (e.g., authors, journal, year of publication) and statistics information (e.g., type of performance, type of measures) was developed. *Appendix 1* shows the coding manual with all 80 articles used to investigate the relationship between ESG disclosure and company's economic performance.

Meta-analysis approach

A meta-analysis with random effects was applied to assess correlations between measures of ESG disclosure and those of the company's economic performance. The sampled articles have different randomly distributed sources of variability (Sen & Yildirim, 2022), such as individual samples of companies of different sizes, industries, countries, or different economic levels, all justified the use of random effects. Meta-analyses with random effects are also applied by Nogueira et al. (2023), Wang et al. (2023), or Khan (2022).

To counter the different scales used in the various articles, the selection of the type of effect size for the investigated relationship between ESG disclosure and company's economic performance fell on correlation coefficients (Pearson, Spearman, Pairwise, or other correlation coefficients). Articles with no correlation coefficients specific to the relationship were excluded in the fourth stage of the sampling process.

Field and Gillett (2010) outline several methods to perform meta-analysis using correlation coefficients, but Sen & Yildirim (2022) present the latest methods of performing a meta-analysis using IBM SPSS Statistics with Version 28 (SPSS28), software that was also used in this research.

Before running the meta-analysis in IBM SPSS Statistics software, Sen & Yildirim (2022) appreciate the need to adjust correlation coefficients due to their dependency on their own variance. Thus, they present the adjustment method with Fisher's z-value, as follows:

$$z_i = \frac{1}{2} \ln\left(\frac{1+r_i}{1-r_i}\right),$$

where z_i is Fisher's z-value for each effect and r_i is Pearson (Spearman, Pairwise, or other correlation coefficient) correlation coefficient value for each effect. In addition, the variance of Fisher's z-value can be calculated as:

$$vz_i = \frac{1}{n_i - 3},$$

where vz_i is the variance of Fisher's z-value for each effect and n_i represents the number of observations for each effect. After calculating Fisher's z-value (z_i) and variance (vz_i) for all effects, Sen & Yildirim (2022) consider that the information are sufficient to obtain the mean effect size in Fisher's z-value (z) using IBM SPSS Statistics. However, to interpret mean effect size, needs to retransform the z-value into correlation coefficients. This is the meta-analysis correlation coefficient and is calculated, as follows:

$$\mathrm{r} = \frac{e^{2z} - 1}{e^{2z} + 1},$$

where r is the meta-analysis correlation coefficient and z is the mean effect size in Fisher's z-value.

Among the main challenges of conducting a meta-analysis are potential and publication biases. First, potential bias focuses on subjective judgment of the researcher who analyses the eligible articles for content (Wang et al., 2023). For this study, the selection stage of 80 articles published in 50 journals and reporting 742 effects, as well as the selection of measures for the analysis of the relationship between ESG disclosure and company's economic performance, can be assumed to have been biased. Regarding publication bias, it is assumed that most of the time, articles with significant results are published, thus resulting in a gap (Sen & Yildirim, 2022; Khlif & Chalmers, 2015; Field & Gillett, 2010). These biases are managed by involving more researchers in the analysis of articles and including additional analyses of publication bias.

The limitations of the meta-analysis approach with random effects are related to the fact that the findings provided by the application of this methodology are mean results. This must be used

with caution in contextual assessments, such as at the level of a sample of companies in a country, over a certain period, for certain industries and company sizes, or in a crisis context.

Results and discussions

According to the identified units of measurement, the relationship between ESG disclosure and company's economic performance was investigated, being the main meta-analytic model. In addition, by grouping the units of measurement specific to company's economic performance into measures based on accounting, market, or other key indicators, three other secondary meta-analytical models were developed.

Table 2 shows the results of the meta-analysis for all four models developed to investigate the relationship between ESG disclosure and company's economic performance.

Table 2. Results of random-effects models

Models	Model 1	Model 2	Model 3	Model 4
Performance	**Overall effect on Company's economic performance**	**Effect on Accounting-based measures of company's economic performance**	**Effect on Market-based measures of company's economic performance**	**Effect on Key company's economic performance indicators**
n	80	77	41	20
N	1658622	1052264	303821	302537
K	742	528	133	81
z	0.047	0.039	0.027	0.125
r	0.047	0.039	0.027	0.124
95% CI lower limit	0.031	0.022	-0.015	0.074
95% CI upper limit	0.062	0.055	0.069	0.174
Z statistic	6.018 (p value <0.001)	4.633 (p value <0.001)	1.250 (p value =0.211)	4.792 (p value <0.001)
Q: Chi-square	70912.297 (p value <0.001)	21491.005 (p value <0.001)	19567.490 (p value <0.001)	21868.737 (p value <0.001)
T: Tau-squared	0.042	0.035	0.058	0.053
H: H-squared	93.371	69.247	129.532	194.157
I^2: I-squared	98.90	98.60	99.20	99.50

Source: Author's own research results.

Notes: n is the sample size of eligible studies included in the final sample; N is the total number of observations; K is the number of total effects; z is Fisher's z-value; r is the meta-analysis correlation coefficient; CI is the confidence interval; Z shows statistics to check the significance; Q, T, H, and I^2 are values to determine the heterogeneity.

Model 1 shows the results of the meta-analysis conducted across the 80 articles with 742 effects and the sample of 1658622 observations for all effects, which examines the correlation between ESG disclosure and company's economic performance. The mean effect size is 0.047, which indicates that companies on ESG information disclosure tend to have on average, a higher level of economic performance (positive relationship). The 95% confidence interval for this correlation ranges from 0.031 to 0.062. This estimate was found to be statistically significant (Z value is 6.018, p-value <0.001). Regarding homogeneity analysis, Q-statistics value was found to be 70912.297 (p-value <0.001), while Tau-squared value and H-squared value were found to be 0.042, and 93.371, respectively. I-squared has a value of 98.90, representing 98.90% of the variance in observed effects reflecting the variance in true effects rather than sampling error. As a result, the sampled studies show significant heterogeneity, which validates the choice for random effects and

requires moderator analysis for the generalizability of the findings without any limitation related to the mean results provided by the application of meta-analysis. The heterogeneity found was explained by the diversity of the 80 articles that have different individual samples of companies of different sizes, industries, countries, or different economic levels. In addition, other justifications may be the use of different databases or the use of samples of companies listed on different stock exchanges. The positive correlation between ESG disclosure and company's economic performance varies from one population to another, but likely falls within the prediction interval of 0.031 to 0.062 for any single population. Therefore, these results support the positive correlation between the level of ESG information disclosure and the degree of efficiency and effectiveness of the economic strategies of the business that determine the company's economic performance. Other authors conclude different meta-analytic influences. Nogueira et al. (2023) evidence a positive relationship between environmental sustainability practices and company's economic performance, and Wang et al. (2023) present the positive influence of sustainable supply chain management on company's economic performance.

In turn, *Model 2* presents the results of the meta-analysis conducted across the 77 articles with 528 effects from a total sample of 1052264 observations for all effects, which observes the correlation between ESG disclosure and accounting-based measures of company's economic performance. The mean effect size is 0.039, which indicates that, on average, companies that report on ESG information disclosure tend to have a higher level of economic performance by accounting measures (positive relationship). The 95% confidence interval for this correlation ranges from 0.022 to 0.055. This estimate was found to be statistically significant (Z value is 4.633, p-value <0.001). These results support the positive correlation between the level of ESG information disclosure and the degree of efficiency and effectiveness of the economic strategies of the business based on financial indicators from the accounting statements. This positive correlation varies from one population to another, but likely a high level of ESG disclosure tends to increase rates of return, leverage, cash flow, liquidity, profitability, or other similar accounting-based measures. Similar results were obtained by Nogueira et al. (2023) who analyzed environmental sustainability practices in relation to accounting-based measures of company's economic performance.

Model 3 shows the investigation carried out on the correlation between ESG disclosure and market-based measures of company's economic performance. It has 41 articles with 133 effects, representing a sample of 303821 observations for all effects. The mean effect size has a value of 0.027 with a confidence interval between -0.015 and 0.069. The Z value, with a p-value of 0.211, is 1.250, which does not support the statistical significance of the model. From this perspective, the findings highlight that a high level of ESG disclosure likely does not lead to an increase in market-based measures of company's economic performance, such as Tobin Q, market to book value, excess stock market returns, free float as a percentage of shares, or other similar measures. These statistically insignificant results can be attributed to the fact that ESG disclosure in the case of listed companies is a necessity imposed by the stock exchanges and not a voluntary disclosure that can influence the economic strategies of the business. Opposite results were obtained by Nogueira et al. (2023) and Khan (2022) who analyze environmental sustainability practices, respectively ESG disclosure in relation to market-based measures of company's economic performance, highlighting statistically significant positive relationships.

Finally, *Model 4* shows the results of the meta-analysis conducted across the 20 articles with 81 effects and the sample of 302537 observations for all effects, which examines the correlation between ESG disclosure and performance based on key economic measures. The mean effect size is 0.124, which indicates that, on average, companies that report on ESG information

disclosure tend to have a higher level of performance based on key economic measures (positive relationship). The 95% confidence interval for this correlation ranges from 0.074 to 0.174. This estimate was found to be statistically significant (Z value is 4.792, p-value <0.001). Similar to *Model 2*, these results support the positive correlation between the level of ESG disclosure and the degree of efficiency and effectiveness of the economic strategies of the business based on key economic performance indicators. These findings highlight that likely a high level of ESG disclosure tends to increase key company's economic performance indicators, such as number of employees, research and development expenditure, sustainable tax strategies, or other similar measures.

According to Sen and Yildirim (2022), Khlif and Chalmers (2015), and Field and Gillett (2010) analysis of publication bias is a necessary investigation to assess the relevance of the meta-analytic effect size. Clustering of the effects of eligible articles around the midline (meta-analytic effect size) shows no publication bias. *Figure 2* shows the publication bias analysis for the validity of the results through a funnel plot.

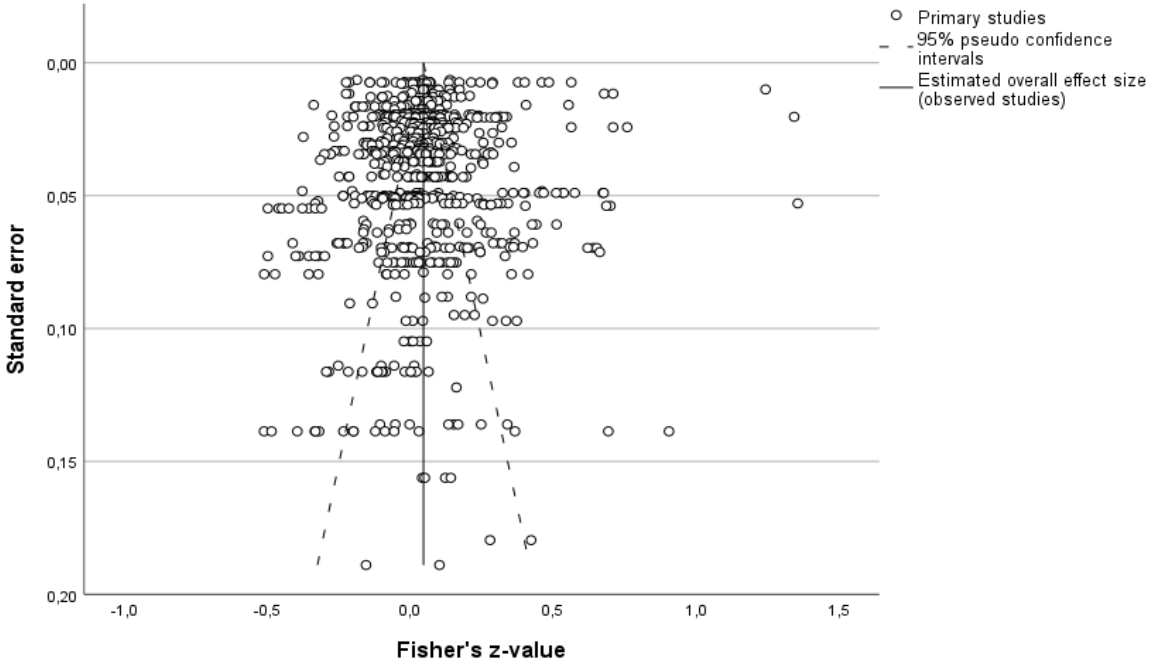

Figure 2. Funnel Plot of Standard Error by Fisher's z-value

Source: Author's own research results.

The effect values of Fisher's z-value in the funnel plot were, in most cases, concentrated at the top and distributed at both ends of the midline. These results showed that can assume that there is no publication bias. Similar results were obtained by Wang et al. (2023). They highlight that there is no publication bias in their study of sustainable supply chain management and firm performance using the funnel plot.

Conclusion

The meta-analysing of ESG information disclosure in association with company's performance, with a focus on the CSP framework has proven to be a method of interest for accounting research in the field of integrated reporting, similar to Khlif and Chalmers (2015). A sample of 241 eligible

articles were analyzed for content. Of these, 80 articles published in 50 journals and reporting 742 effects were relevant for the meta-analysis of ESG disclosure and company's performance. Investigating the relationship between ESG disclosure and company's performance was based correlation coefficients using IBM SPSS Statistics.

First, no relevant units of measurement were identified in this study for investigating the relationships between ESG disclosure and company's environmental performance and company's social performance respectively across the 241 eligible articles. This result led to the assessment that the two research hypotheses, RH_2 and RH_3, cannot be validated or invalidated by this study. For these reasons, this study focused on investigating the relationship between ESG disclosure and company's economic performance (RH_1), by grouping specific measures of company's economic performance into measures based on accounting, market, or other key indicators.

The results support the RH_1 and affirm the positive correlation of ESG disclosure on company's economic performance. More specifically and concerning overall economic performance, that is, the aggregate consideration of the different units of measurement of company's economic performance, it appears that the influence of ESG information disclosure is positive and results in the improvement of the economic performance by companies. This conveys to companies that information disclosure on ESG is for more than just transparently reporting relevant ESG information, but also contributes to the consolidation of a better economic performance. Regarding the relationship between ESG disclosure and accounting-based measures of company's economic performance, it is concluded that the influence is positive, which strengthens previous findings and reinforces the need for companies to combine ESG objectives with accounting objectives. The results of the relationship between ESG disclosure and market-based measures of company's economic performance are not statistically significant, suggesting that the impact of these market-based measures is very low. Finally, it remains to analyze the results regarding the link between ESG disclosure and key company's economic performance indicators, which reinforce the previous notion that this overall relationship is positive.

The main practical contribution of this study relies on the fact that a high level of ESG disclosure is likely information to increase efficiency and effectiveness of business economic strategies based on financial indicators of accounting statements and key economic performance indicators. Thus, several practical implications can be drawn from this study. The most important practical implication is in relation to the management of companies. They should consider ESG information disclosure through a long-term management strategy of non-financial reporting. These managerial strategies should be applied especially in the case of companies for which there are no legislative constraints for ESG information disclosure.

This study was limited to a few analyses, while only one sustainability concept, ESG disclosure, was approached by correlating ESG disclosure with company's performance. Potential future research may include other keywords for the sample selection process, moderator analysis, or investigating multiple reporting frameworks in relation to CSP. Among these, the most important potential future research is related to moderator analysis which can lead to the consolidation of meta-analytic results and the study of heterogeneity. Among others, potential moderators can be considered: firm size, industry, country, economic level, article database, or journal reputation. In addition, analysis of potential and publication biases are also key aspects in validating the meta-analysis approach. These biases are opportune for potential future research through the formation of a research group in order to reduce the subjective judgment of the researcher and the development of article publication bias.

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Appendix

Appendix 1. Articles in meta-analysis

A_ID	Authors/Year	J	CSP	R
A001	Sichigea et al. (2020)	J46	Economic performance	A
A004	Ma & Yoo (2022)	J30	Economic performance	A, K
A007	Sachin & Rajesh (2022)	J13	Economic performance	A
A013	Ma & Chen (2023)	J44	Economic performance	A, M, K
A015	Manita et al. (2018)	J28	Economic performance	A, K
A017	Ng & Rezaee (2020)	J32	Economic performance	A, M, K
A018	Doni & Fiameni (2023)	J06	Economic performance	A, M
A020	Rath et al. (2020)	J18	Economic performance	A, M
A023	Alsayegh et al. (2020)	J46	Economic performance	A, K
A027	Garfatta (2021)	J29	Economic performance	A, M
A028	Nollet et al. (2016)	J11	Economic performance	A, M, K
A029	Ghardallou & Alessa (2022)	J46	Economic performance	A, M
A031	Alkaraan et al. (2022)	J49	Economic performance	A
A033	Baraibar-Diez & Odriozola (2019)	J46	Economic performance	A, K
A034	Fahad & Busru (2020)	J09	Economic performance	A
A036	Sharma et al. (2020)	J20	Economic performance	A, M, K
A038	Gutiérrez-Ponce et al. (2022)	J46	Economic performance	A
A048	Gutiérrez-Ponce & Wibowo (2023)	J46	Economic performance	A, M
A049	Gutiérrez-Ponce & Wibowo (2023)	J10	Economic performance	A, M
A050	Kumar & Firoz (2022)	J05	Economic performance	A, M
A055	Sciarelli et al. (2023)	J43	Economic performance	K
A056	Huang et al. (2023)	J42	Economic performance	A, K
A057	Kolsi et al. (2023)	J14	Economic performance	A
A058	Pulino et al. (2022)	J46	Economic performance	A, K
A063	Kimbrough et al. (2022)	J15	Economic performance	A, M
A064	Wieczorek-Kosmala et al. (2021)	J12	Economic performance	A
A067	Landi et al. (2022)	J10	Economic performance	A, K
A069	Sharma et al. (2022)	J25	Economic performance	A, M
A073	Wasiuzzaman et al. (2023)	J40	Economic performance	A
A074	Atan et al. (2016)	J21	Economic performance	K
A075	Kengkathran (2019)	J24	Economic performance	A
A076	Mohammad & Wasiuzzaman (2021)	J07	Economic performance	A, M
A077	Kweh et al. (2017)	J19	Economic performance	A, M
A078	Zainon et al. (2020)	J04	Economic performance	A
A083	Shaikh (2021)	J30	Economic performance	A, M
A089	Aevoae et al. (2023)	J02	Economic performance	A
A090	Mendiratta et al. (2023)	J16	Economic performance	A, K
A098	Alareeni & Hamdan (2020)	J09	Economic performance	A, M
A104	Moikwatlhai et al. (2019)	J45	Economic performance	A, M
A105	Narula et al. (2024)	J26	Economic performance	A, M
A107	Singh et al. (2022)	J17	Economic performance	A, M
A108	Singh et al. (2023)	J22	Economic performance	A, M
A114	Chouaibi et al. (2022)	J46	Economic performance	A
A115	Pinheiro et al. (2023)	J23	Economic performance	A
A118	Khalid et al. (2022)	J14	Economic performance	A
A119	Aqabna et al. (2023)	J46	Economic performance	A, M
A120	Aluchna et al. (2022)	J40	Economic performance	A
A128	Abdi et al. (2022)	J48	Economic performance	A, M

A132	Abdi et al. (2020)	J46	Economic performance	A, M
A133	Oprean-Stan et al. (2020)	J46	Economic performance	A, M
A134	Chen et al. (2022)	J31	Economic performance	A
A135	Dunne & McBrayer (2019)	J35	Economic performance	A, M
A141	Xiang & Birt (2021)	J01	Economic performance	A
A149	Grewal et al. (2019)	J38	Economic performance	A, M, K
A151	Ben Ali & Chouaibi (2023)	J09	Economic performance	A
A157	Shabbir et al. (2020)	J14	Economic performance	A, K
A161	Ma & Park (2021)	J46	Economic performance	A, M, K
A162	Makridou et al. (2023)	J23	Economic performance	A, M
A163	Ding & Tseng (2023)	J41	Economic performance	K
A167	Arayssi & Jizi (2023)	J27	Economic performance	A
A168	Garcia et al. (2017)	J31	Economic performance	A
A172	Yilmaz (2021)	J50	Economic performance	A
A173	Khanchel et al. (2023)	J37	Economic performance	A
A175	Yadav & Jain (2023)	J28	Economic performance	A, M
A181	Buallay et al. (2020)	J39	Economic performance	A, M
A189	Al Amosh et al. (2023)	J10	Economic performance	A
A191	Velte (2019)	J33	Economic performance	A, M
A194	Atif et al. (2022)	J06	Economic performance	A, K
A195	Chairani & Siregar (2021)	J40	Economic performance	A, M
A199	Giannopoulos et al. (2022)	J34	Economic performance	A, M
A202	Persakis (2023)	J13	Economic performance	A, M
A206	Chung et al. (2023)	J03	Economic performance	A
A207	Espinosa-Méndez et al. (2023)	J46	Economic performance	A, M
A209	Thomas et al. (2021)	J36	Economic performance	A, M
A215	Mooneeapen et al. (2022)	J47	Economic performance	A
A216	Al-ahdal et al. (2023)	J14	Economic performance	A, M
A219	Zahid et al. (2023)	J08	Economic performance	A, M
A222	Tunio et al. (2021)	J14	Economic performance	A, K
A238	Liu et al. (2022)	J46	Economic performance	A, M
A241	Arayssi et al. (2016)	J47	Economic performance	A, M

Source: Author's own research results.

A_ID: Article ID; **J**: Journal - J01. Accounting Research Journal, J02. Applied Economics, J03. Asian Review of Accounting, J04. Asia-Pacific Management Accounting Journal, J05. Australasian Accounting, Business and Finance Journal, J06. Business Strategy and the Environment, J07. Cleaner Environmental Systems, J08. Cogent Economics and Finance, J09. Corporate Governance (Bingley), J10. Corporate Social Responsibility and Environmental Management, J11. Economic Modelling, J12. Energies, J13. Environment, Development and Sustainability, J14. Environmental Science and Pollution Research, J15. European Accounting Review, J16. Global Business Review, J17. Indian Journal of Corporate Governance, J18. Indonesian Journal of Sustainability Accounting and Management, J19. Institutions and Economies, J20. International Journal of Disclosure and Governance, J21. International Journal of Economics and Management, J22. International Journal of Emerging Markets, J23. International Journal of Energy Sector Management, J24. International Journal of Engineering and Advanced Technology, J25. International Journal of Innovative Research and Scientific Studies, J26. International Review of Economics and Finance, J27. Journal of Accounting and Organizational Change, J28. Journal of Applied Accounting Research, J29. Journal of Asian Finance Economics and Business, J30. Journal of Business Economics and Management, J31. Journal of Cleaner

Production, J32. Journal of Corporate Finance, J33. Journal of Global Responsibility, J34. Journal of Risk and Financial Management, J35. Journal of Small Business Strategy, J36. Management and Accounting Review, J37. Management Decision, J38. Management Science, J39. Measuring Business Excellence, J40. Meditari Accountancy Research, J41. Nurture, J42. Research in International Business and Finance, J43. Social Responsibility Journal, J44. Society and Business Review, J45. Southern African Journal of Accountability and Auditing Research-Sajaar, J46. Sustainability, J47. Sustainability Accounting, Management and Policy Journal, J48. Sustainable Development, J49. Technological Forecasting and Social Change, J50. World Journal of Entrepreneurship, Management and Sustainable Development; **CSP**: Corporate Sustainability Performance framework-Economic performance (RH_1), Environmental performance (RH_2), or Social performance (RH_3); **R**: Relations regarding measures of the company's performance - A. Accounting-based measures of company's economic performance, M. Market-based measures of company's economic performance, K. Key company's economic performance indicators.