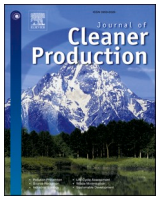
Journal of Cleaner Production 426 (2023) 139048

Contents lists available at ScienceDirect

Journal of Cleaner Production

journal homepage: www.elsevier.com/locate/jclepro



A meta-regression analysis of environmental sustainability practices and firm performance

Elisabete Nogueira [a,*], Sofia Gomes [a], João M. Lopes [b]

[a] Portucalense University, Research on Economics, Management and Information Technologies, REMIT, Rua Dr. António Bernardino Almeida, 541-619, P 4200-072, Porto, Portugal
[b] Miguel Torga Institute of Higher Education & NECE-UBI—Research Unit in Business Sciences, University of Beira Interior, Estrada Do Sineiro, S/n, 6200-209, Covilhã, Portugal

ARTICLE INFO

Handling Editor: Giovanni Baiocchi

Keywords:
Triple bottom line
Environmental dimension
Environmental sustainability practices
Performance
Environmental practices
Meta-regression

ABSTRACT

The growing concern with environmental protection has transformed companies' environmental responsibility into a tactical strategy to increase their competitiveness. The influence of environmental sustainability practices on companies' performance is on the agenda, and it is not consensual. This study intends to analyse the impact of the adoption of sustainable practices on the performance of companies. The heterogeneous results of 96 studies (taken from the Web of Science) were synthesized using meta-regression analyses, from which data on 339 effects were collected. Unlike previous studies that consider performance a one-dimensional construct, this study takes an original approach to performance. Effects were analysed on five different performance measures: (i) the overall performance, (ii) the accounting-based, (iii) the market-based, (iv) the economic-based and (v) the operational-based firm performance. Indirect effects were also explored. Environmental sustainability practices positively influence the five performance measures, even if environmental preservation is not the only motivation for their implementation. The study reinforces the idea that it is profitable for companies to be green. The environmental pressures of stakeholders must be seen as opportunities and contribute to improving the multiple aspects of competitiveness. To accommodate environmental concerns, business ethics must be updated.

1. Introduction

The escalating public concern for preserving and enhancing the natural environment has transformed environmental responsibility into a fresh tactical approach to improve the competitiveness of organizations (Ammer et al., 2020; Larran Jorge et al., 2015). Every day, the importance of implementing eco-friendly business methods grows (D'Souza et al., 2022; Mitra, 2022), and companies are under increasing pressure to communicate their progress towards sustainable development (Subramaniam et al., 2023). Pressures to innovate play a key role in the firm's survival and contribute to sustainability and cleaner production processes (Paruzel et al., 2023). However, for a long time, there have been opposing views on environmental protection and economic development (Peng et al., 2020). The basis of the performance of all companies is the adoption of a management strategy that can help growth, the efficient use of resources and the incorporation of steps that lead companies to sustainability (Y. Ali et al., 2021). The performance of companies must be evaluated in light of the triple bottom line (TBL) (Elkington, 1997, 2006). Performance evaluation can be either objective or subjective, and it can consider both financial and non-financial elements (Kanzari et al., 2022). Accounting-based metrics are ratios that represent the most common standard measures of financial performance found in research (Brealey et al., 2020). In addition to accounting metrics, numerous studies assess companies' performance based on a market-based perspective (such as Tobin's Q) (Gull et al., 2022; Rahman et al., 2021, 2023). Some studies examining the effects of companies' environmental performance on accounting or market-based performance measures have had mixed results (Iwata and Okada, 2011; Lewandowski, 2017; Palea and Santhià, 2022). The research by Annunziata et al. (2018) reveals a clear connection between the implementation of environmental responsibility within organizations and economic performance. Which is a cost-effective measure (Park et al., 2022). Due to their significant impact, it is imperative to investigate the influence of green practices on operational performance (Salandri et al., 2022). His relationship has already identified positive outcomes (De Giovanni, 2022; Santander et al., 2020).

* Corresponding author.
E-mail addresses: elisabete.s.nogueira@gmail.com (E. Nogueira), sofiag@upt.pt (S. Gomes), joao.lopes.1987@gmail.com (J.M. Lopes).

https://doi.org/10.1016/j.jclepro.2023.139048
Received 9 May 2023; Received in revised form 26 July 2023; Accepted 25 September 2023
Available online 6 October 2023

The role of the environmental dimension of TBL needs to be further explored (Nogueira et al., 2022). The connection between adopting environmental sustainability practices and companies' performance is still unclear (Yaw Agyabeng-Mensah et al., 2020a; 2020b; Li et al., 2017). The previous literature on the nexus between environmental sustainability and performance is scarce (Khan et al., 2021). Just as there are few studies that examine complementary or alternative measures of performance (Barth et al., 2023; Lee and Kwon, 2019). The expansion of measures of firm performance is required (Certo et al., 2022; Le and Ikram, 2022; Vito et al., 2022). The relationship between environmental sustainability practices and organizational performance still needs to be studied (Malesios et al., 2021). It is necessary to maintain the debate on the difficulties of measuring the sustainable performance of companies (Nogueira et al., 2023). Xue et al. (2019) argue most previously published studies treat performance as a unidimensional construct (2019). But this construct is complex and encompasses several items in its assessment (Yaw Agyabeng-Mensah et al., 2020b). There have been studies that have examined the relationship between environmental sustainability practices and certain performance measures. However, there is still a clear gap. The current research doesn't settle whether it's worth going green (van Emous et al., 2021). However, this study provides a thorough and holistic examination. It considers environmental sustainability practices (as a whole) and analyses their correlation with a wide range of measures of companies' performance. In this context, stakeholder theory is particularly suitable, as it allows companies to be pressured by stakeholders to adopt actions that will impact their performance (Le and Ikram, 2022). As well as institutional theory, which has been widely used to justify the adoption of organizational practices by companies (Arranz and Arroyabe, 2023). And contingency theory, explains that a company's strategies, procedures, and conduct will change based on the surrounding environment (Williams et al., 2017).

Business practices are subject not only to legal constraints but also to increasing scrutiny, and it becomes imperative to understand how sustainability environmental practices influence the performance of companies. In this context, the present study intends to explore the influence of the environmental dimension of TBL and environmental sustainability practices on the performance of companies in their various measures. Thus, the research questions of this study are: (i) What is the influence of the environmental dimension of TBL on the performance of companies?; and (ii) Environmental sustainability practices exert the same kind of influence on different measures of company performance: (a) the overall performance, (b) the accounting based, (c) the market-based, (d) the economic-based and (e) the operational based firm performance? A meta-regression analysis was conducted to compare the results of previous studies examining the relationship between environmental sustainability practices and business performance.

Realizing whether it's worth it to be green is equally crucial as comprehending whether the behaviour of environmental sustainability practices has the same path in the various performance measures. Therefore, the objective of this study is to explore the influence of sustainable practices on the performance of companies. A new approach was taken to examine how this influence affects different performance measures. By studying the indirect effects, it is also important to deepen our understanding of the synergies between different performance measures.

This study shows that environmental sustainability, in addition to being mandatory for the survival of the planet, is also a profitable business strategy, having defined a set of practical implications for companies and policymakers. It was found that environmental sustainability practices positively influence five different performance measures. Examining indirect effects revealed that accounting performance moderates the relationship between sustainable practices and market and operational performance. Market performance serves as a moderator between sustainable practices and accounting performance. The relationship between sustainable practices and accounting performance has the operational performance as a moderator.

The present study brings three significant contributions and implications. First, it contributes to recent works on environmental sustainability practices and studies on the performance of organizations. In business strategies, it is essential to promote environmentally conscious thinking (Ali et al., 2022). Second, this study shows that environmental practices positively affect firm performance across five distinct performance metrics. This serves as evidence and attests to its originality. And responds to the background discussion that led to this analysis. Since it is profitable to be green, measures that promote environmental well-being must be implemented. Implementing this strategy necessitates connecting with the corporate reputation (Kwon et al., 2021; Ullah, 2021). To succeed, a long-term strategic plan for sustainability innovation is imperative (Peng and Zhang, 2022). The third contribution of the study pertains to the observation that, despite the exertion of decisive pressure by stakeholders, management decisions are primarily influenced by coercive forces, mainly in the form of regulations and compliance with regulations (Luo and Tang, 2016). The government's behaviour and the impact of its policies require special attention.

The paper outline is presented as follows. The previous literature is discussed in the second section, and the hypothesis development is presented. The third section provides an overview of the materials, methods, and literature coding. The results are in the fourth section. The fifth section presents the discussion and the implications of this analysis. In the sixth and last sections, the conclusions are presented.

2. Theoretical background and proposed hypotheses

2.1. Stakeholder theory, institutional theory and contingency theory

When we look into the issues that relate to corporate sustainability and company performance, stakeholder theory is the prevailing theory (Hussain et al., 2018). It is particularly suitable when stakeholders pressure forces companies to adopt strategies impacting their performance (Le and Ikram, 2022). This theory defends the existence of a group of people interested in the functioning and results of organizations, whose support is vital for their survival (Freeman, 1984). The pressures exerted by these stakeholders are crucial for the adoption or not of sustainable management practices (González-Benito and González-Benito, 2006; Haleem et al., 2022; Wolf, 2014; Zhu et al., 2005). Sustainability practices impact the formation of value in organizations that cannot be ignored (Lartey et al., 2021) and require contributions from multiple stakeholders (Frempong et al., 2021). The positivity of this impact is amplified with higher stakeholder integration levels (Danso et al., 2020; Khan et al., 2021). In addition, successful environmental practices strengthen the organization's relationship with all stakeholders (Cankaya and Sezen, 2019).

Companies'adoption of organizational practices has often been explained using institutional theory (Arranz and Arroyabe, 2023; Dimaggio and Powell, 1983; Scott, 2005). That suggests that three sources of external pressure lead companies to adopt similar practices (Dimaggio and Powell, 1983; Subramaniam et al., 2023). Therefore, there is a relationship between stakeholder theory and institutional theory. Since stakeholders implicitly influence the institutions (D'Souza et al., 2022). According to institutional theory, the ability of the social and environmental environment around organizations to affect the development of business structures is stronger than market pressures (Ebrahimi and Koh, 2021). Regulations, norms, and independent organizations that influence the sustainable narrative and condition the sustainable behaviour of companies are examples of institutional situations that mediate the relationship between economic constraints and corporate behaviour (Campbell, 2007). However, understanding how institutional pressures make organizations embrace sustainable behavior and respect rules is still incomplete (Ebrahimi and Koh, 2021).

According to contingency theory, a company's plans, organizes and behaves will alter based on the surrounding environment (Lawrence and

Lorsch, 1967; Thompson, 2003). The underlying assumption is that the adaptation and survival of an organization can be accomplished through multiple means (Williams et al., 2017). This theory departed from the conventional paradigm of having an optimal way to manage organizations (Tekic et al., 2023), realizing that there was a direct link between the external environment, organizational structure, and business outcome for most organizations (Williams et al., 2017). Contingency theory emphasizes the importance of the situation and context as crucial factors influencing decisions on ethical and public relations strategies (Shin, 2023). In corporate governance, the contingency theory provides a theoretical basis for the consequences of varying degrees of environmental turbulence (Heirati et al., 2016). The impact of environmental turbulence can be divided into two forces, market and technology turbulence, which will play an essential role in the formation of disruptive innovation (C. Wang et al., 2022).(C. Wang et al., 2022). Thus, it can be argued that the efficacy of enacted strategies and practices that organizations implement will always depend on their capacity to adapt.

2.2. Environmental sustainability practices and overall performance

To understand what the companies' goals are and how they achieved them, it is essential to measure performance (Pereira et al., 2023). Companies should consider investing in eco-friendly and cost-effective initiatives to earn profit and sustainability (Fok et al., 2023). The research that focuses on the influences exercised by the orientation towards environmental sustainability on the results of the companies has had growing evidence (Adomako et al., 2019). Therefore, it is expected that the performance achieved with environmental efforts will be a weapon both using of assets and in maintaining companies' strategic position (Park et al., 2022). Since it reduces energy and material consumption, improves the connection with stakeholders, reduces costs and increases product quality (Cankaya and Sezen, 2019). Even though some studies claim a negative relationship between environmental sustainability and company performance (Y. Ali et al., 2021), developing capabilities related to environmental actions positively affect a company's performance (Dangelico and Pontrandolfo, 2015). When hotels implement environmental sustainability practices, their overall performance is positively affected (Langgat et al., 2023). Developing strategies to enhance all aspects of the organization is crucial in boosting overall performance (Wongwilai et al., 2022). These reflections lead to the formulation of the following hypothesis:

H1. The companies' environmental sustainability practices are positively associated with the company's overall performance.

2.3. Environmental sustainability practices and accounting-based firm performance

Environmental sustainability can improve companies' financial performance (Khan et al., 2021). Corporate environmental innovativeness and adaptability (Wong, 2013), business model innovation (Al-Nimer et al., 2021) and green innovation (Xue et al., 2019) also contribute to improved financial performance. Like sustainability innovation (Le and Ikram, 2022), operational environmental sustainability (Benitez-Amado et al., 2015) and the proactive adoption of environmental management practices (O'Donohue and Torugsa, 2016). Small businesses adopt sustainable models to maintain sustainability and improve financial literacy (Tang, 2022). Despite the results obtained by Knight et al. (2019) evidence of a negative relationship between companies' environmental behaviour and financial performance, most studies demonstrate that orientation towards environmental sustainability positively influences performance results (Danso et al., 2019). The impact of business activities can influence performance based on accounting ratios (Golovkova et al., 2019). These considerations lead to the formulation of the following hypotheses:

H2. Companies' environmental sustainability practices are positively associated with accounting-based firm performance.

H2. The relation between environmental sustainability practices and accounting-based firm performance can be positively influenced by: b) market-based firm performance; c) economic-based firm performance; and d) operational-based firm performance.

2.4. Environmental sustainability practices and market-based firm performance

In the current competitive market, sustainability is one of the most relevant strategic components (Kwon et al., 2021; Lee and Kwon, 2019). The growing search for sustainability can provide companies, not only with the ability to avoid competition from rivals and criticism from consumers, but also to achieve their positioning as leaders in environmental issues (Lee and Kwon, 2019). Therefore, implementing ecological practices changes companies' business models (Lee and Kwon, 2019), sustains growth and market gains (Kwon et al., 2021), and, in the long term, positively influences performance (Y Agyabeng-Mensah et al., 2020). But environmental improvements may not be perceptible in products or services, which requires an investment to be made in disseminating ecological attributes and makes it difficult to deduce, from the literature, the possibility of actually being implemented (Grekova et al., 2016). The activities occurring within organizations that potentially impact market performance are numerous (Eklof et al., 2020; Fornell et al., 2016). Thus, the following hypotheses were formulated:

H3. Companies' environmental sustainability practices positively affect market-based firm performance.

H3. The relation between environmental sustainability practices and market-based firm performance can be positively influenced by: a) accounting-based firm performance; c) economic-based firm performance; and d) operational-based firm performance.

2.5. Environmental sustainability practices and economic-based firm performance

Economic performance is enhanced by green practices (Rehman Khan and Yu, 2021), environmental proactivity (Barba-Sánchez and Atienza-Sahuquillo, 2016; Cankaya and Sezen, 2019), eco-friendly business practices (Sun and Wang, 2022) and orientation towards environmental sustainability (Roxas et al., 2017). In the literature, the relationships between the superior performance of the company and the implementation of green purchasing have already been identified (Altaf et al., 2020; Park et al., 2022). As was the relationship between that same performance and direct and indirect impacts of sustainable supply chain management practices (Zhu et al., 2022). Environmental practices can positively impact corporate sustainability performance (Cankaya and Sezen, 2019). And improving these practices leads to an improvement in performance (Russo et al., 2021). Implementing certain business activities can impact the organizations' economic performance (Naranjo Tuesta et al., 2021). These considerations led to the following hypotheses:

H4. Companies' environmental sustainability practices are positively associated with economic-based firm performance.

H4. The relation between environmental sustainability practices and economic-based firm performance can be positively influenced by: a) accounting-based firm performance; b) market-based firm performance; and d) operational-based firm performance.

2.6. Environmental sustainability practices and operational-based firm performance

Corporate environmental sustainability plays an essential role in the operational performance of companies (Dadhich and Hiran, 2022).

Capabilities to develop environmental collaborations and to implement environmental actions affect the firm's image (Chuang and Huang, 2018; Dangelico and Pontrandolfo, 2015). Conserving resources and reducing waste improves business profitability and competitiveness (Sakshi et al., 2020). Management's environmental concern significantly affects the link between green innovation and company performance dimensions (Xue et al., 2019). Environmental efforts are more than mere public relations strategies and positively influence business performance (Park et al., 2022). Sustainability innovation can lead to competitive advantages that enhance the company's performance (Le and Ikram, 2022). Operating performance is positively influenced by the application of environmental sustainability practices (Yaw Agyabeng-Mensah et al., 2020b; Feng et al., 2018). The strategies ought to be devised to enhance the organizations' operational performance, resulting in a rise in overall performance (Dieste et al., 2021; Wongwilai et al., 2022). This leads to the formulation of the following hypotheses:

H5. Companies' environmental sustainability practices are positively associated with operational-based firm performance.

H5. The relation between environmental sustainability practices and operational-based firm performance can be positively influenced by: a) accounting-based firm performance; b) market-based firm performance; and c) economic-based firm performance.

Fig. 1 presents the research model and the formulated hypotheses.

3. Materials and methods

When attempting to integrate the results of multiple studies to build a model that explores nonuniformities and trends in the baseline research, meta-analysis provides a powerful tool (Morris, 2023). The meta-analysis, being a scientific quantitative synthesis, helps to establish evidence-based practices and contributes to the resolution of research with results that appear to be contradictory (Fang and Zhang, 2018; Gurevitch et al., 2018). This methodology has become increasingly relevant (Dzwigol, 2021; Gurevitch et al., 2018). Meta-analytical techniques are essential to consolidate the field's state of knowledge and to understand past inconclusive results (Post et al., 2020). Its use has been popularized by its increasing use in several studies (eg, Chen et al., 2022; Cui and Martins, 2021; Dzwigol, 2021; Hang et al., 2019; Qorri et al., 2021; Wang et al., 2022). It integrates an evidence-oriented approach to research (Dzwigol, 2021). The meta-analysis, using as a basis the correlation coefficient of each of the empirical studies in the sample, can calculate the population effect size reflecting the generalized correlation between variables and pooled sampled studies' mean effect size (Q. Wang et al., 2022).

3.1. Sample selection process and data collection

For the selection of studies for the meta-regression, four steps were performed. The first step was the choice of the Web of Science Core Collection for sample identification and collection. This database was chosen because it is considered a key source of information in the field of social sciences (Liu et al., 2015), and its data are subject to a care, selection and organization process (Franceschini et al., 2016). The extraction was performed on June 13, 2023, without any time limitation. The second stage was the identification of studies after applying the search keywords:" environment* sustainable*" and "firm performance" or "corporate performance"; or "environment* practice*" and "firm performance" or "corporate performance". The investigation began with thoroughly examining the studies related to environmental sustainability practices. This process reveals the cadence of keywords used and allows the identification of the most appropriate keywords for this research. Sample extraction was performed following the steps of several authors. The search was performed by topic (title abstract and keywords) (Lopes et al., 2021, 2022c). In the third stage, studies that were not articles or reviews were excluded (Lopes et al., 2022a, 2022b). In the fourth and last stage, studies whose analysis did not expose the correlations between the constructs on which the study focuses were excluded (Abbas and Ali, 2021; Ozkan and Balli, 2023). That is the correlations between sustainable environmental practices and performance. Thus, in the final sample, there are 96 articles. A list of all the articles in the sample can be found in the appendix. The steps taken to extract the sample are shown in Fig. 2.

3.2. Literature coding

To counter the different scales used in the various studies, the selection of the type of effect size fell on the correlation (a measure of unbiased estimator according to Govindan et al., 2020) to explore relationships between variables. Thus, of the 96 studies gathered, 339

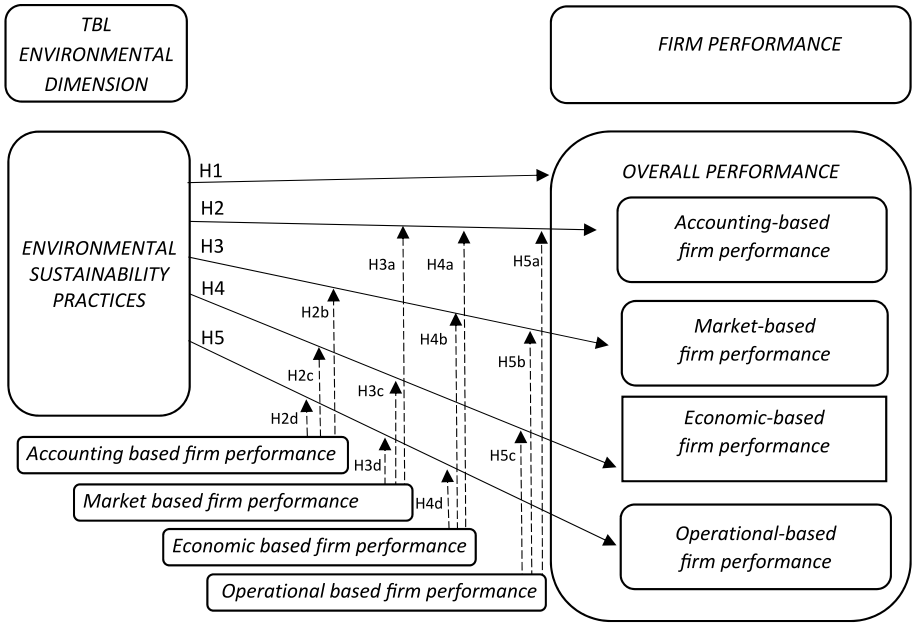


Fig. 1. The research model and the hypotheses formulated.

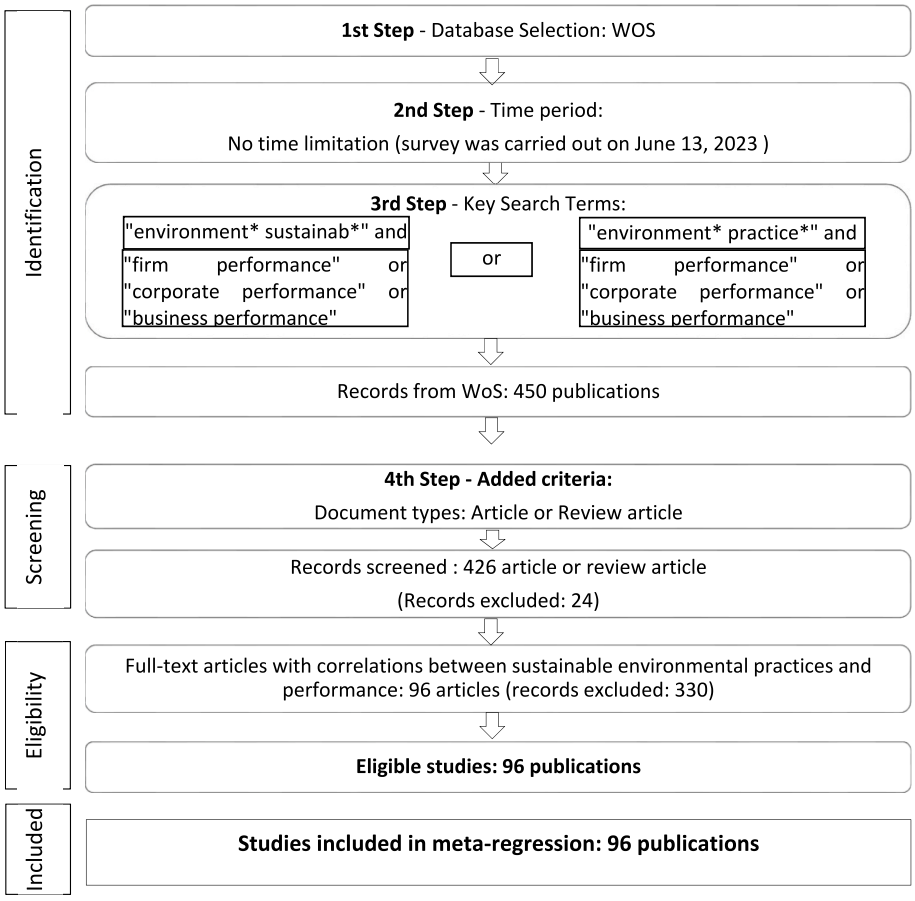


Fig. 2. Sample extraction.

effects were obtained. These effects are based on a sample of 138,371 sample elements from worldwide. The articles that constitute the sample were coded using basic information, sample size, effect size and correlated variables. To clarify the constructs that served as the guiding thread for the codification of the study variables that involve the theme of sustainable environmental practices and the performance of companies, their description is presented in Table 1.

In this study, environmental sustainability practices are understood as all actions and policies that a company develops with to preserve the environment, even if this is not the only motivation for putting them into practice. Examples include but are not limited to: circular design; eco design; emission reduction – buyer level; emission reduction – supplier level; emissions score; energy conservation; green distribution; green information system; green innovation capabilities; green manufacturing; green marketing strategy; green procurement; green supply chain management practices; green transportation; reduce, reuse, and recycle; remanufacturing and recycling; resource conservation; resource reduction – buyer level; resource reduction – supplier level; resource use score; supply chain ecocentricity and sustainable supply partnership. Regarding firm performance, and despite its measurement as a critical issue in management research, there is still no consensus on assessing it in empirical research (Rosenbusch et al., 2011). But it can easily be agreed that a firm's performance captures its ability to achieve goals (Le and Ikram, 2022). Accounting-based firm performance is understood as performance based on accounting measures or the perceptions of these measures. Market-based firm performance is the one that investigates the return to the shareholders. Economic-based firm performance reflects the ability of companies to reduce costs. Finally, operational-based firm performance mirrors a measure of performance that focuses on organizational efficiency and effectiveness.

4. Results

4.1. Results of the meta-regression

The meta-regression was performed using Comprehensive Meta-Analysis (CMA) software (from Biostat, Englewood, United States of America). The CMA can be used regardless of the number of studies (Borenstein et al., 2022). The results are presented in Table 2. Respecting the data that were obtained in the sample, five models were analysed. The first measures the overall effect of environmental practices on business performance, which is the aggregation of data from all performance measures that make up the study. Measuring the effect of environmental practices on financial performance is presented in model two. In model three, we see the measurement of the effect on market performance, the smallest group, as most studies focus on small and medium-sized companies. Model four presents the results of measuring the effects of environmental practices on the economic performance of companies, and model five, on the operational performance of companies.

Random effects were used in the analysis model as it is most suitable for studies where respondents and measurements vary, thus allowing results to be generalized to comparable studies (Borenstein et al., 2009; Fang and Zhang, 2018). Thus, the mean distribution of effects was estimated, as each study provides information about a different effect size (Borenstein et al., 2009, 2010). The Pearson correlation coefficient, r, is the effect size.

In model 1, an analysis of the total number of studies is presented, that is, 94 studies representing the 339 effects and the sample of 138,371, which examines the correlation between sustainability environmental practices and overall performance. The mean effect size is 0.310, which indicates that, on average, companies with a higher level

Table 1
Description of constructs.

Construct	Description	Based in:
Environmental sustainability practices	All actions and policies of a company developed with the aim of promoting environmental sustainability. Eg: eco design; emission reduction – buyer level; emissions score; energy conservation; green distribution; green transportation; remanufacturing and recycling; resource conservation; resource use score; supply chain ecocentricity and sustainable supply partnership.	Arora and De (2020) Frempong et al. (2021)
Firm performance	A company's ability to achieve its goals.	Le and Ikram (2022)
Accounting based firm Performance	Based on measures derived from accounting data and representing financial parameters, such as return on assets, return on equity, profitability and net profit margin.	Tang (2022)
Market based firm Performance	It is based on instruments that assess wealth for shareholders, such as the market value added and Tobin Q.	Lee and Kwon (2019) Lartey et al. (2021)
Economic based firm performance	It is based on the ability of companies to reduce costs related to their activities, such as energy and water consumption, purchase of materials and the creation of waste.	Sun and Wang (2022) Hull et al. (2021)
Operational based firm performance	It is constituted by measures of organizational effectiveness and efficiency. Such as responsiveness to time of delivery, customer satisfaction, product quality development, capacity utilization and competitive advantage, in comparison to the industry average.	Xue et al. (2019) Le and Ikram (2022)

of environmental practices tend to have a higher level of performance. The 95% confidence interval for this correlation is between 0.280 and 0.339. The Z value is 19.204 with a p-value <0.001. Regarding heterogeneity, Q has a value of 12380.306, which implies a rejection of the null hypothesis (that the true effect size is identical in all the studies) of this model. I^2 has a value of 97.270%, representing 97.270% of the variance in observed effects reflects variance in true effects rather than sampling error (Linden and Hönekopp, 2021). Which quantitively confirms the heterogeneity in our sample. The true correlation between environmental sustainability practices and overall performance varies from one population to the next, and in any single population, it likely falls in the range of the prediction interval, −0.260 to 0.720. Thus, hypothesis H1 is confirmed.

In turn, model 2 presents the study with 99 effects from a total sample of 62,591, which observes the correlation between sustainability environmental practices and accounting performance. The mean value effect size is 0.184, and its confidence interval lies between 0.138 and 0.230. This indicates that environmental sustainability practices are agents that drive the financial performance of companies. With p-value < 0.001, the Z-value is 7.663. The Q-test for heterogeneity has a Q-value of 3253.117. The value for I^2 is 96.988%. The heterogeneity is confirmed. The prediction range is from −0.264 to 0.567. These results allow confirmation of hypothesis H2.

Model 3, on the other hand, shows the investigation carried out on the correlation between environmental sustainability practices and market performance. It has 32 effects, representing a sample of 21,550. The mean effect size has a value of 0.053 with a confidence interval between −0.013 and 0.119. It supports the idea that environmental sustainability practices positively influence performance based on market measures. The Z value, with a p-value of 0.011, is 1.566. The value of Q is 395.406, and that of I^2 is 95.209%. Regarding the prediction interval, it lies between −0.307 and 0.400. In this way, hypothesis H3 is accepted.

Model 4 shows that the mean effect size between environmental sustainability practices and economic performance is 0.472, with a confidence interval between 0.429 and 0.512. The sample of this model is 21,589 to 80 effects. The model has a Z-value of 18.681 with a p-value <0.001. Regarding heterogeneity, Q has a value of 646.987, and I^2 has a value of 93.596%. The prediction interval is between 0.043 and 0.754 and it is expected that the results will be within these limits even if the sample is changed. This makes it possible to accept hypothesis H4.

Finally, model 5 presents the analysis of the effect of environmental sustainability practices on operational performance. The total sample is 32.641, and the number of effects analysed is 128. The mean effect size is 0.358, and the confidence interval is between 0.318 and 0.397. Here, too, it can be seen that a higher level of implementation of environmental sustainability practices corresponds to a higher level of performance in this model. The Z-value is 16.119 with a p-value < 0.001. Regarding heterogeneity, Q has a value of 1233.529, and the value of I^2 is 94.085%. The prediction range is located between −0.125 and 0.704.

Table 2
Results of random-effects models.

		random-effect models				
		Model 1	Model 2	Model 3	Model 4	Model 5
		Overall effect on performance	*Effect on accounting performance*	*Effect on* market performance	*Effect on economic* performance	*Effect on operational* performance
N		138,371	62,591	21,550	21,589	32,641
K		339	99	32	80	128
r		0.310	0.184	0.053	0.472	0.358
95% Confidence Interval	lower limit	0.280	0.138	−0.013	0.429	0.318
	upper limit	0.339	0.230	0.119	0.512	0.397
Z		19.204	7.663	1.566	18.681	16.119
P		0.000	0.000	0.011	0.000	0.000
Q		12380.306	3253.117	395.406	646.987	1233.529
I^2 *(%)*		97.270	96.988	95.209	93.596	94.085
prediction interval		−0.260 to 0.720	−0.264 to 0.567	−0.307 to 0.400	0.043 to 0.754	−0.125 to 0.704

*Notes: *n* is the total sample size; *K* is the total effects; *r* is the mean effect size; *Z* and *P* are statistics to check the significance; *Q* and I^2 are values to determine the heterogeneity.

Table 3
Results of the moderation analysis.

MODERATOR	PATH	ESP →AP	ESP→MP	ESP→EP	ESP→OP
			Model 3a	**Model 4a**	**Model 5a**
Accounting based firm performance AP	n		23669	2320	8515
	K		35	10	36
	r		0.460	0.236	0.308
	P-VALUE		0.006	0.340	0.007
	Z-VALUE		2.76	0.95	2.68
	Q -statistics		306.28	49.56	202.56
	P (heterogeneity)		0.000	0.000	0.000
		Model 2b		**Model 4b**	**Model 5b**
Market based firm performance MP	n	23669		*	**
	K	35			
	r	0.243			
	P-VALUE	0.063			
	Z-VALUE	1.86			
	Q -statistics	393.49			
	P (heterogeneity)	0.000			
		Model 2c	**Model 3c**		**Model 5c**
Economic based firm performance EP	n	2320	**		8948
	K	10			37
	r	0.5878			0.082
	P-VALUE	0.367			0.666
	Z-VALUE	0.90			0.43
	Q -statistics	129.80			471.72
	P (heterogeneity)	0.000			0.000
		Model 2d	**Model 3d**	**Model 4d**	
Operational based firm performance OP	n	8515	*	8948	
	K	36		37	
	r	0.577		0.042	
	P-VALUE	0.017		0.841	
	Z-VALUE	2.38		0.20	
	Q -statistics	717.08		519.49	
	P (heterogeneity)	0.000		0.000	

Notes: *n* is the total sample size; *K* is the total effects; *r* is the mean effect size; ESP = Environmental Sustainability Practices. * The studies do not provide data that could be collected for analysis and ** The studies do not provide sufficient data for analysis, as only three effects are reported.

Also here, hypothesis H5 is accepted.

The results of the heterogeneity tests are shown in Table 2. All the Q-statistics were significant at $p < 0.001$, indicating that correlations are heterogeneous. Furthermore, all I^2 statistics exceeded 75% (94–97%), revealing a substantial variation among the environmental sustainability practices research studies. It is, therefore, justified to investigate moderator variables.

4.2. Results of the moderation analysis

An analysis was conducted to determine the indirect effects of each performance measure on the paths between environmental sustainability practices and the various performance measures. The results of the moderator analysis are presented in Table 3.

The analysis of the indirect effect of market-based firm performance on paths ESP – EP (4b), ESP – OP (5b); economic-based firm performance on path ESP-MP (3c); and operational-based firm performance on path ESP – MP (3d), was not feasible due to insufficient data. Hypotheses: H3b, H3C, H4b and H5b are rejected. The result of the indirect effects of: accounting based firm performance on path ESP - EP (4a); economic based firm performance on paths ESP – AP (2c), ESP – OP (5c); and operational based firm performance path ESP – EP (4d) are not statistically significant. Hypotheses: H4a, H2c, H5c and H4d are rejected.

Considering these constrain, there remain four hypotheses that possess statistical significance. The moderating effect of the accounting-based firm performance on the relationship between environmental sustainability practices and market performance was significant ($r = 0.460$; $p = 0.006$; $Z = 2.76$; $Q = 306.28$; $p < 0.001$). The moderating effect of the accounting based firm performance on the relationship between environmental sustainability practices and operational performance was also significant ($r = 0.308$; $p = 0.007$; $Z = 2.68$; $Q = 202.56$; $p < 0.001$). Therefore, hypotheses H3a and H5a are accepted. The moderating effect of the market-based firm performance was also significant in the relationship between environmental sustainability practices and accounting performance ($r = 0.243$; $p = 0.063$; $Z = 1.86$; $Q = 393.49$; $p < 0.001$). Thus, hypothesis H2b is accepted. Finally, the indirect effect (moderation) of operational-based firm performance on the relation between environmental sustainability practices and accounting performance was also significant (($r = 0.577$; $p = 0.017$; $Z = 2.38$; $Q = 717.08$; $p < 0.001$). Accordingly, hypothesis H2d is accepted.

5. Discussion and implications

5.1. Discussion of results

TBL is evaluated in the light of the results of a company's activities, resulting from its intention or legal impositions, which reflect its viability, without this implying damage to social or ecological systems (Smith and Sharicz, 2011). TBL's environmental dimension collaborates

with environmental groups and other audit and certification bodies (Gold et al., 2013). The greater the integration of stakeholders, the greater the impact of their integration (Danso et al., 2020; Khan et al., 2021). Environmental practices are benefited, and receptivity to the relationship with stakeholders is positive and is reinforced with each interaction (Cankaya and Sezen, 2019). The multiplicity of ways of seeing the world has contributed to methodological pluralism by creating diverse research methods, forms and techniques that can lead to different results (Dzwigol, 2021). Based on the need to summarize the contradictory results of the research, which focuses on the influence that environmental sustainability practices exert on the performance of companies, a meta-regression was performed.

In this study, these practices are understood as all actions and/or policies developed by companies that seek to preserve the environment. Even if the motivations that support these actions are not solely related to environmental preservation. It is important to mention that one of the benefits of practicing such efforts is the increase in stakeholder engagement. (Cankaya and Sezen, 2019). Because the adoption of these practices increases the credibility of the companies (Arora and De, 2020), allows them to have a more positive image (Cankaya and Sezen, 2019) and guarantees the well-being of the different groups engaged (Paulraj et al., 2017). Relationships with stakeholders are a vital part of the business and affect the implementation of the corporate strategy, the performance of all aspects of the business activity and the establishment of the brand (Yang et al., 2018). Larran Jorge et al. (2015) found that improved engagement in environmental practices improves stakeholders relationship. The stakeholder theory was validated with the presented findings that recognize that meeting different stakeholders' needs improves company performance. Even if doing business under the influence of stakeholders can be very challenging and requires managers to rethink the business purpose, innovate in its management and embrace more open processes (Schaltegger et al., 2019).

The results support the formulated hypotheses and affirm the positive influence of environmental sustainability practices on companies' performance. More specifically and concerning overall performance, that is, the aggregate consideration of the different measures of business performance, it appears that the influence of environmental sustainability practices is positive and results in the improvement of the results achieved by companies. This conveys to companies that implementing environmental practices is for more than just environmental protection. Because as already identified by previous studies, it also helps to improve the performance and competitiveness of companies (Ni and Sun, 2019). Green innovation has been shown significantly influence performance dimensions (Xue et al., 2019).

Regarding the relationship between environmental sustainability practices and accounting-based firm performance, it is concluded that the influence is positive, which strengthens previous findings and reinforces the need for companies to combine environmental objectives with financial objectives. This supports the results of Agyabeng-Mensah et al. (2020) and Feng et al. (2018), who concluded that implementing sustainable logistics practices improves financial performance. Accounting data and data relating to environmental practices must align and tell the same story, sharing paths, objectives and goals. A sustained improvement in environmental performance leads to better financial performance (Russo et al., 2021), especially when communicated to customers and stakeholders (Ullah, 2021). Environmental performance improves return on investment (Tang, 2022). There is a link between environmental sustainability performance, corporate governance and national culture (Peng and Zhang, 2022).

The results of the relationship between environmental sustainability practices and market-based firm performance reinforce the previous notion that this relationship is positive. Thus, companies are expected to achieve gains in the market by implementing practices that strive to preserve and conserve the planet. For, as verified by Ioannidis et al. (2021) eco-friendly application strategies increase company value and market valuation. The awareness of climate change and the growing willingness of customers to pay companies aligned with the maintenance of the environment generate market opportunities (Russo et al., 2021). In theory, the environmentally sustainable improvement of processes allows differentiation with the potential to obtain market gains (Grekova et al., 2016). Pollution prevention policies positively affect companies' market value (Russo et al., 2021).

As for the relationship between environmental sustainability practices and economic-based performance, the results obtained in this study reaffirm the positive influence of this relationship. Other studies have identified that environmental knowledge is a competitive factor (Martinez-Martinez et al., 2019). The growing attention paid by companies to sustainability issues and the consequent decrease in energy consumption and pollution production not only improves sustainability but also creates a competitive advantage (Nureen et al., 2022). Reducing packaging, waste, energy, and resources improves environmental performance because companies are directly linked to economic performance and quickly embrace them (Cankaya and Sezen, 2019; Huang et al., 2017). This is another win-win situation, where the concern for the preservation of the environment and the actions that arise from it not only led to a reduction in the destruction of natural materials but also to a reduction in costs.

Finally, it remains to analyse the results regarding the link between environmental sustainability practices and operational-based firm performance. This connection is positive and results in an increase in operational performance as environmentally sustainable practices also increase. These results reinforce previous findings that concluded that several environmental practices positively impact company performance. Examples are environmental sustainability (Sardana et al., 2020; Yang et al., 2018), orientation towards sustainability (Danso et al., 2019) and eco-innovation. (Hojnik et al., 2018). And also, the proactive environmental strategy (Benitez-Amado and Walczuch, 2012), green managerial (Park et al., 2022), innovation of low-carbon supply chain integration (Liu et al., 2020) and the management of the green supply chain management (Ajamieh et al., 2016; Ni and Sun, 2019).

Regarding the moderator analysis, the presented approach explored the influence that the different performance measures could exert on the relations between environmental sustainability practices and: accounting, market, economic and operational performance. Surprisingly, there is a lack of evidence to support the positivity of some of those relations, considering that business activities are interconnected, and their results cannot be dissociated. Accounting performance was found to positively influence the relationship between environmental sustainability practices and market performance. Boakye et al. (2020) found that companies that adopt sustainable practices enjoy a distinct advantage regarding firm financial performance that will enable a lower market risk. The financial gains that result from enhancing environmental performance, resulting from the adoption and upkeep of eco-friendly practices methods, results in a steady and sustained increase in the firm's market value over time (Russo et al., 2021). The research revealed that accounting performance positively influences the connection between environmental practices and operational performance. Activities that enhance accounting performance and are associated with reducing waste, maximizing and sustaining business success implicitly improve operational performance (Y. Ali et al., 2021). Accounting performance has always been an imperative of business strategies, closely linked to operational performance (Dieste et al., 2021).

Identifying a positive effect of market performance on the relationship between sustainable practices and accounting performance supports previous research findings. Agyabeng-Mensah et al. (2020a) examined green practices and financial performance, concluding that the impact of market performance is favorable. This reinforces the reflection by Ioannidis et al. (2021) when companies implement activities with concerns with sustainability issues, it is important to communicate with stakeholders the promotion of their eco-friendly to improve their market performance and profitability extensively.

It is safe to say that the verification of the moderating role of

operational performance in the relationship between sustainable practices and accounting performance was anticipated. Customer satisfaction has influenced accounting performance positively, as evidenced by a large amount of research (Golovkova et al., 2019). Because organizational effectiveness and efficiency should be reflected in financial ratios (Dieste et al., 2021). Some eco-friendly methods can potentially to boost operational efficiency, but it's often more helpful to study how they affect financial performance (Dieste et al., 2021).

Research on environmental sustainability practices' influence on company performance is conflicting (Frempong et al., 2021). As far as is known, there is currently no study that simultaneously addresses the diversity of performance metrics as this analysis does. In the meta-analysis by Fang and Zhang (2018), economic and operational performance are positively related to green supply practices chain management. The systematic review by Malesios et al. (2021) identified that when the core of the investigation falls on environmental practices, a large part of the studies analyses their relationship with economic performance. In their systematic review, de Medeiros et al. (2022), concluded that most studies show a positive effect between green product innovation and financial performance results. However, several previous studies have findings bolstered by the outcomes of this research. The study conducted by Samet et al. (2022) asserts that when corporations prioritize environmental concerns, they are more likely to generate value for all stakeholders. For Khalil and Nimmanunta (2021), implementing environmental practices leads to enhanced financial performance. Companies all over the globe employ eco-friendly methods to improve financial performance (Miroshnychenko et al., 2017). During M. Yang et al. (2019) investigation into the impact of various aspects of corporate social responsibility, it was discovered that environmental factor possesses the most significant impact on firms' performance. The Burgos-Jimenez et al. (2013) study also reveals a connection between eco-friendly practices and financial performance. And Chu et al. (2018) demonstrate that green innovation positively affects financial performance. When the analysis is focused on market value, Boakye et al. (2020) have identified that several environmental practices have a positive relationship with the market-based performance measure. The Miroshnychenko et al. (2017) study clearly demonstrates that environmental sustainability practices are closely linked to a firm's future market worth. Often, attention is focused on economic performance, the ability of companies to reduce costs related to their activities. Bagur-Femenias et al. (2016) suggest that hotels committed to maintaining green policies achieve superior outcomes. According to Do and Nguyen (2020), it is evident that the implementation of a proactive environmental approach yields competitive advantages. The link between proactive socio-environmental practices and economic performance is direct (Annunziata et al., 2018). Some studies focus on the operational aspects of the management of companies. A study that identifies a positive relationship between environmental and operational performance is the one by (Ahmed et al., 2019). The research conducted by Perramon et el. (2022) revealed a beneficial effect of eco-friendly practices on the competitiveness of hotels, like the one by Teruel-Sanchez et al. (2021), which argues that environmental sustainability practices positively impact business results.

Companies adopt measures to preserve the environment because they are under pressure from stakeholders and find opportunities to increase their returns and reinforce their positive image. Environmental preservation has gone from being a problem to an option (Tang et al., 2022). Environmental sustainability is implicitly oriented towards the long term and implies a strategic position more likely to sacrifice immediate benefits to future environmental integrity (Miska et al., 2018). In short, it is found that the environmental dimension of TBL positively influences the performance of companies in its different measures.

It is essential to update business ethics to accommodate environmental concerns. After determining that the environmental sustainability practices positively influence the five different performance measures, the obstacles to full acceptance should be considered. The idea of a short-term profit, disposable and synonymous with environmental destruction, will not maintain its strength in the face of a new vision of creating value allied to an ecological conscience. How can it be portrayed in corporate ethics that the ideal time to plant a tree was 20 years ago, and the second-best time is now, even if we don't get to enjoy its shade?

5.2. Policy implications

The fact that management decisions are influenced mainly by coercive forces, primarily in the form of regulations and regulatory compliance, strongly aligns with the theoretical framework of institutional theory (Luo and Tang, 2016). Therefore, policy implications need to be given special attention. From this study, several policy implications can be named and should be implemented by governments. Regulations can enhance the strategic potential of eco-design practices for innovation and, consequently, for performance (Omri et al., 2023). In the specific case of financial performance, and considering that efforts are being made to enhance environmental sustainability practices, regulators must provide greater financial flexibility to companies whose activity involves greater environmental responsibility. Combating the perpetuation of environmentally harmful practices that are not changed due to monetary restrictions. The tax exemptions that accompany the transition from these practices to those that allow for the maintenance of ecosystems may be beneficial. Information regarding environmental concerns can exert a significant influence on the stock market (El Ouadghiri et al., 2021). Accordingly, the administration should strengthen public attention through campaigns that force companies to share more comprehensively the circumstances in which they operate. It is imperative to implement regulations that render greenwashing unfeasible. From an economic performance point of view, the government can utilize green subsidies to incentivize environmental-friendly practices (Xie et al., 2019). Governments must acknowledge the importance of professional voices to gain a comprehensive understanding of the obstacles faced by companies in the development, implementation, and execution of green initiatives. Finally, to enhance operational performance based on sustainable practices, policymakers should strengthen accessibility to technological advances by implementing environmental guidelines for learning programs. Synergies and financial support should be fostered between customers, partners, and competitors. Support for companies that require greater state monitoring must be matched by recognition of firms that already adhere to ecological standards deemed essential.

5.3. Theoretical implications

The study provides several valuable theoretical implications. It reinforces the sustainability literature based on the TBL, strengthens the application of stakeholder, institutional and contingency theories to sustainability issues, and expands the literature in the domain of the relationship between environmental sustainability practices and the performance of companies. In addition, it is known that a review can contribute and advance the theory by clarifying a construct (Post et al., 2020). And the constructs of environmental sustainability practices, firm performance, accounting based firm performance, market-based firm performance, economic based firm performance and operational-based firm performance were developed here. Having established that environmental sustainability practices are a safe bet for the environment and companies, it becomes necessary to develop and subsequently implement indicators capable of assessing the effectiveness and efficiency of pollution prevention strategies and promoting an environmentally sustainable planet. Although workers' environmental awareness does not contribute to corporate social responsibility (Ali and Kaur, 2021), environmentally conscious thinking should be promoted in business strategies (Ali et al., 2022). The study of environmental sustainability (Yang et al., 2018), company performance and stakeholder

relations (Yang et al., 2018) contribute to strengthening the relationships between companies and stakeholders. These relationships stem from the new way of looking at stakeholder pressures as opportunities and contribute to improving the multiple aspects of competitiveness. This study's outcomes align with the instrumental approach of stakeholder theory. The alignment of businesses with the goals of their stakeholders enhances their image in the market, boosts their performance, and draws in investors and customers (Jan et al., 2023). But there are numerous contingencies surrounding all sustainability issues. And the environmental performance of organizations depends on their ability to balance their political operations, the external environment and their structures (S. S. Ali et al., 2021). It is expected that the necessary, development of the TBL will allow for a scientific framework that will lead to the definition of legal norms. In addition, allowing the systemic, formal and systematic inclusion of different stakeholder interests, particularly environmental ones, in the design and implementation of business strategies. Because, environmentally sustainable practices contribute to a more sustainable society (Ali et al., 2020). But the sustainable agenda requires an ongoing, long-term effort (Ali et al., 2020).

5.4. Practical implications

Several practical implications can be drawn from this study. The study establishes that environmental sustainability practices positively impact the performance of companies, in their various measures. Thus, the discussion that revolves around the problem of implementing or not measures that enhance environmental well-being reinforces the idea that, for companies, it is profitable to be green. The operationalization of this strategy must be associated with a corporate reputation (Kwon et al., 2021; Ullah, 2021). Small and medium-sized companies must reconfigure and reorient their management (Y. Ali et al., 2021), requiring analysis (Cankaya and Sezen, 2019). Managers should consider a long-term strategic plan for sustainability innovation, which is imperative for the development and survival of companies (Peng and Zhang, 2022).

To encourage companies to embrace environmental sustainability practices, it is suggested that government agencies consider strict environmental regulations (Khan and Yu, 2021; Le and Ikram, 2022). Creating cross-sectoral education programs that provide the necessary knowledge to obtain regulatory compliance can be a solution (Frempong et al., 2021). In addition, governments must implement measures that encourage companies to adopt green supply chain management practices (Nureen et al., 2022), technology development (Zhu et al., 2022) and appropriate for the expansion and deepening of technology in all industries (Park et al., 2022). This implies that regulators and policymakers deeply understand the characteristics of business models (Tang, 2022). That managers and executives truly investigate practices to encourage environmental performance (Al-Nimer et al., 2021). In this way, true sustainability can be achieved based on the principles of TBL, which brings sustainable benefits to companies, the environment, society and the nation (Le and Ikram, 2022).

6. Conclusion

The research reveals that the triple bottom line's environmental dimension positively influences companies' performance. The study proposes a novel approach to environmental accountability, demonstrating that: environmental sustainability practices positively influence all five performance measures, namely, the overall, accounting, market, economic, and operational performance. However, only four positive moderating effects were identified. Implementing these practices can enhance business outcomes, even if the motivation for their implementation is not based on environmental concerns. The rationale behind the strategic options that are imposed upon corporations is derived from their adaptability, which is the core of contingency theory; the pressure exerted by stakeholders and their capacity to influence institutions; and the theoretical framework of institutional theory, which holds that management decisions are influenced by coercive forces, primarily in the form of regulations and regulatory compliance. Business ethics needs to be updated to take into account environmental concerns. This study improves the knowledge regarding environmental sustainability and company performance. It promotes managers' competence by providing a pragmatic mechanism for evaluating the strategies they must implement.

The exercise that the study presents not only supports the current that identifies environmental sustainability practices as profit creators but also adds strategies to enhance these incomes. But it is not without limitations. The sample was taken from the Web of Science, one of the most comprehensive databases of peer-reviewed publications, but it is not the only source (Nogueira et al., 2023). Some literature may have been omitted due to the filtering process (Lopes et al., 2022b). It is important to recognize that the mean effect size applies particularly to the studies analysed here and that it will be different for another mix of populations (Borenstein, 2019). As the results of this study are based on a quantitative approach, future studies should consider a qualitative approach. Furthermore, now that the influence of environmental practices on all performance measures has been established as positive, it is important to identify constructs that moderate this relationship (Qorri et al., 2021). Environmental sustainability practices are multidimensional and deserve particular attention, especially the distinction between practices that require high investments and those that only depend on recognition of their importance by management. It is also important to expand the research to confirm the eco-efficiency and eco-effectiveness of the firm (Russo et al., 2021). It would be interesting to explore the many avenues of research available in green supply chain management (Nureen et al., 2023). The notion survives that there are costly sustainability activities and that they are implemented to comply with installed regulations. It is crucial to understand whether stakeholders can create synergies that distribute the cost associated with those activities to agents other than the company itself.

Funding

This work was supported by the UIDB/05105/2020 Program Contract, funded by national funds through the FCT I.P.

CRediT authorship contribution statement

Elisabete Nogueira: Conceptualization, Formal analysis, Writing – original draft, Writing – review & editing. **Sofia Gomes:** Methodology, Software, Investigation, Data curation, Writing – review & editing, Visualization. **João M. Lopes:** Conceptualization, Validation, Resources, Writing – review & editing, Supervision, All authors have read and agreed to the published version of the manuscript.

Declaration of competing interest

The authors declare that they have no known competing financial interests or personal relationships that could have appeared to influence the work reported in this paper.

Data availability

Data supporting the results of this study are available at: Appendix A. Supplementary material: https://drive.google.com/file/d/1AsOYPW4LZgkHCzIx7oVs_Au7k3xcF29k/view?usp=sharing

Acknowledgments

NECE-UBI, the Research Centre for Business Sciences, and this work are funded by FCT (Fundação para a Ciência e a Tecnologia), IP, project UIDB/04630/2020.

Appendix A

Supplementary material: https://drive.google.com/file/d/1AsOYPW4LZgkHCzIx7oVs_Au7k3xcF29k/view?usp=sharing

References

Abbas, M., Ali, R., 2021. Transformational versus transactional leadership styles and project success: a meta-analytic review. Eur. Manag. J. 41, 125–142. https://doi.org/10.1016/j.emj.2021.10.011.

Adomako, S., Amankwah-Amoah, J., Danso, A., Konadu, R., Owusu-Agyei, S., 2019. Environmental sustainability orientation and performance of family and nonfamily firms. Bus. Strat. Environ. 28, 1250–1259. https://doi.org/10.1002/bse.2314.

Agyabeng-Mensah, Yaw, Afum, E., Ahenkorah, E., 2020a. Exploring financial performance and green logistics management practices: examining the mediating influences of market, environmental and social performances. J. Clean. Prod. 258, 120613 https://doi.org/10.1016/j.jclepro.2020.120613.

Agyabeng-Mensah, Y., Ahenkorah, E., Afum, E., Agyemang, A.N., Agnikpe, C., Rogers, F., 2020. Examining the influence of internal green supply chain practices, green human resource management and supply chain environmental cooperation on firm performance. Supply Chain Manag. Int. J. 25, 585–599. https://doi.org/10.1108/SCM-11-2019-0405.

Agyabeng-Mensah, Yaw, Ahenkorah, E., Afum, E., Owusu, D., 2020b. The influence of lean management and environmental practices on relative competitive quality advantage and performance. Supply Chain Manag. Int. J. 31, 1351–1372. https://doi.org/10.1108/JMTM-12-2019-0443.

Ahmed, M.U., Golgeci, I., Bayraktar, E., Tatoglu, E., 2019. Environmental practices and firm performance in emerging markets: the mediating role of product quality. Prod. Plann. Control 30, 315–328. https://doi.org/10.1080/09537287.2018.1542514.

Ajamieh, A., Benitez, J., Braojos, J., Gelhard, C., 2016. IT infrastructure and competitive aggressiveness in explaining and predicting performance. J. Bus. Res. 69, 4667–4674. https://doi.org/10.1016/j.jbusres.2016.03.056.

Ali, S.S., Ersöz, F., Kaur, R., Altaf, B., Weber, G.W., 2021. A quantitative analysis of low carbon performance in industrial sectors of developing world. J. Clean. Prod. 284 https://doi.org/10.1016/j.jclepro.2020.125268.

Ali, S.S., Kaur, R., 2021. Effectiveness of corporate social responsibility (CSR) in implementation of social sustainability in warehousing of developing countries: a hybrid approach. J. Clean. Prod. 324 https://doi.org/10.1016/j.jclepro.2021.129154.

Ali, S.S., Kaur, R., Khan, S., 2022. Evaluating sustainability initiatives in warehouse for measuring sustainability performance: an emerging economy perspective. Ann. Oper. Res. 324, 461–500. https://doi.org/10.1007/s10479-021-04454-w.

Ali, S.S., Kaur, R., Persis, D.J., Saha, R., Pattusamy, M., Sreedharan, V.R., 2020. Developing a hybrid evaluation approach for the low carbon performance on sustainable manufacturing environment. Ann. Oper. Res. 324, 249–281. https://doi.org/10.1007/s10479-020-03877-1.

Ali, Y., Younus, A., Khan, A.U., Pervez, H., 2021. Impact of lean, six sigma and environmental sustainability on the performance of SMEs. Int. J. Prod. Perform. Manag. 70, 2294–2318. https://doi.org/10.1108/IJPPM-11-2019-0528.

Al-Nimer, M., Abbadi, S.S., Al-Omush, A., Ahmad, H., 2021. Risk management practices and firm performance with a mediating role of business model innovation. Observations from Jordan. J. Risk Financ. Manag. 14 https://doi.org/10.3390/jrfm14030113.

Altaf, B., Ali, S.S., Weber, G.W., 2020. Modeling the relationship between organizational performance and green supply chain practices using canonical correlation analysis. Wireless Network 26, 5835–5853. https://doi.org/10.1007/s11276-020-02313-3.

Ammer, M.A., Aliedan, M.M., Alyahya, M.A., 2020. Do corporate environmental sustainability practices influence firm value? The role of independent directors: evidence from Saudi Arabia. Sustain. Times 12, 1–21. https://doi.org/10.3390/su12229768.

Annunziata, E., Pucci, T., Frey, M., Zanni, L., 2018. The role of organizational capabilities in attaining corporate sustainability practices and economic performance: evidence from Italian wine industry. J. Clean. Prod. 171, 1300–1311. https://doi.org/10.1016/j.jclepro.2017.10.035.

Arora, P., De, P., 2020. Environmental sustainability practices and exports: the interplay of strategy and institutions in Latin America. J. World Bus. 55 https://doi.org/10.1016/j.jwb.2020.101094.

Arranz, C.F.A., Arroyabe, M.F., 2023. Institutional theory and circular economy business models: the case of the European Union and the role of consumption policies. J. Environ. Manag. 340, 117906 https://doi.org/10.1016/j.jenvman.2023.117906.

Bagur-Femenias, L., Celma, D., Patau, J., 2016. The adoption of environmental practices in small hotels. Voluntary or mandatory? an empirical approach. Sustain. Times 8, 695. https://doi.org/10.3390/su8070695.

Barba-Sánchez, V., Atienza-Sahuquillo, C., 2016. Environmental proactivity and environmental and economic performance: evidence from the winery sector. Sustain. Times 8. https://doi.org/10.3390/su8101014.

Barth, M.E., Li, K., McClure, C.G., 2023. Evolution in value relevance of accounting information. Account. Rev. 98, 1–28. https://doi.org/10.2308/tar-2019-0521.

Benitez-Amado, J., Llorens-Montes, F.J., Fernandez-Perez, V., 2015. IT impact on talent management and operational environmental sustainability. Inf. Technol. Manag. 16, 207–220. https://doi.org/10.1007/s10799-015-0226-4.

Benitez-Amado, J., Walczuch, R.M., 2012. Information technology, the organizational capability of proactive corporate environmental strategy and firm performance: a resource-based analysis. Eur. J. Inf. Syst. 21, 664–679. https://doi.org/10.1057/ejis.2012.14.

Boakye, D.J., Tingbani, I., Ahinful, G., Damoah, I., Tauringana, V., 2020. Sustainable environmental practices and financial performance: evidence from listed small and medium-sized enterprise in the United Kingdom. Bus. Strat. Environ. 29, 2583–2602. https://doi.org/10.1002/bse.2522.

Borenstein, M., 2019. Common Mistakes in Meta-Analysis and How to Avoid Them. Biostat Inc., NJ, United States.

Borenstein, M., Hedges, L.E., Higgins, J.P.T., Rothstein, H.R., 2022. Comprehensive Meta-Analysis Version 4.

Borenstein, M., Hedges, L.V., Higgins, J.P.T., Rothstein, H.R., 2010. A basic introduction to fixed-effect and random-effects models for meta-analysis. Res. Synth. Methods 1, 97–111. https://doi.org/10.1002/jrsm.12.

Borenstein, M., Hedges, L.V., Higgins, J.P.T., Rothstein, H.R., 2009. Introduction to Meta-Analysis. Wiley, Biostat, Inc. NJ, United States. https://doi.org/10.1002/9780470743386.

Brealey, R.A., Myers, S.C., Allen, F., 2020. Principles of Corporate Finance. McGraw-Hill Education, New York.

Burgos-Jimenez, J., Vazquez-Brust, D., Plaza-Ubeda, J.A., Dijkshoorn, J., 2013. Environmental protection and financial performance: an empirical analysis in Wales. Int. J. Oper. Prod. Manag. 33, 981–1018. https://doi.org/10.1108/IJOPM-11-2010-0374.

Campbell, J.L., 2007. Why would corporations behave in socially responsible ways? An institutional theory of corporate social responsibility. Acad. Manag. Rev. 32, 946–967.

Cankaya, S.Y., Sezen, B., 2019. Effects of green supply chain management practices on sustainability performance. J. Manuf. Technol. Manag. 30, 98–121. https://doi.org/10.1108/JMTM-03-2018-0099.

Certo, S.T., Jeon, C., Raney, K., Lee, W., 2022. Measuring what matters: assessing how executives reference firm performance in corporate filings. Organ. Res. Methods. https://doi.org/10.1177/10944281221125160.

Chen, V.Z., Zhong, M., Duran, P., Sauerwald, S., 2022. Multistakeholder benefits: a Meta-analysis of different theories. Bus. Soc. 62, 612–645. https://doi.org/10.1177/00076503221110181.

Chu, Z., Xu, J., Lai, F., Collins, B.J., 2018. Institutional theory and environmental pressures: the moderating effect of market uncertainty on innovation and firm performance. IEEE Trans. Eng. Manag. 65, 392–403. https://doi.org/10.1109/TEM.2018.2794453.

Chuang, S.P., Huang, S.J., 2018. The Effect of Environmental Corporate social responsibility on environmental performance and business competitiveness: the mediation of green information technology capital. J. Bus. Ethics 150, 991–1009. https://doi.org/10.1007/s10551-016-3167-x.

Cui, Y., Martins, P.S., 2021. What drives social returns to education? A meta-analysis. World Dev. 148, 105651 https://doi.org/10.1016/j.worlddev.2021.105651.

Dadhich, M., Hiran, K.K., 2022. Empirical investigation of extended TOE model on corporate environment sustainability and dimensions of operating performance of SMEs: a high order PLS-ANN approach. J. Clean. Prod. 363 https://doi.org/10.1016/j.jclepro.2022.132309.

Dangelico, R.M., Pontrandolfo, P., 2015. Being “green and competitive”: the impact of environmental actions and collaborations on firm performance. Bus. Strat. Environ. 24, 413–430. https://doi.org/10.1002/bse.1828.

Danso, A., Adomako, S., Amankwah-Amoah, J., Owusu-Agyei, S., Konadu, R., 2019. Environmental sustainability orientation, competitive strategy and financial performance. Bus. Strat. Environ. 28, 885–895. https://doi.org/10.1002/bse.2291.

Danso, A., Adomako, S., Lartey, T., Amankwah-Amoah, J., Owusu-Yirenkyi, D., 2020. Stakeholder integration, environmental sustainability orientation and financial performance. J. Bus. Res. 119, 652–662. https://doi.org/10.1016/j.jbusres.2019.02.038.

De Giovanni, P., 2022. Leveraging the circular economy with a closed-loop supply chain and a reverse omnichannel using blockchain technology and incentives. Int. J. Oper. Prod. Manag. https://doi.org/10.1108/IJOPM-07-2021-0445.

de Medeiros, J.F., Garlet, T.B., Ribeiro, J.L.D., Cortimiglia, M.N., 2022. Success factors for environmentally sustainable product innovation: an updated review. J. Clean. Prod. 345 https://doi.org/10.1016/j.jclepro.2022.131039.

Dieste, M., Panizzolo, R., Garza-Reyes, J.A., 2021. A systematic literature review regarding the influence of lean manufacturing on firms’ financial performance. J. Manuf. Technol. Manag. 32, 101–121. https://doi.org/10.1108/JMTM-08-2020-0304.

Dimaggio, P.J., Powell, W.W., 1983. The iron cage revisted: institutional isomorphism and collective rationality in organizational fields the iron cage revisited. Am. Socio. Rev. 48, 147–160. https://doi.org/10.17323/1726-3247-2010-1-34-56.

Do, B., Nguyen, N., 2020. The links between proactive environmental strategy, competitive advantages and firm performance: an empirical study in Vietnam. Sustain. Times 12, 4962. https://doi.org/10.3390/su12124962.

D’Souza, C., Ahmed, T., Khashru, M.A., Ahmed, R., Ratten, V., Jayaratne, M., 2022. The complexity of stakeholder pressures and their influence on social and environmental responsibilities. J. Clean. Prod. 358, 132038 https://doi.org/10.1016/j.jclepro.2022.132038.

Dzwigol, H., 2021. Meta-analysis in management and quality sciences. Mark. Manag. Innov. 6718, 324–335. https://doi.org/10.21272/mmi.2021.1-25.
Ebrahimi, S.M., Koh, L., 2021. Manufacturing sustainability: institutional theory and life cycle thinking. J. Clean. Prod. 298 https://doi.org/10.1016/j.jclepro.2021.126787.
Eklof, J., Podkorytova, O., Malova, A., 2020. Linking customer satisfaction with financial performance: an empirical study of Scandinavian banks. Total Qual. Manag. Bus. Excel. 31, 1684–1702. https://doi.org/10.1080/14783363.2018.1504621.
El Ouadghiri, I., Guesmi, K., Peillex, J., Ziegler, A., 2021. Public attention to environmental issues and stock market returns. Ecol. Econ. 180, 106836 https://doi.org/10.1016/j.ecolecon.2020.106836.
Elkington, J., 2006. Governance for sustainability. Corp. Governance-An Int. Rev. 14, 522–529. https://doi.org/10.1111/j.1467-8683.2006.00527.x.
Elkington, J., 1997. Cannibals with Forks: the Triple Bottom Line of 21st Century Business. Capstone Publishing Limited, Oxford, United Kingdom.
Fang, C.C., Zhang, J.T., 2018. Performance of green supply chain management: a systematic review and meta analysis. J. Clean. Prod. 183, 1064–1081. https://doi.org/10.1016/j.jclepro.2018.02.171.
Feng, M., Yu, W., Wang, X., Wong, C.Y., Xu, M., Xiao, Z., 2018. Green supply chain management and financial performance: the mediating roles of operational and environmental performance. Bus. Strat. Environ. 27, 811–824. https://doi.org/10.1002/bse.2033.
Fok, L., Morgan, Y.C., Zee, S., Mock, V.E., 2023. The impact of organizational culture and total quality management on the relationship between green practices and sustainability performance. Int. J. Qual. Reliab. Manag. https://doi.org/10.1108/IJQRM-12-2021-0450.
Fornell, C., Morgeson, F.V., Hult, G.T.M., 2016. Stock returns on customer satisfaction do beat the market: gauging the effect of a marketing intangible. J. Market. 80, 92–107. https://doi.org/10.1509/jm.15.0229.
Franceschini, S., Faria, L.G.D., Jurowetzki, R., 2016. Unveiling scientific communities about sustainability and innovation. A bibliometric journey around sustainable terms. J. Clean. Prod. 127, 72–83. https://doi.org/10.1016/j.jclepro.2016.03.142.
Freeman, R.E., 1984. Strategic Management: A Stakeholder Approach. Pitman Publishing Ins., Marshfield, United States of America.
Frempong, M.F., Mu, Y.P., Adu-Yeboah, S.S., Hossin, M.A., Adu-Gyamfi, M., 2021. Corporate sustainability and firm performance: the role of green innovation capabilities and sustainability-oriented supplier-buyer relationship. Sustain. Times 13. https://doi.org/10.3390/su131810414.
Gold, S., Hahn, R., Seuring, S., 2013. Sustainable supply chain management in “Base of the Pyramid” food projects-A path to triple bottom line approaches for multinationals? Int. Bus. Rev. 22, 784–799. https://doi.org/10.1016/j.ibusrev.2012.12.006.
Golovkova, A., Eklof, J., Malova, A., Podkorytova, O., 2019. Customer satisfaction index and financial performance: a European cross country study. Int. J. Bank Market. 37, 479–491. https://doi.org/10.1108/IJBM-10-2017-0210.
González-Benito, J., González-Benito, Ó., 2006. The role of stakeholder pressure and managerial values in the implementation of environmental logistics practices. Int. J. Prod. Res. 44, 1353–1373. https://doi.org/10.1080/00207540500435199.
Govindan, K., Rajeev, A., Padhi, S.S., Pati, R.K., 2020. Supply chain sustainability and performance of firms: a meta-analysis of the literature. Transp. Res. E Logist. Transp. Ver. 137, 101923 https://doi.org/10.1016/j.tre.2020.101923.
Grekova, K., Calantone, R.J., Bremmers, H.J., Trienekens, J.H., Omta, S.W.F.F., 2016. How environmental collaboration with suppliers and customers influences firm performance: evidence from Dutch food and beverage processors. J. Clean. Prod. 112, 1861–1871.
Gull, A.A., Saeed, A., Suleman, M.T., Mushtaq, R., 2022. Revisiting the association between environmental performance and financial performance: does the level of environmental orientation matter? Corp. Soc. Responsib. Environ. Manag. 29, 1647–1662. https://doi.org/10.1002/csr.2310.
Gurevitch, J., Koricheva, J., Nakagawa, S., Stewart, G., 2018. Meta-analysis and the science of research synthesis. Nature 555, 175–182. https://doi.org/10.1038/nature25753.
Haleem, F., Farooq, S., Cheng, Y., Waehrens, B.V., 2022. Sustainable management practices and stakeholder pressure: a systematic literature review. Sustain. Times 14, 1–23. https://doi.org/10.3390/su14041967.
Hang, M., Geyer-Klingeberg, J., Rathgeber, A.W., 2019. It is merely a matter of time: a meta-analysis of the causality between environmental performance and financial performance. Bus. Strat. Environ. 28, 257–273. https://doi.org/10.1002/bse.2215.
Heirati, N., O'Cass, A., Schoefer, K., Siahtiri, V., 2016. Do professional service firms benefit from customer and supplier collaborations in competitive, turbulent environments? Int. J. Bank Market. 55, 50–58. https://doi.org/10.1016/j.indmarman.2016.02.011.
Hojnik, J., Ruzzier, M., Manolova, T.S., 2018. Internationalization and economic performance: the mediating role of eco-innovation. J. Clean. Prod. 171, 1312–1323. https://doi.org/10.1016/j.jclepro.2017.10.111.
Huang, Y.C., Huang, C.H., Yang, M.L., 2017. Drivers of green supply chain initiatives and performance Evidence from the electrical and electronics industries in Taiwan. Int. J. Phys. Distrib. Logist. Manag. 47, 796–819. https://doi.org/10.1108/IJPDLM-05-2017-0185.
Hull, C.E., Millette, S., Williams, E., 2021. Challenges and opportunities in building circular-economy incubators: stakeholder perspectives in Trinidad and Tobago. J. Clean. Prod. 296, 126412 https://doi.org/10.1016/j.jclepro.2021.126412.
Hussain, N., Rigoni, U., Cavezzali, E., 2018. Does it pay to be sustainable? Looking inside the black box of the relationship between sustainability performance and financial performance. Corp. Soc. Responsib. Environ. Manag. 25, 1198–1211. https://doi.org/10.1002/csr.1631.
Ioannidis, A., Chalvatzis, K.J., Leonidou, L.C., Feng, Z.T., 2021. Applying the reduce, reuse, and recycle principle in the hospitality sector: its antecedents and performance implications. Bus. Strat. Environ. 30, 3394–3410. https://doi.org/10.1002/bse.2809.
Iwata, H., Okada, K., 2011. How does environmental performance affect financial performance? Evidence from Japanese manufacturing firms. Ecol. Econ. 70, 1691–1700. https://doi.org/10.1016/j.ecolecon.2011.05.010.
Jan, A., Ur, H., Zahid, M., Salameh, A.A., Alam, P., Abdulaziz, M., Al-faryan, S., Binti, R., Aziz, C., Ali, H.E., 2023. Islamic corporate sustainability practices index aligned with SDGs towards better financial performance: evidence from the Malaysian and Indonesian Islamic banking industry. J. Clean. Prod. 405, 136860 https://doi.org/10.1016/j.jclepro.2023.136860.
Kanzari, A., Rasmussen, J., Nehler, H., Ingelsson, F., 2022. How financial performance is addressed in light of the transition to circular business models - a systematic literature review. J. Clean. Prod. 376, 134134 https://doi.org/10.1016/j.jclepro.2022.134134.
Khalil, M.A., Nimmanunta, K., 2021. Conventional versus green investments: advancing innovation for better financial and environmental prospects. J. Sustain. Financ. Invest. https://doi.org/10.1080/20430795.2021.1952822.
Khan, M., Rahman, H.U., Baloch, Q.B., Ahmad, A., Zahid, M., 2021. Is there any difference between the theory and practice for the association between environmental sustainability and firm performance in Pakistan? Bus. Strateg. Dev. 4, 371–382. https://doi.org/10.1002/bsd2.16.
Khan, S.A.R., Yu, Z., 2021. Assessing the eco-environmental performance: an PLS-SEM approach with practice-based view. Int. J. Logist. Res. Appl. 24, 303–321. https://doi.org/10.1080/13675567.2020.1754773.
Knight, H., Megicks, P., Agarwal, S., Leenders, M.A.A.M., 2019. Firm resources and the development of environmental sustainability among small and medium-sized enterprises: evidence from the australian wine industry. Bus. Strat. Environ. 28, 25–39. https://doi.org/10.1002/bse.2178.
Kwon, H.B., Lee, J., Choi, L., 2021. Dynamic interplay of environmental sustainability and corporate reputation: a combined parametric and nonparametric approach. Ann. Oper. Res. https://doi.org/10.1007/s10479-021-04331-6.
Langgat, J., Ramdani, B., Pavic, S., Tok, E., 2023. Environmentally sustainable practices and hotel performance: evidence from Malaysia. Sustain. Times 15, 5289. https://doi.org/10.3390/su15065289.
Larran Jorge, M., Herrera Madueno, J., Martinez-Martinez, D., Lechuga Sancho, M.P., 2015. Competitiveness and environmental performance in Spanish small and medium enterprises: is there a direct link? J. Clean. Prod. 101, 26–37. https://doi.org/10.1016/j.jclepro.2015.04.016.
Lartey, T.A., Amankwah-Amoah, J., Danso, A., Adomako, S., Khan, Z., Tarba, S.Y., 2021. Environmental sustainability practices and offshoring activities of multinational corporations across emerging and developed markets. Int. Bus. Rev. 30 https://doi.org/10.1016/j.ibusrev.2020.101789.
Lawrence, P.R., Lorsch, J.W., 1967. Organization and Environment. Harvard Business School, Boston.
Le, T.T., Ikram, M., 2022. Do sustainability innovation and firm competitiveness help improve firm performance? Evidence from the SME sector in Vietnam. Sustain. Prod. 29, 588–599. https://doi.org/10.1016/j.spc.2021.11.008.
Lee, J., Kwon, H.B., 2019. The synergistic effect of environmental sustainability and corporate reputation on market value added (MVA) in manufacturing firms. Int. J. Prod. Res. 57, 7123–7141. https://doi.org/10.1080/00207543.2019.1578430.
Lewandowski, S., 2017. Corporate carbon and financial performance: the role of emission reductions. Bus. Strat. Environ. 26, 1196–1211. https://doi.org/10.1002/bse.1978.
Li, E.L., Zhou, L.X., Wu, A.Q., 2017. The supply-side of environmental sustainability and export performance: the role of knowledge integration and international buyer involvement. Int. Bus. Rev. 26, 724–735. https://doi.org/10.1016/j.ibusrev.2017.01.002.
Linden, A.H., Hönekopp, J., 2021. Heterogeneity of research results: a new perspective from which to assess and promote progress in psychological science. Perspect. Psychol. Sci. 16, 358–376. https://doi.org/10.1177/1745691620964193.
Liu, X.H., Qian, C., Wang, S.H., 2020. When do 3PLs initiate low-carbon supply chain integration? Int. J. Oper. Prod. Manag. 40, 1367–1395. https://doi.org/10.1108/IJOPM-12-2019-0809.
Liu, Z., Yin, Y., Liu, W., Dunford, M., 2015. Visualizing the intellectual structure and evolution of innovation systems research: a bibliometric analysis. Scientometrics 103, 135–158. https://doi.org/10.1007/s11192-014-1517-y.
Lopes, J.M., Gomes, S., Durão, M., Pacheco, R., 2022a. The holy grail of luxury tourism: a holistic bibliometric overview. J. Qual. Assur. Hospit. Tourism. https://doi.org/10.1080/1528008X.2022.2089946.
Lopes, J.M., Gomes, S., Rodrigues, I., 2022b. Playing the gamification and co-creation game: a bibliometric literature review. Manag. Rev. Q. https://doi.org/10.1007/s11301-022-00302-8.
Lopes, J.M., Laurett, R., Antunes, H., Oliveira, J., 2021. Entrepreneurial marketing: a bibliometric analysis of the second decade of the 21st century and future agenda. J. Res. Mark. Entrep 23, 295–317. https://doi.org/10.1108/JRME-02-2019-0019.
Lopes, J.M., Sousa, A., Calçada, E., Oliveira, J., 2022c. A Citation and Co-citation Bibliometric Analysis of Omnichannel Marketing Research. Manag. Rev. Q. Springer International Publishing. https://doi.org/10.1007/s11301-021-00219-8.
Luo, L., Tang, Q., 2016. Determinants of the quality of corporate carbon management systems: an international study. Int. J. Account. 51, 275–305. https://doi.org/10.1016/j.intacc.2016.04.007.
Malesios, C., De, D., Moursellas, A., Dey, P.K., Evangelinos, K., 2021. Sustainability performance analysis of small and medium sized enterprises: criteria, methods and framework. Socioecon. Plann. Sci. 75 https://doi.org/10.1016/j.seps.2020.100993.

Martinez-Martinez, A., Cegarra-Navarro, J.G., Garcia-Perez, A., Wensley, A., 2019. Knowledge agents as drivers of environmental sustainability and business performance in the hospitality sector. Tourism Manag. 70, 381–389. https://doi.org/10.1016/j.tourman.2018.08.030.

Miroshnychenko, I., Barontini, R., Testa, F., 2017. Green practices and financial performance: a global outlook. J. Clean. Prod. 147, 340–351. https://doi.org/10.1016/j.jclepro.2017.01.058.

Miska, C., Szocs, I., Schiffinger, M., 2018. Culture's effects on corporate sustainability practices: a multi-domain and multi-level view. J. World Bus. 53, 263–279. https://doi.org/10.1016/j.jwb.2017.12.001.

Mitra, S., 2022. An exploratory study of sustainability and firm performance for Indian manufacturing small and medium enterprises. J. Clean. Prod. 371, 133705 https://doi.org/10.1016/j.jclepro.2022.133705.

Morris, S.B., 2023. Meta-Analysis in organizational research: a guide to methodological options. Annu. Rev. Organ. Psychol. Organ. Behav 10, 225–259. https://doi.org/10.1146/annurev-orgpsych-031921-021922.

Naranjo Tuesta, Y., Crespo Soler, C., Ripoll Feliu, V., 2021. Carbon management accounting and financial performance: evidence from the European Union emission trading system. Bus. Strat. Environ. 30, 1270–1282. https://doi.org/10.1002/bse.2683.

Ni, W.B., Sun, H.Y., 2019. Does construct multidimensionality matter? A nuanced examination of the relationship among supply chain integration, green supply chain management, and business performance. Sustain. Times 11. https://doi.org/10.3390/su11195455.

Nogueira, E., Gomes, S., Lopes, J.M., 2023. Triple bottom line, sustainability, and economic development: what binds them together? a bibliometric approach. Sustain. Times 15, 6706. https://doi.org/10.3390/su15086706.Academic.

Nogueira, E., Gomes, S., Lopes, J.M., 2022. The key to sustainable economic development: a triple bottom line approach. Resources 11, 46. https://doi.org/10.3390/resources11050046.

Nureen, N., Liu, D., Ahmad, B., Irfan, M., 2022. Exploring the technical and behavioral dimensions of green supply chain management: a roadmap toward environmental sustainability. Environ. Sci. Pollut. Res. 29, 63444–63457. https://doi.org/10.1007/s11356-022-20352-5.

Nureen, N., Sun, H., Irfan, M., Nuta, A.C., Malik, M., 2023. Digital transformation: fresh insights to implement green supply chain management, eco-technological innovation, and collaborative capability in manufacturing sector of an emerging economy. Environ. Sci. Pollut. Res. Int. https://doi.org/10.1007/s11356-023-27796-3.

O'Donohue, W., Torugsa, N.A., 2016. The moderating effect of "Green" HRM on the association between proactive environmental management and financial performance in small firms. Int. J. Hum. Resour. Manag. 27, 239–261. https://doi.org/10.1080/09585192.2015.1063078.

Omri, W., Courrent, J.-M., Nemeh, A., 2023. To go or to not go green for SMEs: toward the twinning effect of ecodesign practices and radical innovativeness on SME performance. IEEE Trans. Eng. Manag. https://doi.org/10.1109/TEM.2022.3233521.

Ozkan, A., Balli, F., 2023. The predictors of intent to leave in the accounting and finance sector in Asia-Pacific countries: a cross-industrial meta-analysis study. Appl. Econ. 55, 467–486. https://doi.org/10.1080/00036846.2022.2091106.

Palea, V., Santhià, C., 2022. The financial impact of carbon risk and mitigation strategies: insights from the automotive industry. J. Clean. Prod. 344 https://doi.org/10.1016/j.jclepro.2022.131001.

Park, S.R., Kim, S.T., Lee, H.H., 2022. Green supply chain management efforts of first-tier suppliers on economic and business performances in the electronics industry. Sustain. Times 14. https://doi.org/10.3390/su14031836.

Paruzel, A., Schmidt, L., Maier, G.W., 2023. Corporate social responsibility and employee innovative behaviors: a meta-analysis. J. Clean. Prod. 393, 136189 https://doi.org/10.1016/j.jclepro.2023.136189.

Paulraj, A., Chen, I.J., Blome, C., 2017. Motives and performance outcomes of sustainable supply chain management practices: a Multi-theoretical perspective. J. Bus. Ethics 145, 239–258. https://doi.org/10.1007/s10551-015-2857-0.

Peng, B., Sheng, X., Wei, G., 2020. Does environmental protection promote economic development? From the perspective of coupling coordination between environmental protection and economic development. Environ. Sci. Pollut. Res. 27, 39135–39148. https://doi.org/10.1007/s11356-020-09871-1.

Peng, X.H., Zhang, R.R., 2022. Corporate governance, environmental sustainability performance, and normative isomorphic force of national culture. Environ. Sci. Pollut. Res. 29, 33443–33473. https://doi.org/10.1007/s11356-022-18603-6.

Pereira, C., Monteiro, A., Silva, D., Lima, A., 2023. Do the levels of environmental sustainability disclosure and indebtness affect the quality of earnings? Sustain. Times 15, 1–13. https://doi.org/10.3390/su15042871.

Perramon, J., Oliveras-Villanueva, M., Llach, J., 2022. Impact of service quality and environmental practices on hotel companies: an empirical approach. Int. J. Hospit. Manag. 107, 103307 https://doi.org/10.1016/j.ijhm.2022.103307.

Post, C., Sarala, R., Gatrell, C., Prescott, J.E., 2020. Advancing theory with review articles. J. Manag. Stud. 57, 351–376. https://doi.org/10.1111/joms.12549.

Qorri, A., Gashi, S., Kraslawski, A., 2021. Performance outcomes of supply chain practices for sustainable development: a meta-analysis of moderators. Sustain. Dev. 29, 194–216. https://doi.org/10.1002/sd.2140.

Rahman, H.U., Zahid, M., Al-Faryan, M.A.S., 2023. ESG and firm performance: the rarely explored moderation of sustainability strategy and top management commitment. J. Clean. Prod. 404, 136859 https://doi.org/10.1016/j.jclepro.2023.136859.

Rahman, H.U., Zahid, M., Khan, M., 2021. Corporate sustainability practices: a new perspective of linking board with firm performance. Total Qual. Manag. Bus. Excel. 33, 929–946. https://doi.org/10.1080/14783363.2021.1908826.

Rehman Khan, S.A., Yu, Z., 2021. Assessing the eco-environmental performance: an PLS-SEM approach with practice-based view. Int. J. Logist. Res. Appl. 24, 303–321. https://doi.org/10.1080/13675567.2020.1754773.

Rosenbusch, N., Brinckmann, J., Bausch, A., 2011. Is innovation always beneficial? A meta-analysis of the relationship between innovation and performance in SMEs. J. Bus. Ventur. 26, 441–457. https://doi.org/10.1016/j.jbusvent.2009.12.002.

Roxas, B., Ashill, N., Chadee, D., 2017. Effects of entrepreneurial and environmental sustainability orientations on firm performance: a study of small businesses in the Philippines. J. Small Bus. Manag. 55, 163–178. https://doi.org/10.1111/jsbm.12259.

Russo, A., Pogutz, S., Misani, N., 2021. Paving the road toward eco-effectiveness: exploring the link between greenhouse gas emissions and firm performance. Bus. Strat. Environ. 30, 3065–3078. https://doi.org/10.1002/bse.2789.

Sakshi, Shashi, Cerchione, R., Bansal, H., 2020. Measuring the impact of sustainability policy and practices in tourism and hospitality industry. Bus. Strat. Environ. 29, 1109–1126. https://doi.org/10.1002/bse.2420.

Salandri, L., Cascio Rizzo, G.L., Cozzolino, A., De Giovanni, P., 2022. Green practices and operational performance: the moderating role of agility. J. Clean. Prod. 375, 134091 https://doi.org/10.1016/j.jclepro.2022.134091.

Samet, M., Ben, S., Jarboui, A., 2022. Nexus between corporate social responsibility performance and stakeholder value. J. Clean. Prod. 370, 133312 https://doi.org/10.1016/j.jclepro.2022.133312.

Santander, P., Cruz Sanchez, F.A., Boudaoud, H., Camargo, M., 2020. Closed loop supply chain network for local and distributed plastic recycling for 3D printing: a MILP-based optimization approach. Resour. Conserv. Recycl. 154, 104531 https://doi.org/10.1016/j.resconrec.2019.104531.

Sardana, D., Gupta, N., Kumar, V., Terziovski, M., 2020. CSR "sustainability" practices and firm performance in an emerging economy. J. Clean. Prod. 258 https://doi.org/10.1016/j.jclepro.2020.120766.

Schaltegger, S., Hörisch, J., Freeman, R.E., 2019. Business cases for sustainability: a stakeholder theory perspective. Organ. Environ. 32, 191–212. https://doi.org/10.1177/1086026617722882.

Scott, W.R., 2005. Institutional theory: contributing to a theoretical research program. In: Smith, Ken G., Hitt, M.A. (Eds.), Great Minds in Management: the Process of Theory Development. Oxford University Press, Oxford, United Kingdom, pp. 460–484.

Shin, J.H., 2023. Moral conflict and dynamic equilibrium: public relations as strategic conflict management. Publ. Relat. Rev. 49, 102321 https://doi.org/10.1016/j.pubrev.2023.102321.

Smith, P.A.C., Sharicz, C., 2011. The shift needed for sustainability. Learn. Organ. 18, 73–86. https://doi.org/10.1108/09696471111096019.

Subramaniam, N., Akbar, S., Situ, H., Ji, S., Parikh, N., 2023. Sustainable development goal reporting: contrasting effects of institutional and organisational factors. J. Clean. Prod. 411, 137339.

Sun, X.L., Wang, X., 2022. Modeling and analyzing the impact of the internet of things-based industry 4.0 on circular economy practices for sustainable development: evidence from the food processing industry of China. Front. Psychol. 13 https://doi.org/10.3389/fpsyg.2022.866361.

Tang, X.L., 2022. New schemes for investment in of small and medium-sized enterprises of China: role of access to finance, innovation, and sustainability. Front. Psychol. 13 https://doi.org/10.3389/fpsyg.2022.857193.

Tang, Y.M., Chau, K.Y., Fatima, A., Waqas, M., 2022. Industry 4.0 technology and circular economy practices: business management strategies for environmental sustainability. Environ. Sci. Pollut. Res. 29, 49752–49769. https://doi.org/10.1007/s11356-022-19081-6.

Tekic, A., Willoughby, K.W., Füller, J., 2023. Different settings, different terms and conditions: the impact of intellectual property arrangements on co-creation project performance. J. Prod. Innovat. Manag. 1–26. https://doi.org/10.1111/jpim.12668.

Teruel-Sanchez, R., Briones-Penalver, A.J., Bernal-Conesa, J.A., Nieves-Nieto, C., 2021. Influence of the entrepreneur's capacity in business performance. Bus. Strat. Environ. 30, 2453–2467. https://doi.org/10.1002/bse.2757.

Thompson, J.D., 2003. Organizations in Action: Social Science Bases of Administrative Theory. Transaction publishers.

Ullah, Z., 2021. Sustainable product attributes and firm performance: the moderating role of marketing resource intensity. Bus. Strat. Environ. 30, 4107–4120. https://doi.org/10.1002/bse.2859.

van Emous, R., Krušinskas, R., Westerman, W., 2021. Carbon emissions reduction and corporate financial performance: the influence of country-level characteristics. Energies 14, 6029. https://doi.org/10.3390/en14196029.

Vito, J.D.I., Montréal, H.E.C., Trottier, K.I.M., Montréal, H.E.C., 2022. A literature review on corporate governance mechanisms: past, present, and future. Account. Perspect. 21, 207–235. https://doi.org/10.1111/1911-3838.12279.

Wang, C., Qureshi, I., Guo, F., Zhang, Q., 2022. Corporate social responsibility and disruptive innovation: the moderating effects of environmental turbulence. J. Bus. Res. 139, 1435–1450. https://doi.org/10.1016/j.jbusres.2021.10.046.

Wang, Q., Chen, L., Jia, F., Luo, Y., Zhang, Z., 2022. The relationship between supply chain integration and sustainability performance: a meta-analysis. Int. J. Logist. Res. Appl. 1–22. https://doi.org/10.1080/13675567.2022.2144812.

Williams, P., Ashill, N., Naumann, E., 2017. Toward a contingency theory of CRM adoption. J. Strat. Market. 25, 454–474. https://doi.org/10.1080/0965254X.2016.1149211.

Wolf, J., 2014. The relationship between sustainable supply chain management, stakeholder pressure and corporate sustainability performance. J. Bus. Ethics 119, 317–328. https://doi.org/10.1007/s10551-012-1603-0.

Wong, C.W.Y., 2013. Leveraging environmental information integration to enable environmental management capability and performance. J. Supply Chain Manag. 49, 114–136. https://doi.org/10.1111/jscm.12005.

Wongwilai, S., Putnuan, S., Banyongpisut, A., Choopak, W., Sutikasana, C., Wongcharoensin, K., Oungthong, M., Trakoonsanti, L., Jermsittiparsert, K., 2022. The influence of tangible resources and operational performance to promote financial performance of electronic industry. Uncertain Supply Chain Manag 10, 315–324. https://doi.org/10.5267/j.uscm.2022.2.001.

Xie, X., Huo, J., Zou, H., 2019. Green process innovation, green product innovation, and corporate financial performance: a content analysis method. J. Bus. Res. 101, 697–706. https://doi.org/10.1016/j.jbusres.2019.01.010.

Xue, M., Boadu, F., Xie, Y., 2019. The penetration of green innovation on firm performance: effects of absorptive capacity and managerial environmental concern. Sustain. Times 11. https://doi.org/10.3390/su11092455.

Yang, M., Bento, P., Akbar, A., 2019. Does CSR influence firm performance indicators? Evidence from Chinese pharmaceutical enterprises. Sustain. Times 11, 5656. https://doi.org/10.3390/su11205656.

Yang, Y., Sun, L.B., Zhai, J.W., 2018. Stakeholder relations, environmental sustainability and sales performance. Hum. Syst. Manag. 37, 333–343. https://doi.org/10.3233/HSM-17136.

Zhu, C.C., Du, J.G., Shahzad, F., Wattoo, M.U., 2022. Environment sustainability is a corporate social responsibility: measuring the nexus between sustainable supply chain management, big data analytics capabilities, and organizational performance. Sustain. Times 14. https://doi.org/10.3390/su14063379.

Zhu, Q., Sarkis, J., Geng, Y., 2005. Green supply chain management in China: pressures, practices and performance. Int. J. Oper. Prod. Manag. 25, 449–468. https://doi.org/10.1108/01443570510593148.