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GOING GREEN AND FIRM VALUE: MAPPING THE RELATIONSHIP THROUGH A LITERATURE REVIEW

Lina María Maya Toro[1]
Vicente Mateo Ripoll Feliu[2]
Cristina Crespo Soler[3]

ABSTRACT

Objective: The purpose of this paper is to do a literature review of articles that study the effect of environmental initiatives and firm value.

Theoretical Framework: In recent years, there has been a growing global interest in sustainability and environmental care. Companies have developed initiatives such as Corporate Social Responsibility (CSR) strategies, and Environmental Performance (EP) indicators to demonstrate their commitment to sustainability

Method: The analysis includes publications on Environmental, Social, and Governance (ESG), CSR, EP, and environmental disclosure published between 2017 and early 2023.

Results and Discussion: The findings show a positive relationship between firm value and CSR, EP, ESG, and environmental disclosure. Companies that adopt environmental initiatives tend to have greater protection against market uncertainty and generate greater stakeholder confidence. This positive relationship is more significant in developed countries than in developing countries.

Research Implications: An opportunity for further research on this topic is identified due to the relatively low number of studies that explore the relationship between environmental behaviour and firm value in Latin America and the Caribbean.

Keywords: ESG, Environmental Performance, Firm Value, Corporate Social Responsibility, Environmental Disclosure.

SUSTENTABILIDADE E VALOR DA EMPRESA: MAPEANDO A RELAÇÃO ATRAVÉS DE UMA REVISÃO DA LITERATURA

RESUMO

Objetivo: O objetivo deste trabalho foi fazer uma revisão da literatura de artigos que estudam o efeito de iniciativas ambientais e o valor da empresa.

Enquadramento teórico: Nos últimos anos, tem havido um crescente interesse global em sustentabilidade e cuidados ambientais. As empresas têm desenvolvido iniciativas como estratégias de Responsabilidade Social Empresarial (RSE) e indicadores de Desempenho Ambiental (PE) para demonstrar o seu compromisso com a sustentabilidade

Método: A análise inclui publicações sobre Ambiental, Social e Governança (ESG), CSR, EP e divulgação ambiental publicadas entre 2017 e início de 2023.

Resultados e Discussão: Os achados mostram uma relação positiva entre o valor da firma e a RSC, EP, ESG e divulgação ambiental. As empresas que adotam iniciativas ambientais tendem a ter maior proteção contra a

[1] Valencia University, Valencia, Spain. E-mail: limato@alumni.uv.es
[2] Accounting Department, Valencia University, Valencia, Spain. E-mail: vicente.ripoll@uv.es
[3] Accounting Department, Valencia University, Valencia, Spain. E-mail: cristina.crespo@uv.es

incerteza do mercado e geram maior confiança das partes interessadas. Esta relação positiva é mais significativa nos países desenvolvidos do que nos países em desenvolvimento.

Implicações para a investigação: Uma oportunidade para mais pesquisas sobre este tópico é identificada devido ao número relativamente baixo de estudos que exploram a relação entre o comportamento ambiental e o valor da empresa na América Latina e no Caribe.

Palavras-chave: ESG, Desempenho Ambiental, Valor da Empresa, Responsabilidade Social Corporativa, Divulgação Ambiental.

SOSTENIBILIDAD Y VALOR DE LA EMPRESA: MAPEO DE LA RELACIÓN A TRAVÉS DE UNA REVISIÓN BIBLIOGRÁFICA

RESUMEN

Objetivo: El objetivo de este trabajo fue realizar una revisión bibliográfica de los artículos que estudian el efecto de las iniciativas medioambientales y el valor de las empresas.

Marco teórico: En los últimos años, se ha producido un creciente interés mundial por la sostenibilidad y el cuidado del medio ambiente. Las empresas han desarrollado iniciativas como estrategias de Responsabilidad Social Corporativa (CSR) e indicadores de Desempeño Ambiental (EP) para demostrar su compromiso con la sostenibilidad.

Método: El análisis incluye publicaciones sobre Medio Ambiente, Social y Gobernanza (ESG), CSR, EP y divulgación ambiental publicadas entre 2017 y principios de 2023.

Resultados y discusión: Los hallazgos muestran una relación positiva entre el valor de la empresa y la CSR, EP ESG y divulgación ambiental. Las empresas que adoptan iniciativas medioambientales tienden a tener una mayor protección frente a la incertidumbre del mercado y generan una mayor confianza de las partes interesadas. Esta relación positiva es más significativa en los países desarrollados que en los países en desarrollo.

Implicaciones para la investigación: Se identifica una oportunidad para futuras investigaciones sobre este tema debido al número relativamente bajo de estudios que exploran la relación entre el comportamiento ambiental y el valor de la empresa en América Latina y el Caribe.

Palabras clave: ESG, Comportamiento Ambiental, Valor de la Empresa, Responsabilidad Social Corporativa, Divulgación Ambiental.

1 INTRODUCTION

Sustainability particularly the environmental aspect, has become relevant for several decades, especially since the 1960s when several groups of scientists and activists began to warn about the problems of environmental pollution (Zalasiewicz, J., & Williams, M., 2021). Since this time, several conventions and agreements have been made between countries and organizations, which seek to reduce the different environmental impacts generated by human activity on the ecosystem and specially to reduce greenhouse gas (GHG) emissions (Calculli et al., 2021; Fernandes, 2019).

In 2015, several UN member countries decided to propose 17 goals to ensure sustainability by 2030, among which some (7, 9, 11, 12, 13, 14, and 15) aimed at caring for the environment and reducing sources of pollution. On the other hand, initiatives such as the Paris Agreement and the Kyoto Protocol also seek to limit GHG emissions in signatory countries and thus mitigate the effects of global warming (United Nations Climate Change, 2022b, 2022a).

In this context, governments are faced with the challenge of minimizing environmental impacts on their ecosystems. In addition to generating policies, regulations, and interventions that regulate emissions, discharges, de- forestation, and waste treatment in the different industries and that promote the generation of initiatives to care for the environment (Albitar et al., 2023). Organizations have the duty to comply with the regulations of each country in which they operate, but at the same time, to promote and demonstrate environmental corporate responsibility to stakeholders (Clarkson et al., 2008). Companies can demonstrate their commitment to protecting and caring for the environment and man- aging the environmental risks generated by their operations through CSR strategies and practices, eco-innovation, and EP indicators (Kuzey & Uyar, 2017; Sardana et al., 2020).

Several studies have been conducted relating the effects of implementing environmental initiatives on firm value, to quantify this type of action, maximize profits, and ensure firm sustainability and market competitiveness (Khanifah et al., 2020). Empirical and structural equation models correlating a firm value with the quality of environmental initiatives have been developed for more than 20 years (Clarkson et al., 2008; Iqbal et al., 2022; Perez-Calderon et al., 2011; Plumlee et al., 2015) mentioned that there is still a gap in the reported literature, in which most studies treat variables such as ESG, CSR, and EP as synonyms; however, these concepts differ theoretically and should be analysed separately.

In recent years, there has been a notable uptick in the number of publications focusing on the inclusion of new variables in models and the examination of moderating effects. However, it is worth noting that research in Latin American and Caribbean countries in this area remains at a nascent stage. Similarly, comprehensive reviews that encompass various environmental initiatives and sustainability practices, along with their correlations with firm value, are scarce in this region.

In this context, the objective of this paper is to review the literature on the correlation between the implementation of environmental initiatives by firms and their value. In short, it provides a global perspective on the quality of environmental initiatives adopted by different organizations in the frame- work of CSR, ESG, voluntary and involuntary disclosure, and environmental performance strategies and how these can influence the value of companies.

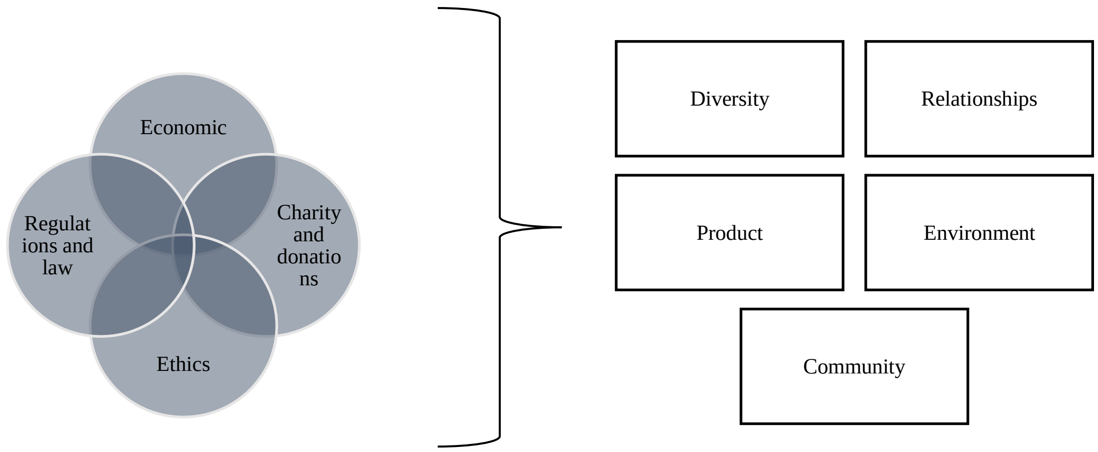
2 THEORETICAL FRAMEWORK

CSR is defined as actions that are not mandatory by law but reflect corporate social responsibility practices in response to the interests and expectations of stakeholders (employees, the community at large, customers, government, investors, suppliers, and shareholders) and the firm itself (Kong et al., 2019; Saridakis et al., 2020).

According to the theoretical aspects of CSR, it is divided into economic, regulatory, and normative, ethical, and charitable (Tarjo et al., 2022). Thus, the dimensions addressed by companies in CSR practices include diversity, relationships, products, environment, and community. These dimensions promote practices such as hiring women and minorities, labour benefits, inclusion policies, health and safety of workers, reduction of corruption, reduction of waste, recycling, use of clean energy, community activities, education, volunteer programs, product safety, innovation, and development (Sardana et al., 2020) (Figure 1).

Figure 1

CSR aspects and their practical dimensions.



CSR practices, in turn, can allow companies to reduce the damages and threats that may arise due to negative reports, regulatory actions, uncertain environments, and consumer complaints, thus managing to generate a mediating and protective effect for firms (Cooper et al., 2018; Kong et al., 2019).

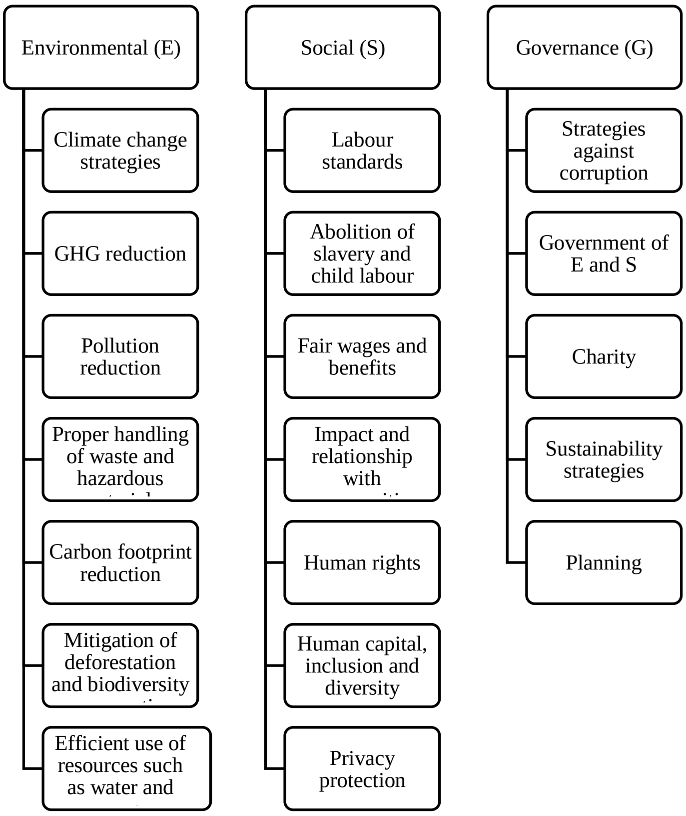
In this sense, reasoning points out that firms that implement CSR practices increase their financial value; however, several studies have shown that the relationship between the two variables follows a quadratic shape, either U-shaped or U-inverted. This implies that there is a portion of the curve where the CSR-firm value relationship is positive and another portion, where this relationship becomes negative (Grassmann, 2021). A clear example of this is the relationship between CSR-environmental initiatives and firm value, which has been shown, to have a U-shaped relationship, this indicates that a minimum CSR must be exceeded so that firm value can increase (Trumpp & Guenther, 2017).

One of the main dimensions of CSR includes ESG aspects (Z. Zheng et al., 2023). The concept emerged from the UN Global Compact Report in 2004 and has been widely adopted by companies and governments worldwide (Ramírez-Orellana et al., 2023). It has also contributed to improving the performance of organizations in 5 aspects (Li et al., 2018): delivery of non-financial information reported by companies, promoting the relationship with stakeholders and the adoption of management practices, decrease in information asymmetry, greater transparency, and visibility of companies and their environmental, social and governance practices, and finally, better decision making and better investments.

The elements that integrate the ESG are shown in Figure 2. From these elements, the ones that have been shown to have the greatest effect on the value of companies are E and S (Ramírez-Orellana et al., 2023).

Figure 2

ESG components, adopted from



Source: (Dmuchowski et al., 2023).

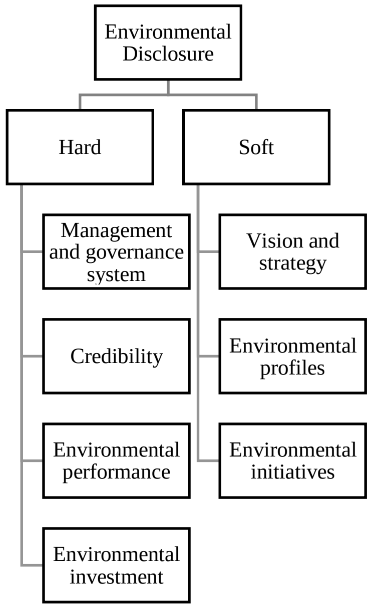
Some independent organizations such as ISO (International Organization for Standardization), Initiative for Integrated Reporting (IIR), and GRI (Global Reporting Initiative), have generated regulations that allow companies to report their environmental practices and initiatives. As well as demonstrating their commitment to the protection and care of the environment and the management of environmental risks generated by their operations (GRI Standards, n.d.; ISO, 2015). The information issued by companies on this issue may or may not be voluntary, depending on the regulations of the country where the organization is located (Grassmann, 2021).

Environmental disclosure allows companies to reduce asymmetry and generate better relations with investors and the market, as well as improve the decision-making process. It has even been shown that they have access to more credit, more confidence from banks, and an increase in the value of the firm (J. Zhang & Yang, 2023). Finally, it can also contribute to improving the financial performance of organizations through three aspects: operational and ethical transparency, improvement of the firm's reputation and stakeholders' perception of it, assistance in decision-making, and risk reduction (Z. Zhang et al., 2022).

Companies can provide information on emission reductions and environmental governance outcomes in their production processes and operations, and these are considered the main types of disclosure (Su et al., 2022). However, the disclosure of this information may come to be considered "greenwashing" in companies that tend to do a lot of soft or selective charter disclosure (Z. Zhang et al., 2022). Regarding hard and soft disclosure, (Clarkson et al., 2008) and (Perez-Calderon et al., 2011) defined them and showed indicators for each. In the hard disclosure at the environmental level, there is more objective information and more accurate and verifiable data and therefore it is considered more credible than the soft disclosure (Figure 3).

Figure 3

Hard and soft disclosure types at the environmental level



Adopted from (Clarkson et al., 2008)

3 METHODOLOGY

This research followed a literature review methodology that synthesizes existing research in a structured manner to provide a comprehensive overview and identify limitations, gaps, and opportunities to advance knowledge on a topic. The goal is to systematically gather and analyse relevant literature, then add value by discussing key issues, emerging themes, and promising future research directions (de Oliveira et al., 2023).

A four-stage process adapted from (Tseng et al., 2019) was implemented as follows:

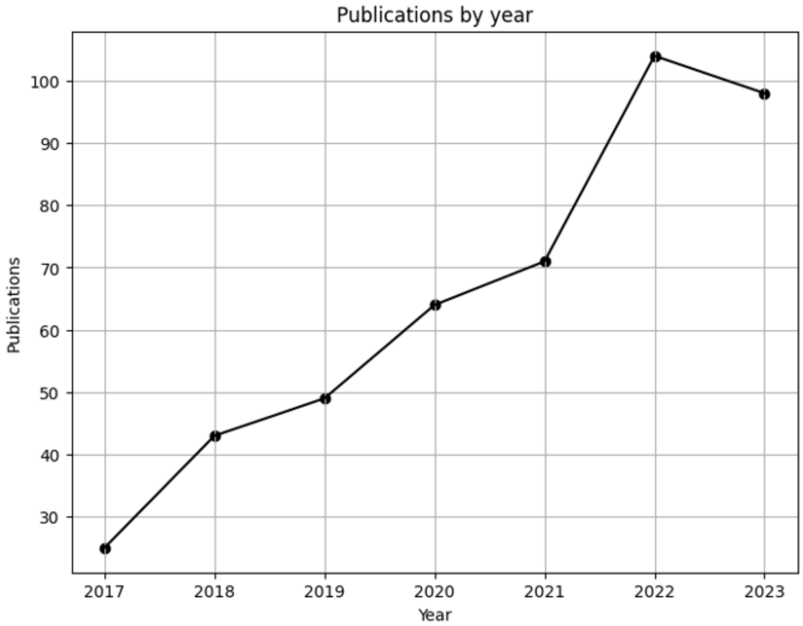
Identification – This first step involved searching a literature database using predetermined search terms and parameters to identify an initial set of articles. From the SCOPUS database, relevant articles or review articles were identified using a search equation that filtered papers with the desired keywords, this resulted in a total of 590 documents. Then, filters were applied to only include articles or review articles that were published between 2017 and March 2023, 6 papers that were not published in English were excluded as well. After applying all the proper filters, 454 documents were identified, the resulting search equation was:

TITLE-ABS-KEY(ESG OR CSR OR “environmental performance” OR “environmental disclosure” AND “firm value”) AND PUBYEAR > 2016 AND PUBYEAR < 2024 AND (LIMIT-TO (DOCTYPE,”ar”) OR LIMIT- TO (DOCTYPE,”re”)) AND (LIMIT-TO (LANGUAGE,”English”)).

Figure 4 shows the number of articles published by year in the selected timeframe. The upward trend shows that this is a relevant research topic.

Figure 4

Publications by year between 2017 and 2023.



Screening - The identified articles were screened by examining titles and abstracts against the scope and objectives of the review to remove articles deemed irrelevant. This screening process resulted in a collection of 80 documents that underwent full-text review later.

Eligibility - This step involves assessing whether each article meets the predefined inclusion criteria to be considered for the review. The remaining articles underwent full-text examination to determine if they fit within the scope and objectives outlined for this review and met certain eligibility criteria like relevant samples, outcomes of interest, pertinent analysis, etc. 55 documents were deemed fit and considered for the inclusion step.

Inclusion - The articles that passed the eligibility assessment were then included in the final sample for full analysis and synthesis. This final set of included studies contributed evidence to address the review purpose. A total of 42 eligible articles were included for analysis, citation, and discussion.

The structured methodology, summarized in Figure 5, enabled a trans- parent and replicable gathering of the existing knowledge base to elucidate the state of research on this topic. The findings from the final sample of included articles are presented in the following sections.

Figure 5

Process of the bibliographical search for the review

Identification: Papers identified in Scopus using the search equation: TITLE-ABS-KEY (((ESG) OR (CSR) OR ("environmental performance") OR ("environmental disclosure")) AND ("firm value")) (n=590)

↓

Identification: Documents filtered by year (2017-2023) and by document type (article or review article) (n=454)

↓

Screening: Documents screened by examining titles and abstracts (n=80)

↓

Eligibility: Full-text examination of documents to filter those that fit the scope and objectives (n=55).

↓

Inclusion: Documents included for citation and analysis (n=42).

4 RESULTS AND DISCUSSIONS

4.1 CSR EFFECT ON FIRM VALUE

In terms of publications related to CSR and the value of the firm in the last years, a growing trend is evident, with the countries with the highest number of publications on this subject being: the USA, China, Indonesia, South Korea, Canada, Australia, United Kingdom, India, France, and Hong Kong. These are developed countries, with large corporations and, for the most part, strict regulations on corporate social responsibility; however, the effects of CSR in each country differ depending on cultural and social characteristics.

Yi et al., (2022) studied the effect of CSR performance on the value of firms in China during the COVID-19 pandemic using a linear regression model in which the dependent variable was stock market performance. They found a significant negative effect between CSR and the stock market performance of firms during this period. This behaviour is explained by the fact that the Chinese population, in general, has little awareness of CSR and investors consider this type of investment costly, even more so in times of crisis, such as the COVID-19 pandemic. The opposite is the case in the work done by (Salam et al., 2022) for Saudi Arabian companies that have business relationships with companies in the Middle East and Africa. This study shows the positive and significant relationship between CSR and firm performance and explains it by the increase in consumer satisfaction and loyalty with firms that adopt a CSR orientation. Similarly, Rjiba et al., (2020) show that CSR has a positive effect on a firm financial performance in times of economic uncertainty, which is more evident in developed countries. On the other hand, studies in emerging economies such as India have found a positive and significant relationship between firm value and CSR practices focused on sustainability and environmental care (Bardos et al., 2020; Bhattacharyya & Rahman, 2019; Sardana et al., 2020).

These results are like those reported by Bardos et al., (2020), where a positive and significant relationship between CSR and firm value is evidenced, mainly mediated by the market effect and with a predominant effect on the eco-friendly practices implemented by companies. As the work of Sheikh, (2018) shows, firm value is related to CSR, especially, in the environmental dimension, however, the effect is only significant in environments with high competitiveness and product fluidity.

It becomes clear that CSR influences firm value, mediated in part by social, cultural, and market aspects surrounding firms. Even religious aspects can become influential. Zolotoy et al., (2019) studied the effect of CSR on the value of firms located in areas with strict religious norms and others in areas that are laxer in this respect. The results show that strict religious norms attenuate the positive effect of CSR on firm value, and even this effect varies according to the composition of religious groups. Pham and Tran(Pham & Tran, 2020) even show how high CEO integrity generates a mediating effect that positively enhances the relationship between firm value and CSR.

Grassmann, (2021) evaluated the relationship between firm value and CSR specifically in the environmental aspect. Using Ohlson’s accounting valuation model, he was able to identify that environmental investments follow a U- shape with the value of the firm. This implies that organizations become more viable and improve their valuation when they make no or very few environmental investments, or on the contrary, make very great efforts in this regard. This result could be attributed, on the one hand, to the legitimization vis-à-vis stakeholders' expectations through the publication of an integrated report in the case of companies with a low level of environmental expenditure. On the other hand, companies with a high level of environmental expenditure could benefit from the explanations provided in their integrated reports on the contribution to the value creation of their environmental strategies.

There have also been several studies showing how the implementation of CSR practices can help mitigate the negative effects caused by product recalls in companies in the food sector (Kong et al., 2019). However, other studies evidence that, if companies have high levels of GHG emissions, the implementation of very strict CSR practices produces a negative effect on their value (Cooper et al., 2018). Likewise, Azimli, (2023) shows how CSR increases the value of companies and even mitigates the negative effects of uncertainty in climate policies, this is due to the protective effect that CSR offers to shareholders in periods of uncertainty and changes in climate policies globally and locally. Finally, Tarjo et al., (2022) showed that proxies such as GRI and environmental voluntary disclosure of CSR positively affected the value of mining companies in Malaysia and Indonesia; however, these effects were reduced when companies committed financial fraud, even decreasing the value of the company.

4.2 ESG EFFECT ON FIRM VALUE

In relation to ESG indicators and the value of companies, the trend in publications has been increasing over the years. From the documents published on this topic in SCOPUS, it was found that the top 10 countries in terms of the number of publications are similar, for the most part, to those described in the previous section for CSR. These countries are South Korea, the USA, Malaysia, China, the UK, India, Indonesia, Spain, Turkey, and Australia. It was also found that there is a relationship between the country's income, its development, and the regulations that oblige companies to report some type of ESG information with respect to the number of publications. It is also noted that, in Latin America, only one publication on this topic was identified in Brazil, highlighting that, in addition, no country in the region has policies or laws that require companies to report ESG information. In this regard, Gregory, (2022a) analyzed firms in 70 countries, in order to identify the effect of ESG indicators on free cash flow and free cash flow to the capital of companies through a regression model. The author found that ESG indicators were only positive and significant for the cash flow of firms in developed countries. However, ESG had no significant impact or correlation with free cash flow and even presented a negative and non-significant value for free cash flow to equity in developing countries.

Shin et al. (Shin et al., 2023) studied the relationship between firm performance,

ESG indicators, and the social and cultural characteristics of different countries, finding that ESG practices in companies have a greater positive effect on financial performance in developed countries such as the USA and the UK, where the population is more individualistic.

Even the effect of ESG on value has not only been studied according to the country and its culture. The effect generated by media coverage of events involving ESG non-compliance in companies has also been evidenced. For instance, Anita et al., (2023) identified that high media coverage of an ESG controversy in a large media outlet can significantly decrease the value of companies in India.

Bofinger et al., (2022) analyzed whether the ESG principles adopted by organizations could lead to a possible misvaluation of the company and related it to CSR. They performed a linear regression model considering variables such as ESG score, ESG profile in organizations, control variables such as profitability, CapEx, Analyst coverage, leverage, market-to-book, and asymmetric information variables such as illiquidity, forecast error, and bid- ask-spread. They highlighted that a better ESG score leads to a significant increase in the real market value of the organizations and that overvalued companies increased their value by improving their ESG profile, while undervalued companies showed a better valuation by increasing this indicator.

Wong et al. (Wong et al., 2021) conducted a regression model to identify the effects of ESG indicators on the value of organizations in Malaysia. Firm value was determined in terms of Tobin's Q and the cost of capital. In the model, they considered the following variables: ESG indicators, firm characteristics (size, asset growth, cash holdings, debt ratio, asset tangibility, and ROA), and time. The authors found that ESG had a significant negative impact on the value determined as the cost of capital in all observation windows. However, the impact was significantly positive for the value determined as Tobin's Q, increasing this indicator by 31.9%, and had no effect in the 3- and 5-year observation windows. In short, ESG adoption in companies is valued in the stock market, although only in the short term. Contrary to what (Rojo-Suárez & Alonso-Conde, 2023) highlight in their regression model focused on determining the relationship between ESG score and firm value in 4 EU countries. They found that the effects of ESG in the short term were not significant, but in the long term, they managed to reduce the existing differences between the value of the firm in the market and the book value, especially in the banking and financial sector.

Aydoğmuş et al. (2022) determined the effect of ESG on firm value and profitability measured as Tobin's Q and ROA. A positive and significant correlation between ESG on firm value and ROA was observed. However, the purely environmental criterion did not have a significant effect on Tobin's Q, although it did have a significant positive effect on ROA.

Ramírez-Orellana et al. Ramírez-Orellana et al., (2023) studied the relationship between ESG and the value of companies belonging to the oil & gas sector. For the specific case of ESG environmental performance, they evaluated 3 indicators: resource use score, emissions score, and environmental innovation score. They found that the strongest ESG indicators, specifically the environmental part, significantly increase the value of companies in the sector and emphasize that these types of companies generate greater investment in innovation strategies and care for the environment. This effect represents a better perception by the stock and stakeholders. However, in companies belonging to the health, finance, and tourism sectors, ESG presented different relationships with the value of the firm. In the financial sector, ESG had a positive and significant correlation with the value of the firm, while in the tourism sector, the correlation was negative and weakly explanatory, with no significant relationship in the health sector (Kuzey et al., 2021).

Fuente et al. (Fuente et al., 2022) studied the relationship between firm value determined as Tobin's Q and ESG indicators using a linear regression model. They reported an increase between 17.5-24 percentage points in firm value as ESG increases in organizations, especially for social and environmental factors.

4.3 DISCLOSURE EFFECT ON FIRM VALUE

In the reviewed literature, we identify a group of studies that evaluate the moderating effect of disclosure on the relationship between CSR and financial performance. As highlighted throughout the paper, this relationship remains a topic of debate for researchers. Voluntary disclosure of CSR activities may have moderating effects on this relationship (Grassmann, 2021) as shown in some of the identified studies.

The work of (Xu et al., 2020) analyzes data collected from reports of 2168 Chinese companies between the years 2008 and 2015. The objective was to determine the relationship between CSR disclosure in the case of the emerging Chinese market economy and the government's regulatory role in it. The study concludes that companies that do voluntary disclosure of their CSR activities are positively rewarded by the market, shown as an increase in their firm value. In general, private companies increase their firm value by making CSR disclosures, while in state-owned companies CSR disclosure only increases the firm value when they suffer negative impacts on their reputation. In contrast to this, the research by Xue et al., (2023) concludes that either type of CSR disclosure (voluntary or mandatory) has a negative effect on the profitability of companies, with voluntary disclosure having the greatest impact on this indicator.

The effect of corporate ESG disclosure remains an open question. In the work of Khan, (2022) a meta-analysis and bibliometric analysis is performed in order to identify the main trends and results in ESG and firm value research between the years 2012 and 2022. This work shows that one of the most relevant factors in this relationship is the effect of disclosure.

A study made by Fatemi et al., (2018) analyzed the effect of disclosure of ESG activities on firm value expressed in terms of Tobin's Q in companies studied between 2006 and 2011. The model used employs ESG strengths and weaknesses variables as a proxy for the ESG performance of companies. It also uses a variable quantifying the level of disclosure obtained from the Bloomberg ESG disclosure score database. The results of their research suggest that firms with a weak ESG level benefit from making adequate disclosure of their ESG. However, companies with a strong level of ESG see a negative effect due to such disclosure.

A similar result is observed in the work by (Li et al., 2018), in which they analyze data from 350 companies between the years 2004 to 2013. In this study, they analyze the effect of ESG disclosure on firm value and the moderating effect of CEO authority. The applied model uses the ESG disclosure score obtained from Bloomberg and Boardex databases as the main independent variable. This study evaluates the effect of this score on firm value (Tobin's Q and ROA). The results confirm the hypothesis that higher disclosure increases firm value.

This suggests a clear positive link between ESG disclosure and firm value. However, Chen & Xie, (2022) show how this trend is maintained, but only in those companies that manage to attract investors interested in ESG. While the relationship is heterogeneous in companies that do not have this type of investor.

4.4 EFFECTS OF ENVIRONMENTAL PERFORMANCE ON FIRM VALUE

This section discusses a series of papers that explore the relationship between the EP of firms and their valuation or financial performance. Without giving greater relevance to other moderating factors such as those presented in previous chapters.

Some studies, such as the literature review done by Dechezleprêtre et al., (2019) have indicated that there is a positive correlation between EP and the financial performance (FP) of firms. On the other hand, studies such as that of Shahgholian, (2019) have determined that the relationship between the environmental profile and financial profile of companies is inconsistent due to the different methodologies of data treatment and interpretation in this type of research. As well as the ambiguity in the definition of what constitutes the environmental profile and the financial profile. In addition to the above, (L. Zheng & Iatridis, 2022) conducted a meta-analysis in which they took quantitative data from more than 160 studies and 124,000 companies. The authors demonstrated that there is a positive relationship between eco-innovation and EP, as well as in the FP, social and operational performance of companies, making an exhaustive analysis that discriminates the different types of eco-innovation that can have moderating effects on this relationship. The results show that the study of the relationship between firms' EP and FP is still an open discussion.

A study developed by (Nishitani et al., 2017) with data obtained through surveys of Indonesian companies shows that those companies that decrease their GHG emissions tend to increase their productivity and profits due to cost reduction. However, they do not do so in increased sales of their products. This increase in EP is slightly significant. These results are in line with those obtained by (Gregory, 2022b), and (Galama & Scholtens, 2021) which indicate negative relationships between GHG emission and firm value. Similarly, the work done by (Nishitani & Kokubu, 2020) with Japanese companies, shows that an increase in EP has a positive and linear effect on the productive process of the companies. This in turn has a positive impact on the increase in demand, which improves their FP.

The research done by (Benkraiem et al., 2022) starts from a different point. It analyses the relationship between carbon efficiency understood as the reduction in GHG emissions and firm value in an international context, taking data from the 100 most sustainable companies in the world according to the Corporate Knights ranking between the years 2013 and 2019. The results obtained show that the relationship between the reduction of GHG emissions (specifically CO_2 emissions) and market value is positive.

Rather than trying to answer the question of whether "going green" is worthwhile, the work developed by (Ben Lahouel et al., 2020) attempts to determine the optimal level of "green" that a company should seek to maintain a positive EP-FP relationship. Assuming that the relationship is not linear but curvilinear. The approach of this paper seeks to determine the limiting values of EP that keep the EP-FP correlation positive using a PSTR regression model. As a result, the authors obtain that the EP-FP relationship is inverted U-shaped when using

Tobin's Q as a proxy for FP as the dependent variable. However, when using ROA as the dependent variable, the curve changes, taking an inverted V-shape.

In their study, the research conducted by (Castro et al., 2021) also seeks to determine the effect of EP on the stock price of companies in 16 European countries. To define the EP, they use the GHG emissions of each company, moderated by aspects of eco-innovation such as the use of renewable energies in each country and green patents, as well as other factors such as access to green technologies through international trade. In addition, the observed time window (2005-2017) allows for considering data from a period of international financial crisis. The results obtained show a positive relationship between EP and stock price. On the other hand, they denote that one-off factor such as the wide use of renewable energies or high intensity in international trade have a negative effect on the stock price, at least in the short term. Focusing on the period of the international financial crisis, it is observed that the EP has no relevance to the value of the stock price.

The work done by (Gonenc & Scholtens, 2017) sheds light on the EP-FP relationship in companies that make intensive use of fossil fuels (chemical, oil, gas, and coal industry sectors). The results obtained from a large and heterogeneous sample including companies from different countries indicate that, in general, there is a positive relationship between the EP and the FP of the companies. However, it is evident that this relationship becomes negative when only data from the fossil fuel-intensive sector are evaluated, showing that companies in this sector with better financial performance have poor environmental performance. It is valuable to take this type of study into account because its focus on this specific sector allows us to see how the EP-FP relationship varies in its behaviour depending on the sector.

5 CONCLUSION

This paper shows the correlation between the different aspects, strategies, and initiatives in environmental matters and the value of the firms. Forty-seven publications were analysed and divided into each of the topics used to determine the environmental activities carried out by organizations (ESG, CSR, EP, and disclosure). Further research could focus on the differentiated impact of the concepts of CSR, ESG, and EP on firm value. While these terms are sometimes used interchangeably in the literature, this analysis has shown they have unique implications and should be analysed as distinct factors.

The analysis of the documents shows that there is heterogeneity in the way company value is determined, with profitability, market-to-book ratio and Tobin's Q being the most common. Heterogeneity was also found in the way the authors determine the environmental performance and activities of the organizations. This remains a matter of open debate, especially considering that there are multiple moderating effects that complicate the relationship between environmental performance and firm value. Future research should work towards creating a widely accepted definition and measurement method for environmental performance, which would facilitate easier comparison and more robust findings.

These moderating effects are generally related to cultural and social issues that surround companies and depend on the country in which they operate. However, the relationships found between different environmental initiatives and firm value tend to be positive and significant and to have mostly linear or quadratic relationships. This effect is partly since companies with good environmental performance tend to have greater protection against uncertainty in the market and generate greater confidence among stakeholders, which translates into an improved image, higher revenues, and, finally, a better valuation. In the documents analyzed, a strong relationship was found be- tween these activities and the value of the firm, and the country's income. In developed countries, the relationship is more significant, while in developing countries the relationships are variable and depend on other factors. There is a potential area to investigate the role of moderating effects in greater depth. These might involve cultural, socio-economic, or other context-specific factors that may impact how environmental performance translates into firm value.

Future studies should aim to address the identified geographical limitations in the existing literature. Specifically, no studies evaluating the correlation between environmental initiatives and firm value in Latin America and the Caribbean were found. This presents a critical opportunity to expand the understanding of these dynamics in underserved geographies. Understanding these dynamics in a broader range of contexts, particularly in emerging economies, could reveal more nuanced insights into the relationship between environmental performance and firm value.

Lastly, there is a scope for research on the optimal level of green or environmental performance a company should seek to maintain a positive EP-FP relationship. This could give firms clear guidelines on their environmental efforts, striking the right balance between economic feasibility and environ- mental responsibility.

By addressing these identified gaps and suggested research directions, future studies can contribute to a more comprehensive understanding of the relationship between environmental performance and firm value.

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