

The impact of greenhouse gas emissions and green innovation on corporate investors' financial performance: A systematic review

L'impact des émissions de gaz à effet de serre et de l'innovation verte sur la performance financière des investisseurs : Une revue systématique

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Abstract:

In light of different environmental challenges, such as global climate warming, wildfires, as well as urban air and water pollution caused by GHG emissions, environmental awareness has emerged as a key factor influencing the way companies operate in the global economy. An eco-friendly culture has been increasingly spreading among stakeholders, governments, and institutions that have been lobbying companies to reduce environmental impacts from their production activities (Yu et al., 2017; Yu and Ramanathan, 2015); Although until a few decades ago, the reality is that industrial practitioners, environmental policymakers, academics, and business people largely ignored the environmental concerns arising from the assumption that the assets manufactured within their organizations had limited ecological impact. Therefore, environmental decline and degradation have emerged as a worldwide challenge (Sascha et al., 2020). From the academic perspective, scientists are steadily expanding their focus beyond general deliberation toward the development of green innovation and so on (Singh et al., 2020; Zhang et al., 2020).

Although there has been a wide survey of literature published on this subject reflecting many paradigms within which the firm stands at the heart of environmental accountability, it remains relevant to bring forward our reflections for further analysis. We find that green innovation mediates the link between environmental and financial performance. In accordance with our findings, we suggest that green innovation is a profitable strategy in the long run with a positive influence on the environmental and financial performances of a firm.

Keywords: Corporate Venture Capital, Green Innovation, GreenHouse Gas emissions, Corporate Social Responsibility, environmental performance.

JEL CODES: G24, O31, O34, Q51.

Article type: Theoretical article.

1. Introduction

Owing to this new awareness, a large number of firms are becoming increasingly aware of and committed to the CSR concept, especially to meet the requirements of the public media as well as to build credibility and gain their trust in the company. To this end, companies have been improving their environmental performance by means of the mediating role of environmental strategy and green innovation (Sascha Kraus et al., 2020). Indeed, Investment in green innovation has become more and more a vital driver in many industries today. The focus of environmental strategy and innovation should henceforth extend beyond the scope of the social and economic quest. In particular nowadays, when the universal context witnesses the severity of harm to the planet. For instance, it was reported that 2018 marked the hottest temperature on record, according to Ma et al (2020). And to this day, surrounded by multi-dimensional crises, many European countries are suffering from an over-exaggerated heatwave that has spawned wildfires that have devastated forests by the hectare. Meanwhile, Northern African countries, namely Morocco, have recently announced a state of emergency owing to a lack of water, a situation that is even more tragic in environmental terms. The above-mentioned environmental crises combine with the staggering stagflationary shocks in the present era, arising from the negative fallout of both pandemics and conflicts.

As an entity in this dynamic and evolving space, the firm needs to be evolving to address the breakdown and decline of its surrounding environment. Therefore, the most effective approach would be to embrace concepts such as a cause and a culture that respect the environment and its sustainable development. In this regard, Freeman (1994) points out that the firm must incorporate ethical and moral values, along with its value-creation objectives to succeed in the long term. Given such underlying assumptions, and to be well-positioned with respect to its performance, the firm needs only to harness its innovations and encourage innovation-related investments (Venturing capital).

Between investing or harvesting, several firms adopt green investment in particular in the “Era of Open Innovation” in order to establish competitive advantages and acquire new market shares (Matteo Rossai et al., 2019). Theoretically, investing in green innovations can have a positive impact on environmental and economic performance. By developing more sustainable practices and products, companies can reduce their environmental impact, save money on resources, improve their branding with stakeholders, and attract new customers who can improve their bottom line (Ramzi Benkreim et al, 2022; & Tang et al., 2018). Recent studies have shown that firms are attempting to reach a “win-win” deal with both their economic and ecological footprint. Stucki (2019) argues that firms invest in green technologies primarily if they are profitable. Contrary to King and Lenox (2002) stating that firms are motivated by the financial benefits that investing in environmental protection can produce and not by the increased value of a “greener” organization (Ramzi Benkreim et al, 2022). Tang (2018) advances that firms can enthusiastically adopt green investment by embracing their social governance responsibility to enhance their economic performance. Thus, other companies, especially manufacturing firms, may be keen to improve their green investment to avoid paying penalties for not complying with applicable environmental laws and regulations.

Through the diversified literature review on which we have relied, the reality of green investment can vary significantly between firms (Clarkson et al., 2011). That is, not all firms are able to implement a “greener” decision-making strategy. In China, the world's largest energy consumer and carbon emitter, green investments are much more complex than elsewhere despite its various developed carbon emission reduction policies. Further to this preamble, our study seeks to answer the following question: How do greenhouse gas emissions and innovative green investment affect the firm's environmental and financial performance? The aim of our study is to fill this causality gap between the four items covering the problematic

subject (CVC, CSR, GHG, GI) by opening a new research avenue to explore the effects of firms' green innovation and GHG reduction policies on financial performance. We basically join previous studies on the impacts of environmental policies on firms' green innovation by supporting the different theoretical hypotheses and results of various studies mobilized in this sense.

In this report, we shall proceed with a systematic review of the relevant literature, which will be further divided into four sections: First, an overview of CVC, followed by a theoretical analysis of green innovation, greenhouse gas (GHG) policies, CSR performance, and finally concluding with the study's conclusion with its findings, outlines the research limitations as well as provides directions for further development.

2. Research Methodology

To ensure accuracy, we have followed the previous guidelines on how to implement a rigorous and a systematic literature review. A first brainstorming rough draft has been determined in such a way that we subdivide the subject into four items namely: CVC, GI, GHG, and CSR. We opted for this strategy after noticing that rarely when all four items were mentioned in the same research reflection. As they were bound and involved in an intersectional theme, we sought to address them by identifying the relationships between them. To build our initial corpus of studies reporting our subject, we paid more attention to the articles covering the period from 2015 to 2022 in order to capture modern results and updated theoretical underpinning. We collected relevant papers about each of the four items. To identify relevant articles related to each sectioned item, we searched for specific keywords, as described in the table below:

Table1: Section keywords searched

	CVC	GI	GHG Emissions	CSR
Keywords searched	-Corporate venture capital -Corporate misconduct -Corporate investor -Green Venturing	-Green innovation -Sustainability Orientation -Green Investment -Green innovation culture	- Greenhouse Gas Emissions -Climate change -Global Warming -Environmental proactivity	-Corporate social responsibility -Environmental social governance -Social Performance

Source: Author

During our collection process, the optimal step would be how to find studies approaching two or even three of the four elements at the same time; it allows us to determine the various common points between them. Through the results of such studies, we discover the type of relationships between these main elements. We went with the snowball approach and added complementary articles, for each section, in the references of the papers we previously identified. As our systematic review focuses on peer-reviewed studies, we excluded books, book chapters, and other non-peer-reviewed publications from our corpus. After implementing the research design, collecting desired articles, removing irrelevant ones; as an analytical step, we aggregated a state-of-the-art of the different tensions for each sectioned item up to higher levels and classified them under aggregate dimensions without the need to literally apply the Gioia data structure although it is an appropriate method in such an inductive study of a wide variety of contexts (Gioia et al., 2013). Based on relativist subjectivism's premise of our state-of-the-art review, we went with the reflexivity step where the description is provided to make

clear how our subjectivities shape the interpretations of the grounded theories that we presented in the analysis step.

3. Literature review

3.1. CVC's overview

The main drivers of the emerging digital revolution have been the breakthrough technologies since the initial release of the Internet, a continuously changing landscape that has influenced global economic systems, business, and corporate competitiveness. Within these life-changing landscapes, casual investors in the shape of corporate venture capitalists (CVCs) have been playing a transformative impact, by exploring ground-breaking new opportunities, harnessing organizational strengths, as well as constantly searching for discriminating innovations. Typically, many companies invest in CVC primarily due to a strategic purpose, which is to reduce debt and improve liquidity. These companies commonly hold less liability and more liquidity (Bernard Tawiah and Michael O. Keefe, 2021). Judged to be patient, these companies, strictly speaking, take the risk of investing in startups with high growth potential, recent or even in the process of being created, with an innovation or acquisition motivation. Theoretically, it has been shown that committing to a competent venture capital company can positively impact the growth of the startup, lower the risk of failure, and ultimately create a more valuable company. Taking a so-called cautionary pessimistic perspective, (katila et al, 2008), (Hallen et al, 2014) have previously found that dealing with CVC is like swimming with sharks. The same thinking may be seen in a prominent investor who recently noted that startups that accept corporate money are trading with the devil (CB Insights, 2018) (Sergey Anokhin et al, 2021).

Certainly, apart from any judgment unsupported by solid academic analysis, it goes without stating that CVC is quite useful, whether one likes it or not, except for predatory firms where venture capital is a means of deception. The positive impact extends to other measures, which in turn may lead to other objectives. In this regard, Enrico et al's (2021) hypotheses, based on the assumptions of RBV theory (Barney, 1991), extend their theoretical background and claim that CVC programs can generate complementary resources. Indeed, according to Benson and Ziedonis (2009), CVC programs provide companies with resources and capabilities with the ultimate goal of increasing their performance. In the current system of things, where large companies have found themselves pressured by stakeholders, governments, and institutions on social, environmental, as well as economic issues in the case of sustainability and business; they, therefore, tend to rely more and more on startups that can easily meet these demands, given their nature. Indeed, the results of (Enrico Battisti et al, 2021) affirmed a positive impact link between CVC and CSR-related activities. And from this point, i.e. CSR itself, a series of impacts, by multiplier effect, on the environmental strategy and on green innovation, which in turn, alluding to the advances of (Sascha Kraus et al, 2020), will have a significant and positive impact on the environmental performance of the company.

According to this assessment, it was indeed revealed in the literature that CVC programs have an emerging influence on CSR. In other words, venture capitalists positively affect all three components: economic, social and environmental through their financing cycle. In contrast to crowdfunding, for instance, which is only capable of driving social change (Debbie Rodan et al, 2017). Likewise, ICV (independent venture capital) funds which are defined by Chemmanur et al. (2014) as limited partnerships that pursue purely financial returns (Emmanuelle Dubocage & Fatima Shuwaikh, 2021). Although it is the same logic: financing an entrepreneurial project, the thing that distinguishes CVC from other means of entrepreneurial investment is the adoption by the parent company of the organizational ambidexterity that is essential for the

competitive advantage of firms in the market (Duncan 1976, March 1991, Tushman & O'Reilly 1996). However, few researchers have tackled this issue of ambidexterity despite its relevance in so-called entrepreneurial organizations (Meeks, 2012), (Kristian Peters & Paul Buijs, 2021). Although it is recognized that there are many failures in CVC programs, this is due precisely to the lack of sequential ambidexterity. Notwithstanding the high risk, the findings showed that CVC-funded firms were more innovative than those funded by ICV funds. Furthermore, consistent with the advances made by (Matteo Rossai et al, 2019), CVC ambidextrous firms that strategically invest large amounts in firms close to their business portfolio mark a high entrepreneurial intensity. Thus, a complementary reference is made to the advances of Emmanuelle Dubocage & Fatima Shuwaikh (2021), stipulating that "the presence of greater business similarity and geographic proximity between the investment firm and the entrepreneurial firm, serves a key role in facilitating the transfer of knowledge, R&D capabilities, and firm personnel."

3.2. Green innovation: Theoretical analysis

In line with Joseph Schumpeter's concept, innovation leads to economic growth since it is the source of technical progress. Such innovation stems from the entrepreneurial ideas of companies that invest in R&D or/and in startups with new innovative concepts, as with CVC, so as to reap the benefits and obtain competitive advantages (RBV theory). Innovation has been an essential part of any organization's ability to maintain its competitive advantage in a business environment (Colin C.J. Cheng, 2018), (Damanpour, 1991). For the sake of accuracy, we will focus on green innovation herein, which falls within the framework of the green economy, which states that ecological crises are a lever for any alternative innovation that brings the least damage to the environment. We believe that green innovation is a form of creative destruction that replaces some old technologies with new green technological practices.

Certainly, there is still a lack of academic research on this subject. Today, more than ever, it is alarming to dedicate the most serious reflections to this issue. Nevertheless, green innovation has been addressed from various perspectives. It is growing in prominence as the threats of global warming and environmental degradation present enormous global challenges. In fact, recently, researchers have been talking about the importance of this theme due to its heavy weight and its significant contribution to the environmental performance of the company (Sascha Kraus et al., 2020). But the uncertainty reigns in its field of application, especially the manufacturing companies having difficulty in giving themselves to the green products innovation. Researchers have tried to understand this dichotomy between green and conventional innovation. According to our sources, the following observation was made: Establishing green innovation in a firm is conditioned by the injection of a whole green culture within the firm (Green innovation culture). Indeed, a company without a green innovation culture will have problems implementing the capabilities, motivation, and opportunities of employees (Paul Kivinda Muisyo & Su Qin, 2020). In this sense, more proper implementation of this culture involves changing the recruitment system to a new green recruitment system (Renwick, 2013). "Green human resources management" GHRM is further encouraged to promote green performance in the company through its human resources. Indeed, following in the footsteps of AMO theory (Appelbaum et al., 2001), Motivating green employee passion involves activities such as green performance management and green reward and compensation systems (Pellegrini et Al., 2018), that is, an organizational context that can enhance the environmental performance of the entire firm.

To relate this to RBV theory, we find that GHRM alone is not necessarily sufficient to achieve a green competitive advantage for firms, although it is certainly a sine qua non-condition. Indeed, some work has broadened their perspectives to include other exogenous factors that impact the maintenance of green innovation. (Kristian Peters and Paul Buijs, 2021) have found

that companies face many uncertainties related to GPI (green product innovation) due to both internal and external forces. Recent work has explained these uncertainties by the existence of only external forces: (Customers, market stakeholders, or regulators). The internal factors detected can be seen, for example: when companies stick to exploiting existing inefficient competencies to face the current market conditions or try to partially exploit inefficient competencies just to achieve the cross-cutting ambidexterity strategies. This puts companies in a situation of uncertainty as to foresee and plan effective actions related to manufacturing and selling new green products. Indeed, established companies launching green activities might suffer from a lack of green knowledge and skills (Colin C.J. Cheng, 2018).

Therefore, some previous studies, which are based on KBV (Knowledge-based view) theory, have highlighted several roles of suppliers in the development of innovation, such as knowledge source, co-creator, co-producer, user, and buyer. Colin C. J's research, fine as it is, did well to distinguish two types of green suppliers. The first is a source of knowledge. The second is a co-creator. His results show that diversifying green entrants who implement the green supplier's involvement as a co-creator perform better in green innovation than those who implement the green supplier's involvement as a knowledge source. In fact, both types of suppliers play an important role in the green innovation development process by moderating the link between sustainability orientation and green innovation performance. This link has been less thought through and never empirically tested.

Drawing on the two most dominant theoretical foundations (RBV and AMO theories), the researchers went around the firm to find what might trigger green innovation. From organizational ambidexterity, where ambidextrous organizations are called upon to move from ambidextrous leadership teams and managers - i.e., green employees - to GHRM - to the moderating link between sustainability orientation and green innovation, as well as the significant contribution of a green supplier (co-creator and knowledge source) of the latter. The studies did not remain at this level. They have spread to suggest a new green transformational leadership that is supposed to be accompanied by a performing GHRM with the ultimate goal of always weaving a fertile ground for the achievement of the environmental performance of the firm. Indeed, green transformational leadership is not only a source of motivation, vision, and inspiration for employees but also a strong incentive to acquire new knowledge and better engagement in the green process (Sanjay Kumar Singh et al., 2019).

At this measure, the theory allows us to observe that green innovation provides the company with environmental performance, although it has the challenge of filling the gap in the green knowledge and skills of its employees. It is also possible for the company to use CSR consultants for any useful information consolidation since CSR activities have a positive and significant impact on the maintenance of green innovation (Sascha Kraus et al., 2020). Thus, it could be argued that even CVC with the objective of introducing green innovation, have an interest in drawing on the green innovation culture of the startups they fund, given their nature of flexibly facilitating green integration, as we have highlighted in the CVC section. If we can qualify the CVC as financial innovation, we will find that it participates in the consolidation of green innovation. Financial innovation, according to the research of (Gecheng Yuan et al., 2021), can promote green innovation, especially in technology-intensive industries through the ability of intermediaries to screen information. Indeed, the results of (Gecheng Yuan et al., 2021) state that although financial innovation does not have an obvious impact on the proportion of green innovation, it has a significant effect in countries where environmental regulations are considered strict and the degree of banking competition is lower, as well as in technology-intensive industries.

3.3. GHG emissions.

Global warming, which is driven by the concentration of greenhouse gases (GHGs), is now becoming the most pressing concern (Williston, 2018). For example, the IPCC's 4th assessment report in 2007 highlighted that between 1906 and 2005, the average global temperature climbed by 0.74 degrees Celsius. Among the six GHGs that are stipulated in the Kyoto Protocol were CO₂ (carbon dioxide), CH₄ (methane), N₂O (nitrous oxide), HFCs (hydrofluorocarbons), PFCs (perfluorocarbons), and SF₆ (sulfur hexafluoride), out of which the contributions of CO₂, CH₄, and N₂O made up more than half of the overall greenhouse effect. As per the World Bank database (The World Bank Group, 2018), the annual global CO₂ emissions have grown from 22.15 Gt in 1990 to 36.14 Gt in 2014. Meanwhile, CH₄ emissions have risen from 6.67 to 8.01 Gt of carbon dioxide equivalent. Consequently, the analysis of the main drivers of global changes in CO₂, CH₄, and N₂O emissions has gained utmost priority and emergency. Many approaches have been developed to address the change in global GHG emissions as well as how economic behaviours may lead to an increase or decrease in GHG emissions along with increased energy needs (Ang et al., 2003). There are two basic methods that have been implemented to settle the aggregate inputs: index decomposition analysis (IDA) and structural decomposition analysis (SDA). In addition to the research carried out by Laspeyres in 1871, a group of researchers has also focused on the index of decomposition analysis (Ang, 2005). The index can be split into the Laspeyres index, Divisia index, Paasche index, Fisher index, and Marshall-Edgeworth index (Ang and Choi, 1997). However, the other strand of decomposition analysis is referred to as SDA. Through the development of input-output theory and structural economic theory, the analysis of the relationship between economic croissants and GHG emissions using the input-output approach becomes achievable (Hristu-Varsakelis et al., 2010). Consequently, Su and Ang (2012) suggested a wider input-output structural decomposition scheme. Having the distinct benefit of tracking the impact of indirect resource needs caused by ultimate demand spillover between industries, the SDA has been extensively applied in the area of energy and GHG emissions (Wang et al., 2017).

The overall economy-wide impacts associated with a climate change policy are commonly investigated through computed general equilibrium (CGE) based approaches (K. Zhang, 2016). Broadly speaking, either a regional, national, or worldwide economy (which includes almost all branches of an economy) can be depicted in a CGE model. The such model consists of a group of equations depicting consumption, import, export, investment, savings, and output according to the economic theory. Generators are frequently characterized in a way that minimizes the cost of production by allowing them to substitute different inputs (such as between capital and labor, or between coal and natural gas) at given rates, in order to purchase low-cost inputs rather than relatively expensive inputs with greatly increased prices. The emissions data may also be incorporated into a CGE model for studying climate change policy, in which variations in emission levels are frequently linked to changes in input quantity demands or output quantity levels.

Moreover, the rational management of a driven policy is not always very successful; indeed, it may sometimes cause the accentuation of another concern. Indeed, although these policies are the measures implemented to protect the environment through taxes and regulations may have immediate effects on or even through the cost-effectiveness as proposed by traditional neoclassical economic theory, they cannot avoid additional production costs and the imposition of constraints on the decision making of firms on production. These consequences will produce a "capital crowding out" effect, weaken a firm's international competitiveness, and negatively affect economic growth (Jaffe and Stavins, 1995). To illustrate this cobra effect, the study by Zhongfei et al, (2021) showed that instead of committing to follow the policies pilot of the carbon trading system, companies are more likely to reduce their investment and production than to increase green technological innovation to achieve the emission reduction target. This

unanticipated behavior of Chinese companies, which is not at all conducive to green innovation, negatively influences economic growth through lower investment and production, which can be explained, according to (Zhongfei et al), by the reduction in cash flow and expected returns.

3.4. CSR performance.

It is actually hard to define CSR's concept (McWilliams et al., 2006), but the most widely accessed view of CSR is based on the European Commission (2011, p.1) defining CSR as "the responsibility of enterprises for their impacts on society" and stating that they should have "a process in place to integrate social, environmental, ethical human rights, and consumer concerns into their business operations and core strategy in close cooperation with stakeholders".

According to (Aurélien Acquier, Franck Aggeri, 2015), the debate on CSR seems to be relatively new in Europe, whereas this notion, a discipline/culture today, has generated a lot of reflection in North American management literature, especially with the work of (Bowen, 1953), who, with his arduous efforts to formulate and systematize CSR, emerged at the frontier between theology, economics, and management. His ideas date back to the middle of the last century and were based on moral and ethical foundations with the church as a source of inspiration. Indeed, an important interpenetration was noticed between the discourses analysed by Bowen and those of religious ethics. The same view is reaffirmed by Carroll (1979), for whom CSR refers to "society's expectations of the company in economic, legal, ethical and discretionary terms".

In his book "Social Responsibilities of the Businessman", Bowen defined CSR as a set of obligations, applied to managers, toward society. Such a vision was structured around the notions of "trusteeship" and "stewardship" by taking into account stakeholders, called at that time "interested groups". In truth, this consideration of ethical values as a basis for corporate social responsibility is simply an extension of American culture, based on belonging to a community, or of humanism's philosophy, for which many thinkers have given unprecedented importance; from Weber to Edgar Morin, for whom the entrepreneurial dynamic is far from being reducible to an economic calculation, all the more so if it is driven by ethical foundations. In the same thoughtful alignment (Peter Drucker, 1954), a precursor, had shown that social issues and those of the company are welded. His vision highlighted the need for business leaders to take into account the environment of their practices and to review the principles that could motivate the company's decisions. On this point, (Drucker, 1954) in line with (Bowen, 1953) thus rejects the utilitarianism of the liberals (Smith, Mandeville) as a principle of managerial action.

Over time, and following the emergence of the large company going hand in hand with a questioning of its responsibility, a strong intention is increasingly given to CSR issues. Aware of this and in order to be sustainable, companies are modifying their strategies and choices in response to the increased demand from stakeholders (Hussain, Rigoni, & Orij, 2018), with whom they seek to improve ties by using precisely CSR disclosure to show their alignment with societal values (Garcia-Sanchez et al, 2014). It is therefore in the company's interest to work on its reputation, which is like a perceptual representation of its past actions and future prospects that describe the overall appeal of its main stakeholders (Fombrun, 1996). For better CSR disclosure, most researchers have identified the board of directors as one of the main corporate governance mechanisms. Indeed, it ensures the company's profitability, aligning its behaviour with the interests of its shareholders and stakeholders (Jo & Harjoto, 2011). Board members as internal stakeholders can communicate with corporate agents directly to obtain first-hand information on CSR initiatives (Madsen & Rodgers, 2015). Thus, the effectiveness

of CSR strategy explains the positive relationship between board sustainability committees and corporate environmental and social performance (Nurlan Orazalin, 2019).

On the issue of environmental performance, the study by (Sascha Kraus et al, 2020) showed that CSR does not directly influence environmental performance as found in the study (Ala Eldin Awawdeh and Mohammed Ananzeh et al., 2021). Which is not identical therefore to those of (Bacinello et al., 2020) nor (Nurlan Orazalin, 2019) who found that CSR significantly improves the environmental performance of the firm, ditto for the results of (Hernandez et al., 2020) having projected on Spanish micro, small and medium firms. Under the same research lens as (Sascha Kraus et al., 2020), the study of (Yasir Hussain et al., 2022) witnessed the moderating impact of CSR on environmental performance by arguing that green innovation, green capability, environmental strategy, and green transformational leadership, are the most successful ecological examples that mediate CSR and environmental performance.

Apart from the social and environmental performance generated by CSR, through its mediating and moderating roles of board gender diversity, green innovation, environmental strategy... and so on, some papers have tested a relationship between CSR, environmental investments, and financial performance. The study of (Malik Shahzad Shabbir & Okere Wisdom, 2020) has shown a positive and significant relationship between internal environmental investments and a firm's financial performance and a positive but insignificant link between external environmental investments and a firm's financial performance. Yuanyuan Zhang and Zhe Ouyang (2020) suggest that corporate environmental responsibility is enhanced in terms of prominence and favourability, through which CER indirectly improves corporate financial performance. Compared with other dimensions of CSR activities (such as community benefits and employee benefits), CER devotion was considered a waste of corporate resources because stakeholders may only reward social initiatives that are closely and directly related to their own interests (Stoian & Gilman, 2017). However, CER is a significant signal that may provide stakeholders with information about a firm's norms, values, processes, and capabilities, possibly leading to a generalized favourability concerning the firm (Yuanyuan Zhang & Zhe Ouyang, 2020). Most of these studies have highlighted how organizations can be well-liked by the stakeholders they are trying to attract through the moderation role of CSR investment strategy to build loyalty, and reputation and achieve better financial performance.

4. Conclusion

The purpose of this systematic review is to provide an overview of the environmental dimension of a firm's performance. The discussion was undertaken based on four theoretical components, namely: CVC, green innovation, GHG emissions, and CSR, which are considered beneficial for all practical purposes, such as to policymakers for improved societal governance through green foundations that reflect a strong political commitment to achieve sustainable development with a sensible manner. Furthermore, it is also important for the general managers of the companies so they can follow the pilot policies implemented by responsibility, either to escape the levies or just to satisfy the demands of the stakeholders, both internally (employees) and externally (suppliers). The ultimate aim of these activities is to achieve a green, efficient, and innovative production process, from which positive effects can be derived, whether on the economic side: an increase in economic profitability through the achievement of competitive advantage; or on the social side: boosting employability, reducing precariousness, and so on; or on the environmental side: reducing the toxic effects that have accumulated on the planet, and taking a greater part in its protection.

We have shown through the literature that companies must consider the green investment as a long-term strategy. Nevertheless, certain limitations of this study open up interesting opportunities for future research. One of the limitations of this study is that the "pay to be

green" strategy, which aims to improve a company's performance, is implemented very differently across firms (Clarkson et al., 2011). The same green strategy cannot always be easily replicated among the firms; The worst is that *"green investment could be seen as a waste of energy in the measure where this investment would absorb resources that could otherwise be used by firms for standard operations and production which will affect their production and sales and hurt their financial performance"* (Ramzi Benkreim, Fatima Shuwaikh, Emmanuelle Dubocage, 2022).

In addition, the main thrust of this review, throughout its four complementary sections, implies that understanding the ongoing systemic crisis we are experiencing needs to consider the ecological dimension thereof (Dominique Philon, 2013). On this basis, it is worthwhile to state that further research, to which we hope to give rise through this report, will provide a basis for further reflection on finding a possible alternative for dealing with the contemporary crisis while taking into account its environmental and eco-friendly aspects. It is worth noting that this study contains a summarized, filtered, and diversified survey of the existing literature so that only harmonious insights are recited, and every addition, rectification, or criticism will lead to the identification of new issues that could further enrich scientific research in this field.

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