# CARBON MANAGEMENT CHALLENGE, A MATTER OF PERFORMANCE: DOING GOOD OR FEELING GOOD?

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**Abstract**

Climate change has become a crucial matter involving every human and business activity, required by the growing incidence of extreme natural events that characterize our era. The statement of the "global boiling era" by António Guterres (Niranjan, 2023), the UN Secretary-General, in July 2023, has brought attention to various tools implemented to address global warming, including carbon credits, introduced under the Kyoto Protocol. The increasing urgency of addressing climate change has led to a stream in the importance of carbon offsets over the past two years (Gurgel, 2022). Companies are investing in carbon offsets to mitigate their greenhouse gas emissions (Harvey, 2021), with each offset representing a tonne of emissions avoided or removed from the atmosphere. However, these investments have come under examination, with concerns about over-crediting or selling offsets that promise more emissions reductions than they achieve (Fan et al., 2021). Despite these challenges, the carbon offset market has shown resilience, even progressing during the coronavirus pandemic (Gross, 2020). This is partly due to an unexpected boost from corporate demand and high-profile initiatives.
Although carbon credits and carbon offsets are frequently used interchangeably, they represent different products with distinct purposes. In essence, a carbon offset denotes the removal of greenhouse gases from the atmosphere, while a carbon credit represents the reduction of released into the atmosphere (Calel et al., 2021). Carbon credits or offsets, often used to balance emissions that are difficult to remove, have gained traction as an essential element of corporate sustainability initiatives. However, their impact on financial outcomes remains an area of ongoing debate (Wang et al., 2022; Wang, 2023).
This research aims to shed light on the relationship between carbon credits and a firm's financial performance, examining the mediation role of Environmental score (Peterson, 2022). The study's purpose is to fill this gap and determine whether carbon credits are connected to financial outcomes.

According to the last studies in the sustainability field, carbon offsets may be considered as strategic resources or capabilities available to a company for enhancing its competitive advantage (Kaplan et al., 2023; Shrestha et al., 2023). This view represents the core of the Resource-Based View theory, which suggests that firms gain a competitive advantage by using their resources and capabilities differently compared to competitors (Barney, 1991). Furthermore, carbon credits could operate as a means for companies to acquire or maintain legitimacy in the eyes of stakeholders, ensuring actions in compliance with laws: Legitimacy Theory (Dowling & Pfeffer, 1975; Suchman, 1995). Finally, carbon offsets could be seen as a way for companies to fulfill their responsibilities to stakeholders in general (employees, customers, environment, and, so on), not only shareholders: Stakeholder Theory (Jones et al., 2017; Cornell & Shapiro, 2021).
In this setting, characterized by growing environmental concerns, organizations are increasingly investing in carbon offsets as a strategy to reduce their carbon footprint (Cadez et al., 2019). Then it becomes interesting to understand the role of carbon offsets, considered as a resource, and consider that financial outcomes are related to

the combination of a firm's resources. More specifically, we assume that the impact of carbon offsets on financial outcomes is positive and that environmental score increases their effects, moderating them. Our variables come from existing literature on the sustainability field: carbon credits variable come from carbon offsets proxies defined by Sitompul et al. (2023) and, financial outcomes from previous studies in the sustainability field (Tang et al., 2012; Dalal & Thaker, 2019; Palea & Santhia, 2022). We also used several control variables in order to avoid endogeneity problems (Sitompul et al., 2023). **To test our hypothesis, we use a** worldwide sample of 50 companies with carbon offsets/credits for a time frame of 5 financial years (2018-2022), with specific attention to the sector and geographical region. To determine the impact of carbon credits on financial performance, we used the panel regression technique. The risk of endogeneity has been eliminated by fixing the direction of analysis and incorporating a lot of control variables.

The study reveals significant preliminary results. First, it sheds light on the relationships between carbon credits and, the company's financial outcomes. Carbon credit utilization has a notable impact on the financial performance of companies, with certain industries and regions experiencing more prominence. The results also highlight the Environmental score as a mediator, suggesting that companies with strong sustainability initiatives improved financial performance when incorporating carbon credits. Due to the findings obtained, it is possible to highlight many contributions. By integrating insights from recent events and empirical evidence, this research will contribute to our understanding of how investments in carbon offsets can serve as strategic resources that enhance financial performance (Meng et al., 2023). It will also shed light on how environmental scores can influence this relationship. The data comes from a worldwide sample so variations in regulatory frameworks and reporting standards across regions could impact the study's findings. Furthermore, it is essential to recognize that the adoption of carbon credits becomes mandatory for specific companies (Palea & Santhia, 2022; Zhang et al. 2023). This raises the question of whether carbon credits can be considered an effective strategy to fight climate change or just an economic/financial tool implemented by companies due to regulatory requirements (Zhang et al. 2023).

This work highlights important implications for encouraging sustainable entrepreneurship by focusing on carbon credit investment due to law recommendations and enhancing financial performance. Policymakers can use the research insights to implement effective policies that encourage businesses to adopt sustainable practices. Investors can gain valuable knowledge on the financial implications of incorporating carbon credits and ESG practices into their decision-making processes. Ultimately, the study can assist companies in making informed decisions about carbon credit utilization and sustainability practices, contributing to their long-term financial success while promoting sustainability.

In conclusion, with the growing visibility of climate change impacts, there is a notable acceleration in the adoption of decarbonization commitments. Companies are taking swift and resolute actions to mitigate greenhouse gas emissions and offset residual carbon footprints (Badri et al., 2023). However, a significant unanswered question remains: What is the source of funding for carbon credits, which companies utilize to offset their emissions, does it originate from marketing or sustainability budgets? (Hodgson, 2022).

**Keywords:** Carbon management, Carbon offsets, Financial performance, ESG score

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