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How to Properly Communicate Sustainability: Redefining Claim Credibility with a PLS-SEM Approach

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Introduction

In an era marked by growing concerns about environmental sustainability and corporate responsibility, the field of sustainability marketing has emerged as a critical domain for organizations seeking to align their practices with societal values and expectations. This task became increasingly difficult to execute, as widespread skepticism and rejection of sustainability claims deterred companies from divulging publicly their environmental and social achievements (Chen & Chang, 2013; Testa et al., 2018). The variety of strategies exhibited by many companies in a multitude of industries further fragmented the research field, leading to different types of sustainable marketing (Golob et al., 2023; Jaeger & Weber, 2020). In the academic field, the same phenomenon prompted researchers to focus either on the requisites and effects of a strategy or on their root cause, greenwashing (Seele & Gatti, 2017). While the response of the theoretical world is both timely and admirable, trying to understand the minutiae of the mechanisms that led to greenwashing and the resulting strategies means that the academical field is not integrated with the precedent literature. Tying the latest research to preceding works allows for novices and veterans alike to understand the impact that, in this case, the greenwashing phenomenon has. In particular, a concept crucial for marketing campaigns to be effective is perceived claim credibility: despite its critical role, its understanding remains fragmented in the face of disruptions such as greenwashing, with disparate perspectives and definitions scattered throughout the literature.

The primary objective of this research is to deepen the understanding of the factors that influence perceived claim credibility in sustainability marketing. By identifying and examining its antecedents, the author aims

to shed light on the underlying mechanisms that shape consumers' perceptions of sustainability claims made by organizations. Additionally, this paper seeks to address the gap present in recent literature about sustainable marketing by proposing a new, integrated definition of perceived claim credibility that integrates key dimensions identified in the literature and reflects its complex nature, unlike most papers in the field (see Table 1).

To address these research objectives, this study adopts a rigorous methodological approach, leveraging Partial Least Squares Structural Equation Modeling (PLS-SEM) to analyze data collected through a structured questionnaire. PLS-SEM offers a robust framework for examining complex relationships among latent constructs and observed variables, providing insights into the validity of measurement models, the structural relationships between constructs, and the meaningfulness and implications of research findings.

The structure of this paper is as follows: Chapter 1 provides a comprehensive review of the literature on perceived claim credibility in sustainability communication along with the method followed to select the papers. Chapter 2 describes the methodology employed to gather observations on these dimensions, including the development and administration of the questionnaire used to gather data. In Chapter 3, the author analyzes the data using the PLS-SEM technique and evaluates the hypotheses formulated in Chapter 1. Finally, Chapter 4 proposes a new definition of perceived claim credibility based on the research' findings and concludes the paper by describing theoretical and managerial implications, limitations of this study and future research.

Authors	Title	Research scope
Bhattacharyya (2023)	“The structure of sustainability marketing research: a bibliometric review and directions for future research”	Synthesizes and evaluates the current sustainability marketing literature
Szabo and Webster (2021)	“Perceived greenwashing: the effects of green marketing on environmental and product perceptions”	Studies the effects of greenwashing on three types of responses with PLS-SEM
Viererbl and Koch (2022)	“The paradoxical effects of communicating CSR activities: Why CSR communication has both positive and negative effects on the perception of a company’s social responsibility”	Categorizes sustainability communication types through CSR activities and commitment
Chen and Chang (2013)	“Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk”	Studies the relationship between greenwashing and green trust (credibility)
Rahman and Nguyen-Viet (2023)	“Towards sustainable development: Coupling green marketing strategies and consumer perceptions in addressing greenwashing”	Studies antecedents of greenwashing and its relationship with green strategies with PLS-SEM
Seele and Gatti (2017)	Greenwashing Revisited: In Search of a Typology and Accusation-Based Definition Incorporating Legitimacy Strategies”	Proposes a new definition of greenwashing based on a theoretical framework
Torresan, S. (2024)	“How to Properly Communicate Sustainability: Redefining Claim Credibility with a PLS-SEM Approach”	Studies the antecedents of perceived claim credibility with PLS-SEM to propose a new definition

Table 1. Positioning of this paper in relation to existing research.

1. – Theoretical framework

1.1 - Methodology for the Literature Review

In the academical world, the literature review serves as a fundamental vehicle for systematically exploring existing knowledge and identifying gaps. The overarching goal of this study is to unravel the concept of credibility within sustainability claims; the diverse perspectives stemming from disparate research contexts require to choose the correct methodology. Therefore, this study adopts a systematic review approach, navigating the expansive landscape of sustainability communication and claim credibility with ever-increasing restrictions to identify the documents relevant to this particular sub-topic.

This process provides a rigorous framework to identify all relevant dimensions and analyze each one, facilitating a comprehensive understanding of their individual roles and interactions. Also, the level of granularity offered by this approach is essential to explore the possible connections between dimensions of credibility within sustainability marketing. However, beyond its inherent benefits, the structure of this approach carries an additional advantage in strategically limiting the scope of the research: identifying and connecting the multitude of factors contributing to the credibility of sustainability claims and is a time-consuming task. For this reason, the boundaries offered by a structured approach serve as a methodological guide, ensuring a focused and targeted exploration. As the study progresses, this systematic review framework will serve as a robust tool for unveiling the dimensions that contribute to the credibility of sustainability claims within the dynamic landscape of marketing. Figure 1 illustrates the steps taken to select the papers present in the literature review.

To know what to search for is as important as selecting the right papers: no methodology is sound enough to account for not understanding the field of research. The preliminary step involves assessing the field and comprehending existing theories related to sustainability communication and claim credibility, particularly in the realm of marketing, to allow a thorough exploration of the topic. To do so, a preliminary research was needed: launching a query for “sustainable marketing,” the author read the most recent meta literature reviews that summed up the main topic of discussions and delved deeper into every subject that seemed closely related to credibility. While there won’t be any direct impact of this step in the construction of the paper selection for the literature review, it provided a great understating of closely related topics. In other words, this step allowed to understand the distinguishing details of apparently similar fields and to consider topics that otherwise would’ve flown under the radar.

The first concrete step of the literature review process is the choice of query strings and of academic documents aggregators or sources. The chosen online resource for this study is Scopus: while there’s merit in including other online aggregators and sources, their contribution would be marginal at best, and the number of initial matches was way higher than needed. Regarding the query strings, the author decided to use “sustain* credib*”, “greenwash* OR green wash* OR green wash*” and “sustainable marketing.” The first query is necessary to gather as many papers as possible relevant to this study early in the process; the second query allows to explore in greater detail the most prominent issue about sustainability claims. Lastly, while it may seem redundant given the previous queries, searching the broader field in which credibility is located will prove necessary to corroborate and contextualize the findings of other papers.

The second step was dedicated to excluding manuscripts that did not fit the basic criteria to be included in a structured literature review. First of all, documents must be peer reviewed papers to avoid redundancy between different document types and to guarantee a basic validation of the contents of the research paper's content. Then, these papers must be available in English, so that all readers of this study could read the cited documents for themselves, if desired; it is also a pre-requisite for the next step. Lastly, since this is a topic highly discussed and actively researched, the publication period spanned from 2012 to 2023, as to consider the period in which sustainability became a research subject and exploited by markets' bad actors, resulting in the greenwashing phenomenon that seems so common these days. After this step, there were 2321 papers from the first query, 4804 from the second query and 5689 from the third.

The next step is meant to assess the quality of the papers, choosing them based on a set of criteria. While using a structured approach for a review usually implies a strict application of one or two restrictions, this study is not a meta-literature review or a theoretical article where it is of utmost importance to apply the criteria to the letter. For this reason, I used a set of criteria for inclusion and exclusion, and a paper needed to fit at least one of them. The criteria set is:

- the paper must've been present in the first 250 results of each query, ordered by number of citations first and by newest after. This means that I've taken into consideration up to 1500 papers before taking into account the other two criteria;
- the paper must've been published in a journal listed in the 2021 version of the Academic Journal Guide;

- the paper must've been published by one of five big publishers (Springer, Taylor & Francis, Elsevier, SAGE, Wiley & Sons). While there's no proven correlation between being a renowned publisher and the quality of the papers they publish, it's safe to assume that these organizations want to keep their current prestige and status, and thus check thoroughly the quality of the papers they publish.

After considering these requirements, the total number of palatable papers was 462. However, there's a third criteria that must be applied only in the following step of the process and will be discussed here for coherence:

- if a paper has been cited in the final selection of papers and is relevant to the study, then it will be considered in the literature review. The relevance of the paper will be assessed as discussed in the previous step of the process.

While papers selected in this way are guaranteed to offer additional information about their subject, their quality is not completely assured. Ideally, the validity and veracity of these papers was adequately checked when the paper they were cited in was assessed for publication; however, there is no guarantee that cited papers were scrutinized as heavily as the originally selected paper. Therefore, for papers selected this way, I applied the two previous criteria and added a necessary condition for their inclusion:

- if the main authors have previously published in reputable journals (defined as journals respecting one of the two main criteria) and they previously worked on related aspects of the paper's topic, then the paper can be considered as good as already selected papers.

At last, the final step of the structured approach is all about the manual screening. For this part, each paper was evaluated on the title, the abstract

and the text; if the title or the abstract was not relevant to either sustainability, credibility or what were its antecedents, it was excluded. This process allowed to shrink the number of papers to only 56, which were included in the literature review; for the complete list of papers, see Appendix 1.

Ultimately, the number of papers and the topic they covered is sufficient to offer a complete overview of the subjects related to credibility of sustainability communications. Even if certain topics had less prominence leading to different depth of discussion, this selection of papers allow for hypotheses and results to be formulated and discussed properly thanks to the breadth of sub-topics present.

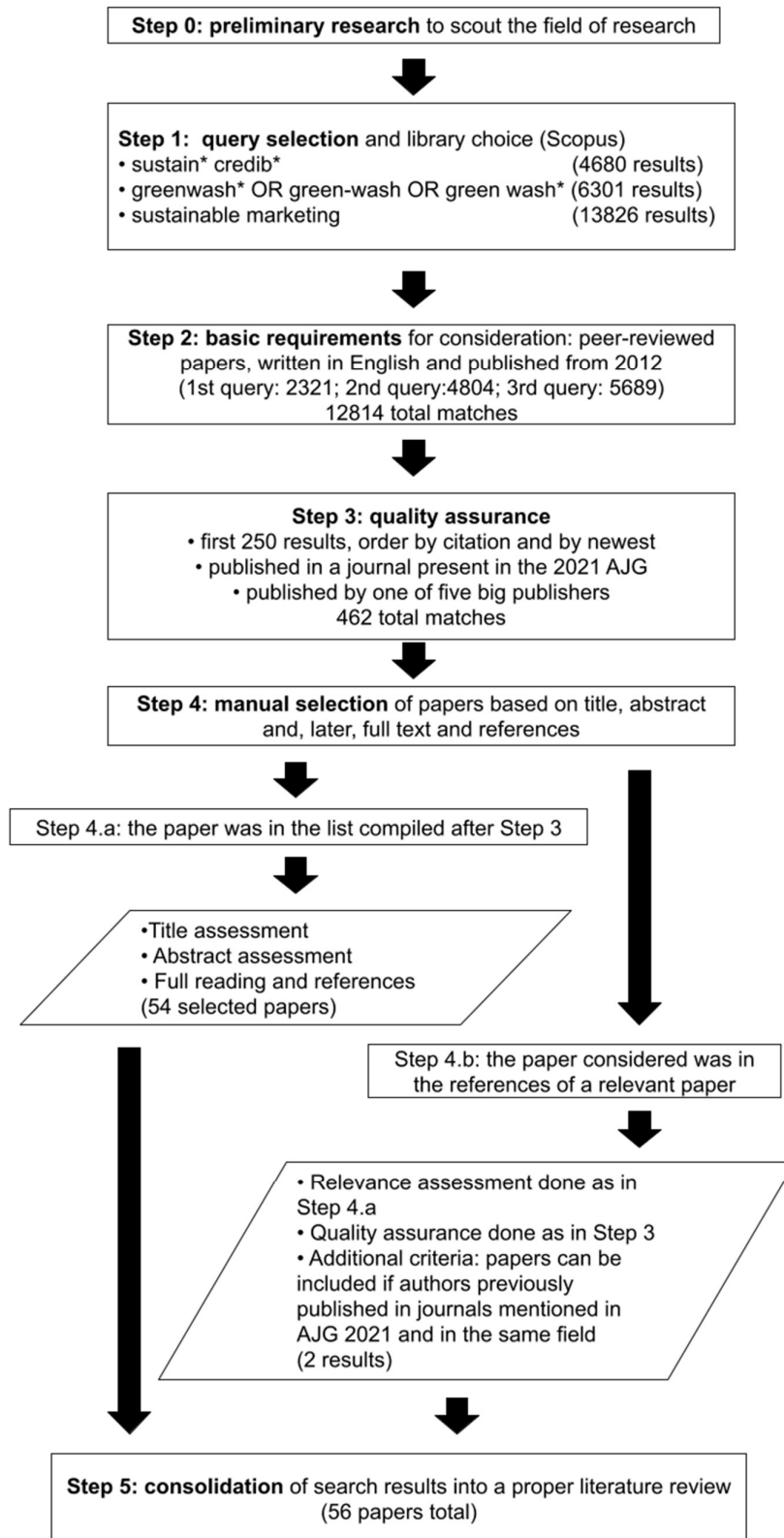


Figure 1. Process followed to create the literature review.

1.2 Literature Review

1.2.1 – Perceived Sustainability Claim Credibility

The recent focus on sustainability transformed the way companies communicate their efforts. The paradigm shift in the marketing sector poses unique challenges to individuals, as they navigate a barrage of competing claims vying for their attention and acceptance. In fact, the diversity of methods, mediums and contexts in which these claims can be communicated further complicates the receiver's task of credibility assessment (Golob et al., 2023; Miller & Bush, 2015; Parguel et al., 2015; Viererbl & Koch, 2022) to the point that the very concept of marketing credibility became fuzzy.

To bring back some clarity, researchers in the sustainability marketing field proposed many definitions that often are complementary to each other. While currently there is no consensus, there are two orthogonal theories that try to explain the current status of credibility: the 'marketing' perspective (Jaeger & Weber, 2020; Kemper & Ballantine, 2019; Lunde, 2018; McDonagh & Prothero, 2014) and the 'communication' perspective (Golob et al., 2023).

For Jaeger and Weber (2020), there are three parallel definitions of sustainable marketing: auxiliary, reformative and transformative. The first conceptualization is the closest to the marketing field: its aim is to provide a 'green' image for the firm to improve brand reputation and customer loyalty. From this perspective, sustainability is to be implemented throughout the whole marketing mix to build a competitive advantage over businesses, by improving reputation and pre-empting regulations; extracting value from the final customer is still the main priority. The second sustainability marketing type aims to promote sustainable lifestyles and de-market harmful products: its aim is to change the current methods

of conducting business and, consequently, marketing. It reflects this ideal in multiple ways: increasing consumer awareness on environmental and social issues, conducting internal marketing campaigns, and lobbying for stricter regulations are the most common strategies promoted by this current of thought. Lastly, transformative marketing occurs when a company realizes that responsibility toward a more sustainable future lies in both businesses and consumers. Its aim is to proactively challenge our current assumptions on our relations with economics and nature to create sustainable societies; participating in fair subsistence marketplaces, voluntary agreements, promoting degrowth, social marketing campaigns and partnerships are all accepted ways to have a positive influence on society.

From the ‘communication’ perspective instead, (Golob et al., 2023) identify 5 different modalities: commercial communication, reporting, transmission of information for consumer awareness, transformative communication and greenwashing. Albeit these definitions can help researchers and practitioners to understand why and how sustainability marketing works, they fail to consider the recipients of all these efforts (i.e. the general public), letting companies vulnerable to potential backlash and accusations.

Among the many assumptions that these definitions gloss over, credibility is necessary to ensure that a message gets received and accepted (Bush et al., 2013; Grimmelikhuijsen & Meijer, 2014; Jijelava & Vanclay, 2017; Kim & Song, 2020; Knight et al., 2022; Parguel et al., 2015). Credibility is attributed to the message and its characteristics (e.g. source, medium, ...), but in practice it can only be as high as it is perceived to be (Kim & Song, 2020; Lock & Seele, 2017), hence the *raison d’être* of this study.

A company sending a sustainable message must make sure that it is credible, regardless of its marketing approach or communication reason.

Currently, the most widespread practice to ensure credibility is to limit the number of recipients of the message through targeting or to define its scope before anything else. The most prominent example of this phenomenon is the creation of CSR reports: companies need to gather all sorts of data and compile it for publication yearly, so that institutions, the finance sector, and stakeholder group representatives can evaluate the company's sustainable performance. Especially in the EU, there is an ongoing effort (at the time of writing) from EFRAG to create the ESRS, reporting standards that allow for inter-company and inter-sector comparisons: the promise is that all interested parties can understand the progress toward sustainability of any company (Marcatajo, 2021).

As it is now, allowing companies the freedom to choose how to communicate their sustainability efforts to the general public made difficult to discern between genuine sustainability claims and fake ones. Since this became a hot topic in recent years, many businesses in sectors like hospitality (Majeed & Kim, 2022) acted in bad faith to promote their inexistent sustainable practices and product qualities. This practice of misleading consumers into paying a premium price for no added benefit, aside from companies' balance sheets, was not meant to work for long. When the discrepancies between words and reality were brought to light, the term *greenwashing* rose to popularity, and has since marked the general sentiment of people when companies try to appear more sustainable, usually regardless of any effort actually implemented by a company (Seele & Gatti, 2017).

1.2.2 – Lack of Assurance: Claim Skepticism

Even if it may seem evident, to prove the importance of claim skepticism Majláth (2017) provides support on what happens when information on evidence of greenwashing is provided. The opinion of individuals

previously neutral or favorable toward a company and its sustainability communication quickly worsened as the consequence of acquiring knowledge on how reality was different from what the ads claimed.

The details on how this phenomenon works have been explained through the expectancy violation theory: to provoke a noticeable change in opinions, a firm must betray the expectations that the public, or at least its stakeholders, have of them. When the violation is positive, expectations are low and additional info portrays the company as more able and committed to sustainability leading to a more positive opinion. Vice versa, a negative violation happens when the public holds a business to a certain standard set by institutions, the stakeholders of the company itself, and violates expectations thanks to a bad or non-existent sustainability performance (Cho et al., 2021).

Institutions' efforts to enforce a satisfactory quality and quantity of sustainability information cannot be understated. From the introduction of stricter reporting standards to legal proceedings against companies violating regulations aimed at enforcing sustainability, from commissions tasked with solving various reporting, financing and implementation problems like project TranspArEEEnS (Venice, 2022) to investments in eco-labels and independent organizations, it is undeniable that there's a big push to address claim skepticism (Moratis, 2017). Because external assurance is one of the most direct ways third parties can influence the firm's credibility perception, this mechanism has been applied to all levels of the organization, including audit committees to supervise the board of directors and the combined use of a mix of eco-labels and self-declared environmental claims to demonstrate the highest assurance levels to stakeholders (Al-Shaer & Zaman, 2018; Dangelico & Vocalelli, 2017; Ertz et al., 2017). Still, this method of addressing skepticism is especially susceptible to competition: for example, if there isn't a designated eco-label

from governments, which are seen as more authentic as more credible sources than the firms themselves (Kim & Song, 2020; Visentin et al., 2019), organizations and their respective labels must compete for hegemony in their niche. This phenomenon is rooted in signaling theory, which emphasizes how a signal must be perceived as credible before other parties assign any value to it. Miller and Bush (2015) studied this particular event in the fishing industry: while an eco-label was regarded as the ‘gold standard’, another label with much less requirements for acquisition was the most renown and widespread. This case study has been objects of discussion multiple times in the literature, because it was initially thought as an accessibility issue (Bush et al., 2013). The problem instead was that authority, when not imposed from third parties, was subject to lobbying from the certified entities, decoupling credibility from authority and starting a multi-year struggle between labels, at the expenses of the final customers that rely on eco-labels as a signal of sustainability.

Stories like these may tempt the targets of sustainable claims, and everybody else, to believe that skepticism towards green ads and greenwashing refer to the same thing just because they both are defined as the perceived gap between ‘what should be in theory’ and ‘what happens in practice.’ However, the fundamental difference between them is that perceived greenwashing builds on past events to generate a general distrust toward green ads, while claim skepticism refers to future encounters with sustainability communication (Farooq & Wicaksono, 2021; Rahman et al., 2015). In other words, *corporate’s* greenwashing strategy initially generates *individual* skepticism through expectancy violation, which in turn is the main driver of *individual* perceived greenwashing. Skepticism is the person’s coping mechanism to align the level of communication of a company to the (probable) real amount of CSR activities carried out, thus acting as a predictor of perceived greenwashing.

The findings of Hur et al. (2020) also suggest that customers tend to act toward a company according to individual customer-company identification levels: therefore, the author hypothesizes that skepticism acts as a sort of baseline for the greenwashing attitude shown by each individual.

Hypothesis 1.a: Higher levels of skepticism toward claims have a negative effect on perceived claim credibility levels.

Hypothesis 1.b: Higher levels of skepticism toward claims have a positive effect on greenwashing attitude levels.

1.2.3 – Lack of Transparency: Claim Verification Effort

While information reliability may seem an essential element to obtain credible sustainability messages, it is only one side of the coin: after all, no level of assurance is enough to compensate for lack of information availability. The issue of transparency, seemingly simple, is in reality two-fold: a company may withhold information from its stakeholders, thus creating an asymmetry in information quantity, or could cherry-pick notions and messages to manage impressions, which constitutes a moral hazard (Tata & Prasad, 2015; Xiao & Shailer, 2022). To avoid the first problems, once again institutions are stepping in to define which indicators of sustainability should be recorded, how they should be measured and how they should be published (EUR-Lex, 2023). Sustainability reporting is the main tool to enforce transparency and assurance on most organizations; however, the general public is neither the target nor it is interested in reading a full report to evaluate how much a firm is sustainable (Mahoney et al., 2013; Moratis, 2017; Zeisel, 2020). In fact, there are many cases where companies purposefully try to spin a story with many stratagems,

like hiring experts and using labels to manage public impressions and expectations (Buvár et al., 2023; Chiba et al., 2018; Gagné et al., 2022; Miller & Bush, 2015). To address this problem, researchers are starting to investigate how sustainability claims are received and perceived (Bhattacharyya, 2023; Rahman & Nguyen-Viet, 2023). For the time being, they confirmed that non-deception improves the perception of green messages: instead of trying hard to be transparent, not trying to be -and not appearing as- being manipulative is more effective. One suggestion to include non-deception in communications was to decrease the difficulty for the average person to verify the firm's sustainability claims: the harder it is, the higher the distrustful attitude toward the message becomes.

Hypothesis 2.a: Higher levels of claim verification effort have a negative effect on perceived claim credibility levels.

Hypothesis 2.b; Higher levels of claim verification effort have a positive effect on greenwashing attitude levels.

1.2.4 – CSR Activity Evaluation: Perceived CSR Ability

Viererbl and Koch (2022) suggest that low amounts of CSR activities is one of the two characteristics that makes a green communication strategy being perceived as greenwashing by individuals. This characteristic is hardly recognizable to the general public, because it's often masked by communication levels, and it doesn't directly affect the quality of products and service experiences. Actions speak louder than words, and this construct reflects this adage: for example, it's the reason that most consumers aren't willing to pay more for sustainable products (Barchiesi et al., 2018) or that green product characteristics are a minor part in overall green customer satisfaction (Gelderman et al., 2021).

Due to the limitations of this study in creating two different histories of CSR activities, the chosen proxy to evaluate this aspect of greenwashing was the perceived ability of a firm to enact CSR activities. If a firm seems capable of being sustainable to an individual, appearing as actively engaged in sustainability implies their ability to implement projects towards this end. Therefore, higher CSR ability should increase the perceived claim credibility attitude toward a company since individuals would perceive philanthropic or incorporated CSR (see Figure 2).

Hypothesis 3.a: Higher levels of perceived CSR ability have a positive effect on perceived claim credibility levels.

Hypothesis 3.b: Higher levels of perceived CSR ability have a negative effect on greenwashing attitude levels.

1.2.5 – CSR Communication Level: Perceived CSR Commitment

The amount of claims that a company makes in their communication efforts, according to Viererbl and Koch (2022), determines whether the marketing strategy of a firm will be perceived as greenwashing or not. More specifically, the mere quantity of ads doesn't determine a strategy as greenwashing: instead, it represents the effort a company puts into appearing sustainable, assuming that as the amount of green ads increases, so does the firm's will to convince its customer base (Bhattacharyya, 2023; Rahman & Nguyen-Viet, 2023). This explanation is rooted in the historical meaning of 'sustainability marketing', since the goal is to persuade people to consume regardless of potential environmental dangers and ignoring consumer's or firm's behaviors completely (Kemper & Ballantine, 2019; McDonagh & Prothero, 2014). In other words, the amount of CSR

communicated to parties outside the firm represents the level of commitment that a company shows.

Measuring commitment as the intensity of the intent of a company to be sustainable, researchers were able to understand its role in this field: for example, Calabrese et al. (2015) determined the type and strength of feedback from a green marketing campaign. Golob et al. (2023) included commitment as a key element differentiating the types of communication, which included interaction style and topics covered as the two ways to convey it. Further, Sander et al. (2021) investigated the effectiveness of green ads to empirically prove which themes and issues provoked the strongest reaction from respondents so that a company's commitment to CSR can be conveyed as convincingly as possible.

Overall, there is the expectation that the level of commitment to sustainability shown by companies is necessary for promoting initiatives correctly, but the same characteristic is also attributed to the greenwashing strategy. Still, if an individual perceives a firm as committed to doing CSR, it should increase the recipient's perceived credibility.

Hypothesis 4.a: Higher levels of perceived CSR commitment have a positive effect on perceived claim credibility levels.

Hypothesis 4.b: Higher levels of perceived CSR commitment have a negative effect on greenwashing attitude levels.

1.2.6 – Perceived greenwashing attitude

Like perceived credibility, greenwashing levels vary from person to person (Ioannou et al., 2023; Nyilasy et al., 2014; Rahman & Nguyen-Viet, 2023). Tackling the issue of greenwashing, academic research has been quite fragmented due to differences between industries, contexts and actions;

however, Viererbl and Koch (2022) framed this concept into a certain type of sustainable communication. In particular, this phenomenon is part of a communication strategy that they refer to as CSR-washing and define it as “[...] Presenting a company as engaging a lot in different CSR activities when its actions speak otherwise.” These characteristics are represented in a 2-by-2 matrix they constructed (Figure 2) with the level of CSR communication on the y axis and the amount of CSR activities on the x axis. Szabo and Webster (2021) proposed a similar classification, which included greenwashing marketing strategies related to products for each quadrant (Figure 3). In these frameworks, greenwashing is starkly distinct from CSR-omitting, which was often considered as another strategy employed by companies to cover their lackadaisical or non-existent approach to sustainability. It is also completely different from CSR-blushing, often referred to as brown-washing, albeit the financial effects on companies are negative for both communication types (Testa et al., 2018). Determining a precise set of behaviors shown by companies as greenwashing is useful to understand its antecedents and consequences. For example, Viererbl and Koch (2022) first and Ferrero-Ferrero et al. (2023) later show that the presence of a gap between the levels of activities and communication meant worse result than if a company chose to communicate sustainability based on its number of initiatives and projects. Ioannou et al. (2023) proved that greenwashing negatively affects character reputation, as in “the degree a firm is known for integrity and trustworthiness”, especially when a firm is facing the dangers of moral hazards between itself and its stakeholders. When analyzing the hospitality sector, especially vulnerable to greenwashing accusations due to precedent episodes, Rahman et al. (2015) demonstrated that it is not related to a person’s ecological concern, while increasing the effect of skepticism due to perceived hypocrisy

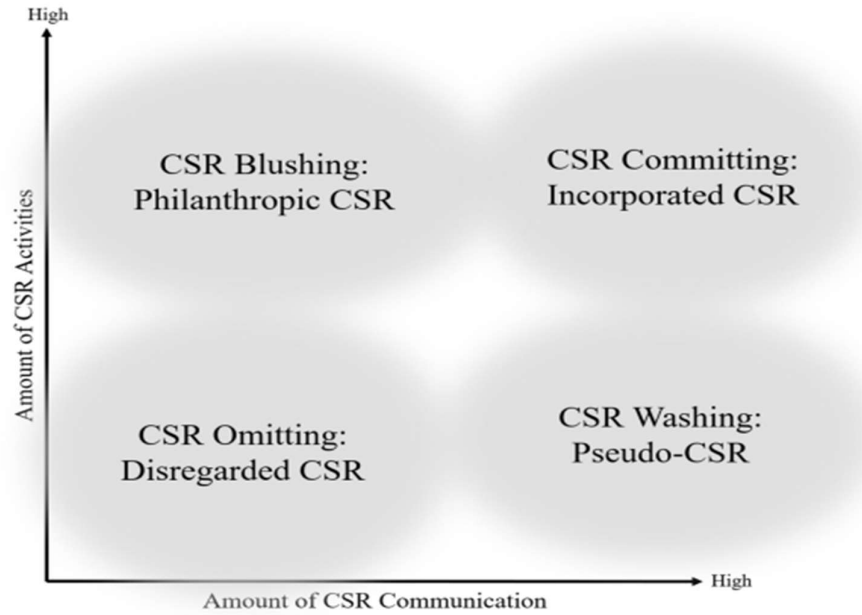


Figure 2. Sustainability strategies based on CSR elements (Viererbl & Koch, 2022).

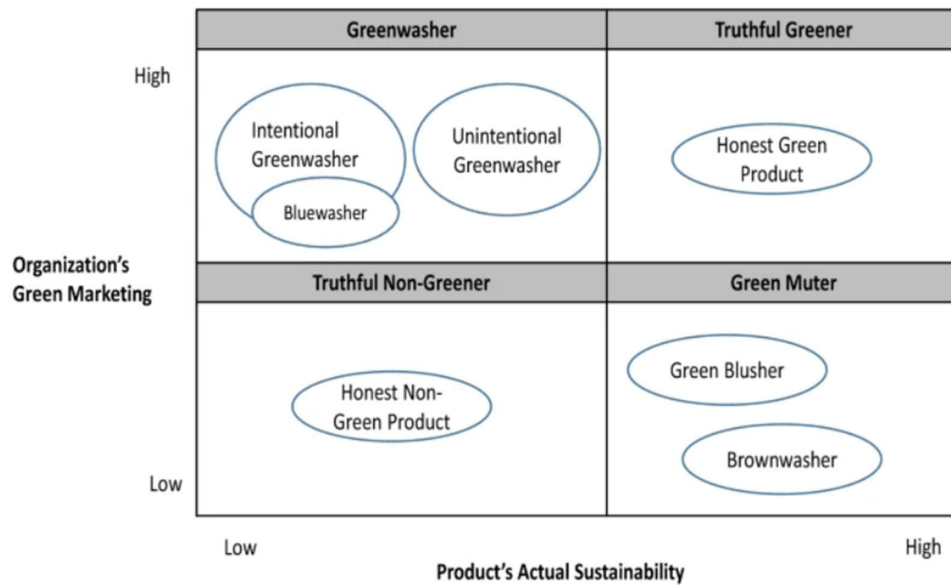


Figure 3. Greenwashing strategy types according to Szabo and Webster (2021).

between the ecological claims and the ulterior motives that prompted the firms to boast a level of sustainability that they didn't possess.

Overall, from the firms perspective, greenwashing is a one-period, short-term communication strategy that uses reputation as the primary

intangible resource to manage stakeholders' impressions and expectations (Cho et al., 2021; Gagné et al., 2022). The gravest implication of this behavior set, however, is that it increases green perceived risk for marketing's recipients, thus jeopardizing other firms' activities and efforts to be sustainable. Due to its heavy drawbacks, especially on corporate reputation, it is an especially bad long-term investment for companies that wish to build and maintain a positive relationship with its customers (Chen & Chang, 2013; Kucharska & Kowalczyk, 2019; Santos et al., 2023). Since it is done by passing false sustainable messages as genuine, greenwashing is hard to recognize and prove without further investigations. For this reason, the focus in both theoretical and real worlds is toward improving the quality of sustainability messages to such a high standard that greenwashing attempts become easy to spot by comparison.

Currently, the greatest signs of truthful green messages are transparency and assurance: the former allows a larger amount of people to verify the claims a firm makes, while the latter is the most common way to address concerns over hidden ulterior motives, made-up claims and forged evidence (Ganz & Grimes, 2018; Mahoney et al., 2013).

Hypothesis 5.a: Higher levels of perceived greenwashing attitude displayed by an individual negatively affect the level of perceived claim credibility.

Hypothesis 5.b: Perceived greenwashing mediates the relationship between claim skepticism and perceived claim credibility.

Hypothesis 5.c: Perceived greenwashing mediates the relationship between claim verification effort and perceived claim credibility.

Hypothesis 5.d: Perceived greenwashing mediates the relationship between perceived CSR ability and perceived claim credibility.

Hypothesis 5.e: Perceived greenwashing mediates the relationship between perceived CSR commitment and perceived claim credibility.

1.2.7 – Gullibility: Ease of Being Persuaded

Greenwashing may certainly be one of the most prominent dimensions that allow to understand what makes a sustainability message credible or not, but it still is one among many other components that have been determining perceived credibility. In fact, greenwashing doesn't consider neither individual characteristics nor other attributes related to how the ad is crafted; the gullibility of a person is a prime example of this. This concept is best understood as a set of behaviors, born by the tendency of an individual to believe messages without scrutinizing the credibility of the source or of the information itself (Florendo & Estelami, 2019). While it's not a growing research field, it's clear the risk that identifying and manufacturing this characteristic in individuals poses, especially if done by purposefully confusing people (Chen & Chang, 2013). Prabowo (2023) underlines this fact: his study suggests that gullibility is a fundamental attribute for people to fall into scams, and that it is contextual. For example, suffering an investment fraud does not prevent an individual from taking other types of information at face value and acting upon those. In the context of this study, being gullible means believing sustainability messages blindly or, in other words, that an ad easily persuaded the respondent into accepting the information presented without checking its veracity or credibility first. Chang (2017) proposes that gullibility mediates positively the manipulative intent of an ad on the accepting behavior: it seems reasonable to assume that accepting behavior stems from the ad being credible enough to act accordingly, thus representing the first personal dimension that has an effect on credibility.

Hypothesis 6: Higher gullibility has a positive effect of perceived claim credibility levels.

1.2.8 – Sustainability Attitude: Environmentalism

The propensity of a person to misjudge how much an advertisement is credible alone is seldom enough to explain why it is perceived as such. In fact, Mercier (2017) suggests that communication may not be the reason a claim influences someone, but rather the alignment of transmitted information and pre-existing beliefs. If it is true, then the perceived credibility of green claims depends more on matching the right claim to the right individual through a related attitude.

The individual attitude toward sustainability is often related to the green or natural appearance of advertisements: for example, this type of medium is more effective at increasing credibility and brand attitude if the recipient of the ad cared toward environmental matters (Sander et al., 2021). In another study, it is suggested that the purchasing behavior exhibited by a person regarding green products is majorly affected by its self-recognition of green traits and properties (Khare, 2015). Maybe even more importantly, the environmentally friendly attitudes of individuals investigated by Manika et al. (2015) have positive relationships to all the green behaviors identified in that study, suggesting that environmentalism motivates people in behaving more sustainably and identifying with those values, which is precisely the objective of credibility in this context.

Overall, the prior opinion and knowledge about environmental matters may be a strong antecedent of perceived claim credibility especially because, at high levels, it substitutes completely the effect of transparency in a message (Grimmelikhuijsen & Meijer, 2014). Since in these studies it is often declared or implied that pre-existing beliefs influence how much an advertisement is perceived as credible, and that if an individual views environmental activity positively it also tends to believe messages that

confirm this belief, in this study this relationship between environmentalism and credibility will be tested.

Hypothesis 7: Higher levels of environmentalism have a positive effect on perceived claim credibility.

1.2.9 – Use of Green Claims: Receptiveness

The assessment of perceived credibility of an ad, as discussed before, is partially based on personal characteristics and experiences (Lock & Seele, 2017). Majláth (2017) in fact suggests that, when people are provided with greenwashing information on sustainability initiatives, the perception of the ad worsens, especially in people with high environmentalism. Therefore, the process of evaluating credibility is continuous, and susceptible to any relevant information: for receivers of sustainability messages, assessing whether to believe new information or not is a persistent effort, albeit small. This susceptibility is what Smith et al. (2008) refer to as receptiveness: the person's characteristic of being generally more open-minded, ultimately affecting how and how much new bits of information change the previous opinion. Since Majláth (2017) already established that greenwashing information can worsen the ad's and brand's evaluations, there's no theoretical reason to believe that the opposite can't also be true. In fact, trying to positively influence the public's opinion with marketing campaigns and impactful initiatives is the theory upon which the transformative sustainable marketing approach relies (Jaeger & Weber, 2020).

Hypothesis 8: Higher levels of receptiveness have a positive effect on perceived claim credibility.

1.2.10 – Communication style: Abstractness

Until now, all dimensions discussed in this study have been related to individual attitudes of a person or were antecedents of them. While the message composition largely lies outside the scope of the research, since it is closer to traditional marketing theories and practices, there are some characteristics that supposedly have an impact on how much a sustainability claim is perceived as credible.

Abstractness is the first of these dimensions, and it refers to the construal level of the ad. This theory assumes that people perceive objects or topics as either concrete and detailed (low construal level) or as abstract and holistic (high construal level). In their study, Jaeger and Weber (2020) found that lower construal levels increase the credibility of ads that promoted green products, even if it didn't translate into higher purchase intentions. These results are consistent with the construal level theory, since their research was on organic food products and, since the subject was concrete, the better construal level in ads was in accordance to this characteristic. Dangelico and Vocalelli (2017) suggest the same, from a marketing perspective, when advising caution in determining the contents of an ad and when differentiating between green brand and green product strategies. Another research suggested that, for people to be involved in CSR activities promoted by companies, associating the company with CSR was necessary, and affirm that green communication should focus more on the brand than on the products if they desire to involve their customers. Accordingly, a high level of abstractness, or high construal level, leads to higher claim credibility, at least when the focus is on the brand.

Hypothesis 9: Higher abstractness has a positive effect on perceived claim credibility levels.

1.2.11 – Information Quality: Desire for More Precise Information

The other dimension which could determine whether an ad is credible or not, and is a property of the message itself rather than the source or the recipient, is claim specificity. Ganz and Grimes (2018) in particular support the importance of this construct because “in the context of green advertising, the findings of this study suggest that specific claims are more credible than vague claims. Furthermore, this effect is robust across a broad range of categories and is not influenced by the environmental relevance of the product.”

A simple and all-encompassing dimension such as specificity may be the ultimate indicator of the quality of the ad. An ad that satisfies the desire for knowledge of the receiver allows to formulate an informed opinion about the subject of the advertisement, which tends to be neutral at worst and positive at best. The rationale behind is simple: for marketing purposes, a firm would want to convince the receivers to buy their products or services, and being specific about the green specifics of a product or a brand helps to control and solidify the recipients’ opinions. For this reason, the quality of a sustainability message should be a positive predictor of credibility, as one of the elements that an individual evaluates when determining if to believe the ad claims or not.

Hypothesis 10: Higher claim specificity has a positive effect on perceived claim credibility.

Since the scale used to measure this construct measured the desire for more precise information, which represents the opposite concept of claim specificity, it is possible to outline another formulation of the hypothesis, reported here:

Hypothesis 10: Higher desire for more precise information has a negative effect on perceived claim credibility.

1.3 – Conceptual Model

Building upon the work of previous scholars, it is now possible to understand how each dimension is related to perceived claim sustainability; Figure 4 represents every dimension discussed until now, together with the associated hypotheses.

To assess the proposed connections and evaluate the model's adequacy, the author utilized Structural Equation Modeling (SEM) as the chosen analytical method. In particular, the author followed the Partial Least Squares (PLS) methodology, with the assistance of SmartPLS software version 4.0, to analyze the dataset comprehensively (Ringle, 2024). SmartPLS provides an intuitive interface designed for SEM analysis, particularly for variance-based modeling utilizing the PLS path method. As highlighted by Hair Jnr et al. (2010), PLS-SEM is particularly suited for studies featuring multiple constructs and a multitude of variables such as the proposed conceptual model, allowing for comprehensive estimation of relationships.

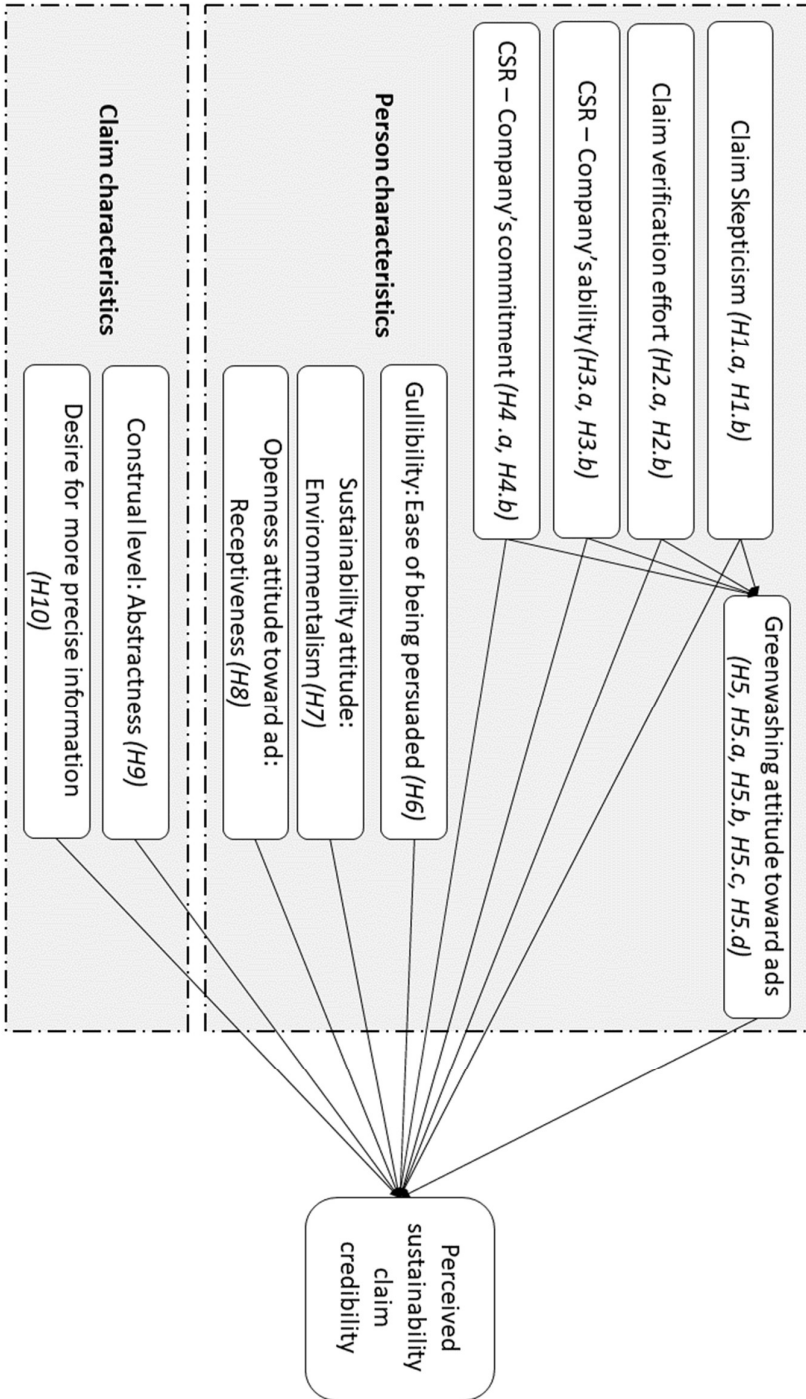


Figure 4. Conceptual model with the hypotheses formulated in the review.

2 – Questionnaire methodology

2.1 – Survey Administration and Dataset Validity

After exploring and explaining each of the potentially defining elements of perceived credibility of sustainability claims, the issue of crafting a definition that could be used both in the academical and the business worlds still remains. The simplest and fastest method would be to offer a definition based on the findings that the papers present in the literature review suggested, but then it would be simply an informed opinion on the matter instead of a valid definition. Also, it was not possible to consult other experts and work together to propose a good definition: credibility is an inherently subjective concept, and there would still be the possibility of personal biases toward focusing on certain characteristics while disregarding others. The solution implemented for this study is instead to create a self-administered questionnaire open to everyone willing to take it and that was capable of understanding the questions asked. The questionnaire was created with Google Forms; participants were given either a link or a QR code that would open the first section of the form.

To ensure that an answer was valid, participants were asked to write the current time before answering any other question; since the timestamp of when they sent their answers was recorded automatically, it was possible to compute the elapsed time. The estimated completion time for the survey was between 10 and 20 minutes, so any response that was sent in a suspiciously low time -under 6 minutes- was deemed to be rushed in its completion and therefore invalid. Furthermore, to exclude low-effort answers, the author implemented the individual response variability technique, a variant of the ‘long string’ screening technique where the

author computed the standard deviation of each respondent's answers (DeSimone et al., 2015). Fortunately, only three answers didn't pass both validity checks, with a standard deviation of 0.4 and a sequence of consecutive, identical answers over different scales of up to 29 in a row: the final number of valid answers was 99.

According to Hair et al. (2017), to achieve a statistical power of 80% there is a minimum sample size that depends on the maximum number of arrows pointing at a construct, the significance level desired and the minimum R^2 that can be detected. Considering the current conceptual model, there are 10 independent variables pointing at the dependent variable. The minimum sample size required to detect a R^2 value of 0.25 at the 5% significance level is 59; therefore, the sample size for this study satisfies these conditions.

2.2 - Stimuli

Many dimensions and scales have been created, tested and used together with some kind of stimuli, almost always provided by the authors of the research. The scales chosen to measure each of the dimensions explained in the previous chapter often refer to a previous image, video, or ad; therefore, to encompass both scenarios of high and low perceived credibility, it was necessary to create two images depicting two ads crafted following altered and opposite characteristics.

The stimuli chosen to represent an exaggerated example of greenwashing communication was an ad promoting a special kind of heated blanket, as shown in Figure 5. Ideally this ad embodies most, if not all, the characteristics of a greenwashing communication: empty claims about sustainability, vague statements, obscured or exaggerated information about the blanket's characteristics or manufacturing, and a focus on selling

the product. A second stimuli, instead, was created as a counterpart to the greenwashing example: the featured product were the glasses produced by the company, as shown in Figure 6. This ad was made to encompass the hypothesized characteristics of credible sustainability communication: commitment to act, investments into verifiable product characteristics or behaviors, accountability through other media and through information availability -the QR code-, and a focus toward promoting the company's values through their actions.

2.3 - Back-translation

The items used in the questionnaire have been taken from published papers and modified to ask attitudes and opinions about green claims; however, the vast majority of potential respondents weren't capable to understand the original question written in English, and doubly so for the stimuli. For this reason, both the stimuli and the questionnaire items went through the back-translation process for Italian to ensure the meaning in both languages was consistent. To accomplish this, the author first translated the questions and the stimuli texts in Italian as accurately as possible; then, a colleague with similar linguistic skills both in English and Italian translated the sentences back to English. This colleague was not previously exposed to the original questions and images, so the translations are entirely genuine. After comparing his translations with the originals, noting the divergent or inaccurate ones, the problematic questions and sentences were rewritten in a way that satisfied both. Thanks to this process, 4 questionnaire items have been adjusted in Italian and many sentences in the stimuli were slightly rewritten to account for grammatical and idiomatic differences. The Italian translations of the stimuli and the questionnaire items are shown in Appendix 2.



Clarity is our top priority for us and for the environment.

"At Ease & Peace, authenticity is at the core of our commitment to the environment. We understand the skepticism surrounding green claims, and we're here to address it head-on. Our \$38 million investment over the past decade has been meticulously directed towards verified eco-friendly practices. From adopting third-party certifications like ISO 14001 into our production facilities to adopting life cycle assessments for our products, we're committed to meeting and exceeding the highest environmental standards. Explore our Sustainability Report on our website for a detailed breakdown of our initiatives and achievements, or open the QR code to see how we're taking responsibility for our mistakes.

At Ease & Peace, transparency is our promise.



Go green with your dreams!

Indulge in the unparalleled luxury of Celestial Dreams, EarthGuardian's revolutionary carbon-neutral blanket that promises a sleep experience beyond imagination.

Woven with threads imbued with ether that catalyze the positive energy of distant stars, this blanket transports you to a celestial realm while neutralizing your carbon footprint. Feel the cosmic embrace as you drift into dreams, knowing you're wrapped in the gentle arms of our celestial fibers. Our \$300 million investment in celestial technology ensures your sleep is not just a journey through dreams but a voyage to a greener future.

EarthGuardian: Where dreams meet the stars, and carbon footprints vanish into the cosmic void!*



EarthGuardian, Inc.

Figure 6. The 'credible' stimulus, used in the questionnaire.

Figure 5. The 'greenwashing' stimulus used in the questionnaire.

2.4 Questionnaire structure

For greater understanding of the result analysis of the following chapter, this section will focus on explaining how the questionnaire was presented to the respondents according to the scales and the stimuli used. Recall that the ultimate goal of this study is to propose a new, comprehensive definition of “perceived credibility of sustainability claims”: to achieve this, the chosen method was to inquire about the preferences of the respondents. For this reason, all participants were presented with both stimuli, instead of creating two distinct groups where respondents were shown only one of them at random. This choice had the double aim of allowing interested people to express clearly their preferences since they were able to compare the stimuli, and to prove the hypotheses in two different conditions at the same time. For example, when referring to the “greenwashing stimuli” (Figure 5) it should be possible to test whether a higher construal level - implemented by focusing more on the product promoted in the ad - is correlated with lower perceived sustainability. At the same time, for the same people the author could check whether the “ideally credible stimuli” (Figure 6) fosters higher perceived credibility due to a lower construal level, therefore communicating the company’s values and motives more than the company’s product characteristics. If both results are statistically significant and coherent with the hypothesis, it could suggest that abstractness is a valuable and defining characteristic of credibility as a whole.

Having established the rationale, it’s now possible to understand how the questionnaire was structured in 4 different sections. In the first, there were 8 questions that measured general skepticism toward sustainability and the person’s environmentalism level; these questions have been originally written in such a way that a stimulus was not needed. In the second section,

respondents were invited to read an ad (see Figure 5) promoting a heated blanket with the associated text crafted to highlight some greenwashing characteristics, such as vague or exaggerated claims. In this section, participants were asked to answer all items regarding the other dimensions; in order, they were: perceived credibility, perceived company's ability to enact CSR, perceived company's commitment to enact CSR, desire for more precise information, claim verification effort, construal level of the ad (abstractness), ease of being persuaded, greenwashing attitude toward ads, receptiveness. In the third section, participants were shown a second stimuli, this time promoting the sustainability activities of a company making glasses (see Figure 6); then, they were asked the same set of questions of the previous section. Finally, in the last segment people could choose to tell their gender, age range, education level and their preference toward either ad, with the possibility of writing their reasons for their choice. Notably, all responses to the open-ended question written in Italian will be translated into English by the author before analysis and reporting.

2.5 Demographic information

Since the questionnaire has been self-administrated online, the people who participated may cause biases in the results simply due to self-selection and the fact that this sample may not represent the full population. While it is impossible to remove the risk of biases, it is possible to take measures and partially address it. In fact, by its nature PLS-SEM makes no distributional assumptions: since it is a non-parametric technique, it's possible to analyze the dataset despite the possible presence of biases causing extreme skewness and kurtosis in the data distribution (Hair et al., 2017).

However, by itself PLS-SEM is not enough to account for extremely non-normal data, as it inflates the standard errors obtained through bootstrapping. This issue will be considered through the techniques implemented to interpret the data, like the bias-corrected and accelerated bootstrapping, and by using descriptive data to assess whether there are some under-represented categories in the dataset. This data was provided voluntarily by respondents, so some missing values are expected.

Overall, there were 60 women and 38 men among the respondents; only 1 preferred to not provide his identified gender (Figure 7). The age range most represented was 18-24 years old people, while the least present categories were 55-64 with 6 people and 65+ years old with only 2 people. Only 1 respondent decided not to disclose its approximate age range (Figure 8). Regarding the educational level of the respondents, people with either a high school diploma, a bachelor's degree or a master's degree were represented somewhat equally, with postgraduates and other experiences representing the minority (Figure 9). These results are indicative of a slight bias toward women and toward younger people, but shouldn't pose a significant bias issue.

Finally, all respondents were asked to express their preference toward either ad with the question "Between these two ads, which one would you like to be more used by companies?" As Figure 10 and Table 2 show, there's an overwhelming preference toward the 'credible' stimuli, proving that the stimuli produced the intended effect. The results of the open-ended question are illustrated through a word-cloud (Figure 11). The most mentioned characteristics of the ads were "transparency," "reference," "seems," "QR code," "right" and "truthful," suggesting that respondents valued the dimensions of transparency, assurance, and the lack of desire for more precise information more than the others.

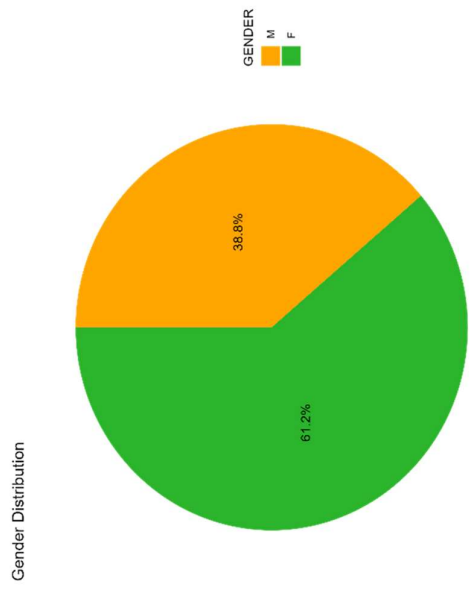


Figure 7. Gender distribution of respondents.

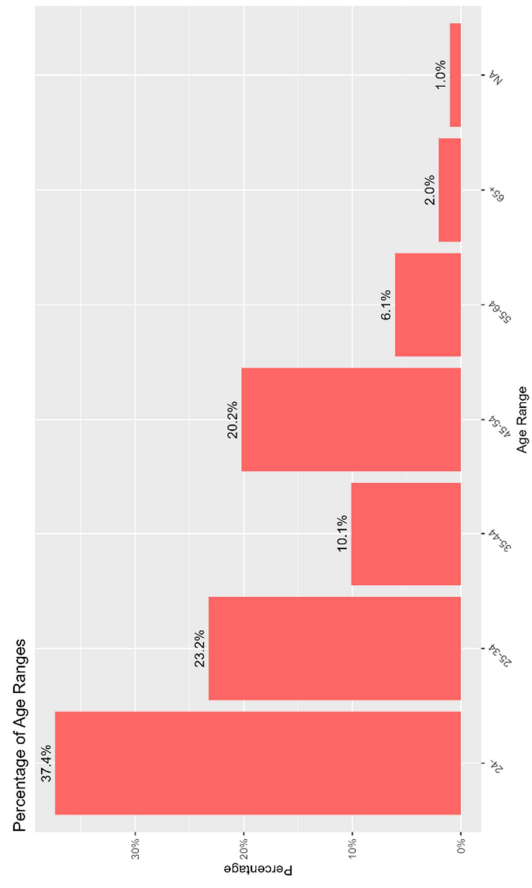


Figure 8. Age range distribution of respondents.

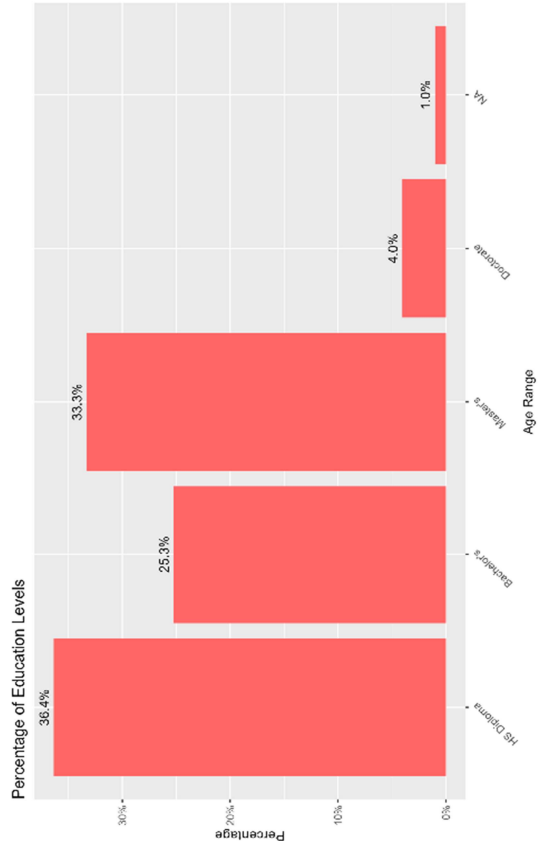


Figure 9. Educational level distribution of the respondents.

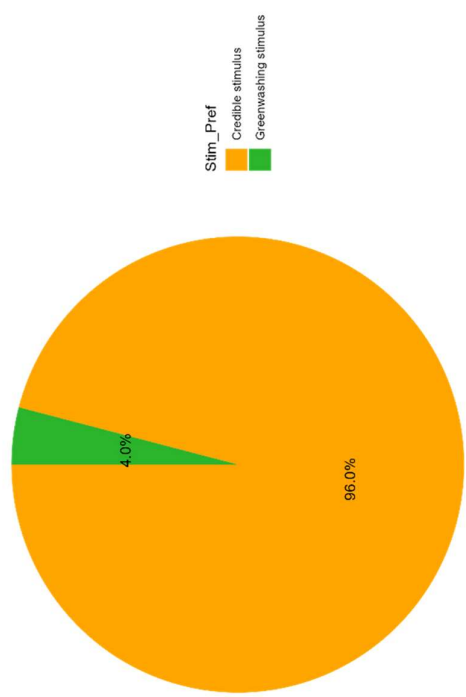


Figure 10. Ad stimulus preference of the respondents.

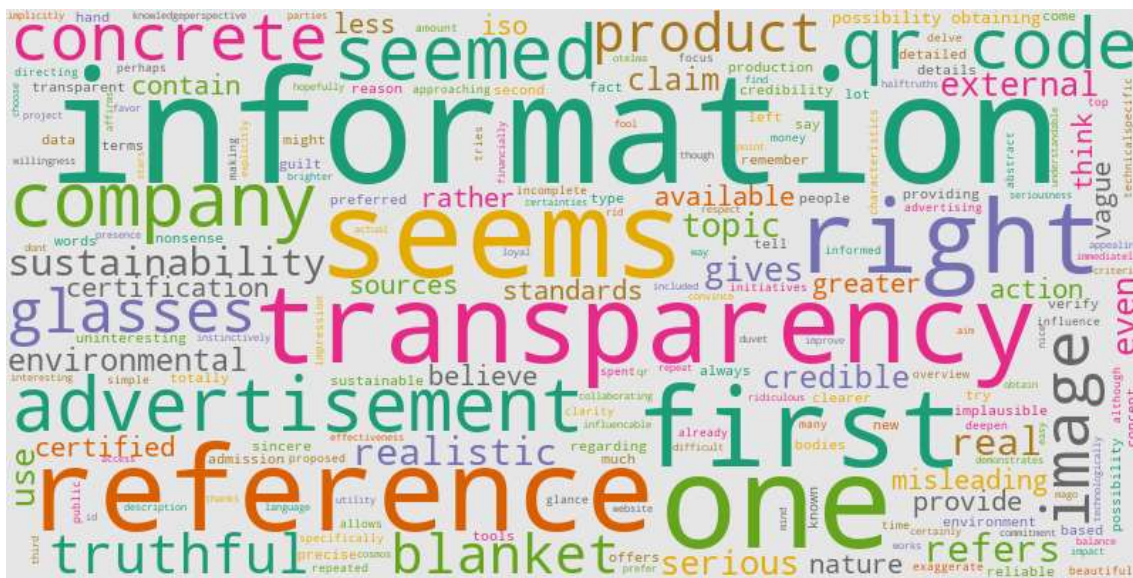


Figure 11. Word cloud illustrating the reasons why respondents prefer a certain advertisement over the other.

STIM_PREF	Frequency	Percentage	GENDER	Frequency	Percentage
Greenw. Ad	4	4.0%	M	38	38.4%
Cred. Ad	95	96.0%	F	60	60.6%
			N/A	1	1.0%
AGE_RANGE	Frequency	Percentage	EDU_LEVEL	Frequency	Percentage
18-24	37	37.4%	HS Diploma	36	36.4%
25-34	23	23.2%	Bachelor	25	25.3%
35-44	10	10.1%	Master	33	33.3%
45-54	20	20.2%	Doctorate	4	4.0%
55-64	6	6.1%	Other/NA	1	1.0%
65+	2	2.0%			
NA	1	1.0%			

Table 2. Demographic information.

3 – PLS-SEM Analysis

3.1 – Questionnaire Scales

Dependent variable – Perceived Claim Credibility

As the structure of the questionnaire implements two different stimuli created for this study, and they're intended to exalt different aspects of companies' green communication, it is necessary to demonstrate statistically how much they are different. For this reason, the author chose to use the four-item, seven-point Likert scale (see Table 3) first developed by Chang (2011) to measure the respondent's attitude toward green marketing claims or, in other words, their believability. In the original survey, the scale's Cronbach alpha was 0.81; when applied to the 'greenwashing' stimulus and the 'credible' stimulus, the alpha was 0.843 and 0.863, respectively. An alternative measure of internal reliability commonly used in PLS-SEM is the composite reliability: the thresholds for this statistic are the same as for Cronbach's alpha, and for this construct the values were 0.895 and 0.907, further proving the scale's excellent reliability. The convergent validity will be measured with the average variance extracted (or AVE for short), which can be interpreted as a measure of how well a set of indicators represents a latent construct. Its values are well above the critical threshold of 0.5, sitting at 0.681 for the 'greenwashing' stimuli and 0.709 for the 'credible' one.

To prove and validate the intended effects of the stimuli, a Welch's t-test was performed on the answers, comparing the means of the 'greenwashing' stimulus and of the 'credible' stimulus. The former had a mean of 2.210 and a standard deviation of 1.263, while the latter had a mean of 5.109 and a standard deviation of 1.247. The t-test assumes that the true difference in

means between the groups is zero; with a t-value of -16.251, the associated p-value is below 0.001. Therefore, it is safe to reject the initial hypothesis of the t-test and affirm that the difference in believability is statistically significant: the 'greenwashing' stimulus evokes low levels of credibility, while the 'credible' stimulus is perceived as more credible, as intended.

Independent variables – Claim Skepticism

This dimension aims to measure how much an individual strongly doubts the veracity of sustainability claims made by companies. This Likert scale originally created by Mohr et al. (1998) was examined and cleaned by Chang (2011), which extracted four statements (see Table 3) that yielded an alpha of 0.72 in her study. For this study, the four items measured on a seven-point scale were not modified. This set of questions was asked only one time at the beginning of the questionnaire and had a Cronbach's alpha of 0.767 in both models. The composite reliability and AVE slightly changed between the models, but the values proved both internal consistency and convergent ability of the scale: the former statistic was at 0.842 and 0.851, while the latter was at 0.578 and 0.589.

Claim Verification Effort

As the construct that quantifies the lack of transparency perceived in a sustainability message, it was necessary to measure this dimension of greenwashing. In the questionnaire, the four, seven-point Likert scale was heavily modified from the original study conducted by Krishnan et al. (2006), because the scale was created to measure the cognitive effort a person needed to process price information, not green claims (see Table 3). In the original study, the scale had a Cronbach's alpha of 0.81; when using the 'credible' stimulus as a reference, it was 0.780, while it was removed

from the model referring to the ‘greenwashing’ stimulus due to abysmal values of internal consistency and convergent validity.

This could’ve happened because the modified prompts were not as similar as before, or because there were different but valid reasons to either agree or disagree with the statements. For example, a respondent could’ve expressed a lot of agreement because it thought that there was no practical or easy way to check the validity of the claims, while another individual could’ve expressed disagreement with the scale items because it was easy to judge whether a claim was most probably true or false. Still, when considering the model in which this construct is still present, the composite reliability was as high as 0.861, with a satisfactory AVE value of 0.612.

Company’s Ability to enact CSR

As discussed in the literature review, this dimension represents one of the two defining characteristics of greenwashing, following the definition of Viererbl and Koch (2022). The scale used to measure this construct first appeared in Jin and He (2018), and the items were not modified for this study. The original study measured a Cronbach’s alpha of 0.82, while for the ‘greenwashing’ stimulus model was 0.857.

In the ‘credible’ stimulus model for perceived credibility, the value was extremely high, at 0.973; while this value suggests that the scale suffers from an item redundancy problem, collinearity analysis showed that it was highly collinear with its companion construct, company commitment. For this reason, the author created a single latent variable, CSR communication, which was measured through the items of both company ability and company commitment to CSR. While the details, reasons and possible explanations for this phenomenon will be provided when discussing the structural models, in this section the values referring to this

created scale will be provided along the single dimensions: the alpha for this composed scale was computed at 0.925. The composite reliability for these scales were 0.911 for the 'greenwashing' stimulus and 0.943 for the 'credible' stimulus construct, CSR communication. Finally, both AVE show high convergent validity, at 0.775 and 0.768, respectively.

Company's Commitment to pursue CSR

This dimension should represent the company's level of communication; however, due to the constraints imposed by choosing to administer this questionnaire only one time with only one ad per fictional company, it was necessary to choose a proxy scale. The high level of communication typical of firm enacting a greenwashing company has the objective of convincing the targets of the company's commitment to be sustainable even if it's not backed up by facts: therefore, a scale that measures the perceived commitment to CSR of a firm is appropriate for this task. This dimension was measured with a three item, seven-point Likert scale. The alpha in the original study conducted by Jin and He (2018) was 0.88; in the 'greenwashing' stimulus model it was 0.919, and for the "CSR Communication" construct present in the 'credible' stimulus model it was 0.925. The composite reliabilities found in the models were, respectively, 0.949 and 0.943; finally, the convergent validity is established with AVE values of 0.861 and 0.768.

Greenwashing Attitude

This construct was measured on a seven-point Likert scale over seven items (see Table 3). Participants had to evaluate how much they believed the stimuli were misleading with their claims and implications by expressing their agreement with the following questions, slightly modified from Schmuck et al. (2018) to inquire about sustainability claims. The alphas

obtained in the original study were 0.95 and 0.93; in this study, the values were 0.814 for the 'greenwashing' stimuli and 0.908 for the 'credible' one. Respectively, the internal reliability of this scale is further proved with composite reliability values of 0.865 and 0.927, respectively. The convergent validity is also verified, with AVE equal to 0.520 and 0.644.

Gullibility – Ease of Being Persuaded

A verified scale measuring how much an individual is gullible doesn't exist: in fact, as described in the previous chapter, in the academic research it is conceived as a set of behaviors (Hall & Haas, 2022). However, for this study the most relevant aspect of gullibility is the propensity of accepting false information, as individuals adopting this behavior would accept and believe potentially any claim regarding sustainability. Measured on a seven-point Likert scale, the prompts used by Chang (2017) asked participants their degree of agreement to four-items. In the original study, the Cronbach's alpha was 0.87; for the 'greenwashing' stimulus it was 0.790 and for the 'credible' one it was 0.825. Their respective composite reliability was 0.856 and 0.862, confirming the good internal reliability of this scale. Finally, the AVE established convergent validity, with values of 0.604 and 0.623.

Sustainability attitude – Environmentalism

Among other dimensions, the individual predisposition toward caring for environmental and social causes may be the strongest predictor of credibility, especially because it seems not related at all to greenwashing attitude (Rahman et al., 2015). This construct was measured on a four, seven-point Likert scale, and the items were lightly modified from the previous studies of Schuhwerk and Lefkoff-Hagius (1995) and Chang (2011). The alphas computed in previous studies were 0.90 and 0.91; in

this study, the same measure was at 0.692 and 0.711 in the two models, despite the fact that these questions were asked only one time. This happened due to the removal of one item of this scale from the first model, explained in the next section where the models will be presented and discussed. The composite reliability of the scale is completely satisfactory, sitting at 0.770 and 0.817 in both models; similarly, the convergent validity of the scale is confirmed, with AVE scores of 0.540 and 0.529.

Receptiveness

It is a common belief shared between most researchers and practitioners that a firm's communication efforts should align to the values held by its consumer base. The recent push for a higher presence of reformative and transformative types of sustainable marketing, however, implies that ads should also try to raise awareness in people to think and act in a more sustainable way. Therefore, in this study the author measured the extent of the advertisement's ability to allow the recipient to consider other views and to change preconceptions about some topic with a three-item, seven-point Likert scale. The questions were slightly changed to be adapted for the survey. The Cronbach's alpha found in the original study by Smith et al. (2008) was 0.93; for the 'greenwashing' stimulus is 0.818 and is 0.912 for the 'credible' one. The composite reliability measured in both models is 0.891 and 0.930 respectively, empirically proving the internal reliability of this scale. The AVE was similarly high, at 0.731 and 0.816.

Abstractness

As discusses in the previous chapter, the construal level of green communications may be an essential characteristic of credible claims, by focusing on why a company is being more sustainable instead of the how. On a seven-point Likert scale, participants rated the construal level of each

image with the following items, changing only the subject of the items from the original paper by Ryoo et al. (2017). The original Cronbach's alpha was 0.96, showcasing an exceptional level of internal reliability; the 'greenwashing' and 'credible' stimuli, for comparison, had an alpha of 0.880 and 0.890, respectively. Furthermore, the composite reliability values were 0.926 and 0.932, further proving the internal validity of the latent variable. The AVE for both stimuli was excellent, at 0.806 and 0.819.

Desire for More Precise Information

Measured on a three-item, ten-point Likert scale, participants indicated their desire to obtain more precise. These questions have been used in another study by (Lembregts & Pandelaere, 2019), and its Cronbach's alpha was 0.91. For this study, the same statistic was 0.879 for the 'greenwashing' stimulus and 0.921 for the 'credible' one. Their composite reliability was 0.936 and 0.961, while the convergent validity of this scale was established with AVE equal to 0.881 and 0.924.

[PCCR]	Perceived Claim Credibility
[BS_PCCR_1], [GS_PCCR_1]	The green claims are not believable. (reverse scored)
[BS_PCCR_2], [GS_PCCR_2]	The green claims are exaggerated. (reverse scored)
[BS_PCCR_3], [GS_PCCR_3]	The green claims are misleading. (reverse scored)
[BS_PCCR_4], [GS_PCCR_4]	The green claims are real.
[SKEP_CLA]	Claim Skepticism
[SKEP_CLA_1]	Most environmental claims made on package labels or in advertising are wrong. (reverse scored).
[SKEP_CLA_2]	Because environmental claims are exaggerated, consumers would be better off if such claims on package labels or in advertising were eliminated.
[SKEP_CLA_3]	Most environmental claims on package labels or in advertising are intended to mislead rather than to inform consumers.
[SKEP_CLA_4]	I do not believe most environmental claims made on package labels or in advertising.
[VER_EFF]	Claim Verification Effort
[GS_VER_EFF_1]	I have to use a lot of effort to verify the truthfulness of the claim.
[GS_VER_EFF_2]	I would have to work hard to verify if it is a true claim.
[GS_VER_EFF_3]	These types of sustainability claims are likely to confuse people I know.
[GS_VER_EFF_4]	I find these sustainability claims easy to follow. (reverse scored).
[CSR_ABI]	Perceived CSR Ability
[BS_CSR_ABI_1], [GS_CSR_ABI_1]	The firm has the capability to do public good.
[BS_CSR_ABI_2], [GS_CSR_ABI_2]	The firm has abundant resources to do public good.
[BS_CSR_ABI_3], [GS_CSR_ABI_3]	The firm has a strong ability to do public good.
[CSR_COMM]	Perceived CSR Commitment

[BS_CSR_COMM_1], [GS_CSR_COMM_1]	The firm expends considerable effort to do public good.
[BS_CSR_COMM_2], [GS_CSR_COMM_2]	The firm has a strong commitment to do public good.
[BS_CSR_COMM_3], [GS_CSR_COMM_3]	The firm demonstrates persistence in doing public good.
[GRW_ATT]	Greenwashing Attitude
[BS_GRW_ATT_1], [GS_GRW_ATT_1]	This ad misleads with words in its environmental features.
[BS_GRW_ATT_2], [GS_GRW_ATT_2]	This ad misleads with visuals or graphics in its environmental features.
[BS_GRW_ATT_3], [GS_GRW_ATT_3]	I believe the green claims in this ad are vague.
[BS_GRW_ATT_4], [GS_GRW_ATT_4]	This ad exaggerates what the product's green properties or functionalities actually are.
[BS_GRW_ATT_5], [GS_GRW_ATT_5]	I believe the green claims in this ad are masking important information, making them sound better than they are.
[BS_GRW_ATT_6], [GS_GRW_ATT_6]	This ad uses information about environmental features that is false.
[BS_GRW_ATT_7], [GS_GRW_ATT_7]	This ad does not tell the truth about the product's green functionality.
[GULLIB]	Gullibility - Ease of Being Persuaded
[BS_GULLIB_1], [GS_GULLIB_1]	While reading the ad, I experienced difficulty in resisting the message.
[BS_GULLIB_2], [GS_GULLIB_2]	While reading the ad, I experienced difficulty in counterarguing the message.
[BS_GULLIB_3], [GS_GULLIB_3]	I found myself being easily influenced by the message.
[BS_GULLIB_4], [GS_GULLIB_4]	I found the ad persuaded me easily.
[SUST_ATT]	Sustainability Attitude - Environmentalism
[BS_SUST_ATT_1], [GS_SUST_ATT_1]	I am concerned about the environment and social matters.

[BS_SUST_ATT_2], [GS_SUST_ATT_2]	The condition of the environment affects the quality of my life.
[BS_SUST_ATT_3], [GS_SUST_ATT_3]	I am willing to make sacrifices to protect the environment.
[BS_SUST_ATT_4], [GS_SUST_ATT_4]	My action impact on the environment, the society or both.
[RECEPT]	Receptiveness
[BS_RECEPT_1], [GS_RECEPT_1]	This ad caused me to be more open-minded toward sustainability issues.
[BS_RECEPT_2], [GS_RECEPT_2]	This ad got me to consider views different from my own toward sustainability issues.
[BS_RECEPT_3], [GS_RECEPT_3]	This ad got me to be more flexible in my views toward sustainability issues.
[ABSTR]	Abstractness
[BS_ABSTR_1], [GS_ABSTR_1]	These green claims explain the reasons for participating in sustainability initiatives and projects.
[BS_ABSTR_2], [GS_ABSTR_2]	These green claims introduce the purpose of sustainability initiatives and projects.
[BS_ABSTR_3], [GS_ABSTR_3]	These green claims are about the ultimate goal of sustainability initiatives and projects.
[INFO_DES]	Desire for More Precise Information
[BS_INFO_DES_1], [GS_INFO_DES_1]	To what extent would you desire more precise information?
[BS_INFO_DES_2], [GS_INFO_DES_2]	How useful would you consider more precise information?
[BS_INFO_DES_3], [GS_INFO_DES_3]	How happy would you be with more precise information?

Table 3. Questionnaire items and tags used for the analysis.

3.2 – Measurement Model Validation

After establishing the reliability and validity of each scale used in the questionnaire, it is necessary to establish if the measurements taken are also reliable and valid. Initially, the models for the ‘greenwashing’ and ‘credible’ stimuli were created with the same number of latent variables and indicators for each, but were modified to allow for both measurement models to be fully valid. For brevity and clarity, only the values computed after finishing the correction of the models will be reported; however, the values of each model will be reported together to allow for easier comparison of the changes in values and missing indicators. While most changes have already been discussed in the previous section, now they will be reported contextually to the table data.

As shown in Figure 12 and Figure 13, the measurement models have all latent variables built as reflective. This choice has been made based on the recommendations of Hair et al. (2017): all indicators either represented consequences of the constructs, were mutually interchangeable or the construct was a trait explaining the indicators. For these reasons, the evaluation of the measurement model is the same for all indicators and latent variables will be discussed as such.

For the measurement model to be validated, many conditions must be simultaneously satisfied. To determine the internal reliability of the constructs, the author relied on 2 measures: Cronbach’s alpha and composite reliability. For a construct to be fully reliable, both values should be above 0.7 as a convention; a value above 0.6 is also acceptable, if all other indicators provide satisfactory results (Nunnally & Bernstein, 1994).

Convergent validity, intended as an indicator used to assess whether items designed to measure the same underlying concept are consistent and

positively correlated with each other, was evaluated on two statistics: the Average Variance Extracted (AVE) and the factor loadings of each indicator. To prove convergence, AVE values of each construct should be above 0.50; for factor loadings the ideal threshold is at 0.708, but values from 0.40 to 0.70 are still acceptable if the composite reliability or the AVE are already above their threshold values (Fornell & Larcker, 1981; Hair et al., 2017; Hair Jnr et al., 2010). Both internal reliability and AVE are shown for each construct in Table 4; the outer loadings have been reported separately (Table 5).

Divergent validity instead is “the extent to which a construct is truly distinct from other constructs by empirical standards” (Hair et al., 2017), implying that each construct is unique and not correlated with another. The criterion chosen to prove this property of the measurement model is the heterotrait-monotrait (HTMT) ratios of the correlation, following the recommendation of Henseler et al. (2015). The recommended threshold value for HTMT is 0.85, but values up to 0.90 are still considered valid when construct are conceptually similar, according to Hair et al. (2017). Higher values reflect an issue of divergent validity, and must be dealt with by creating a higher order construct or by merging the latent variables into one if an issue of collinearity between constructs is also present. Finally, if the HTMT ratios are close to the threshold values, it is necessary to test the ratios via bootstrapping with bias-corrected and accelerated method: if the 95% bias-corrected confidence intervals do not include 1, the discriminant validity of the constructs is supported (Hair et al., 2017; Russo & Stol, 2021). HTMT ratios for both models can be consulted in Table 6 and Table 7, while the tests for the 5 highest HTMT values for each model will be reported in Table 8 and Table 9.

While in their current and final form both measurement models are fully validated, there are some differences between them. Most notably, there are 3 missing indicators in the 'greenwashing' measurement model (BS_GRW_ATT_2, BS_INFODES_2 and SUST_ATT_1) and 2 missing from the 'credible' model (GS_CSR_COMM_2 and GS_INFODES_3): these items have been removed either to increase the AVE of their construct above 0.5 or due to their unacceptable factor loading (< 0.4).

Two other significant changes have been made, altering both measurement and structural models: the "Claim Verification Effort" dimension has been entirely removed, and the two latent variables representing the ability and commitment of a company to enact and communicate CSR have been substituted with a single construct, "CSR Communication." These changes will be validated with the structural model evaluation; however, the causes are rooted in the measurement model. For the missing latent variable in the first model, neither the internal reliability nor the convergent validity was high enough to justify its inclusion in the model, so all indicators were removed. The "CSR Communication" construct instead was necessary due to a discriminant validity issue between CSR Ability and CSR Commitment in the 'credible' measurement model. The HTMT ratio between the two constructs was 0.986, and the VIF of both constructs was above the recommended threshold of 5; after merging the constructs into one, GS_CSR_COMM_2 had a factor loading below 0.4, causing its removal.

After applying these changes, both measurement models were validated. Between all constructs in both models, the Cronbach's α ranged between 0.662 and 0.925, while the composite reliability spanned between 0.771 and 0.960. Regarding the convergent validity, all AVE values ranged between 0.520 and 0.924; as for divergent validity, all HTMT ratios were between 0.063 and 0.831, below the 0.85 threshold.

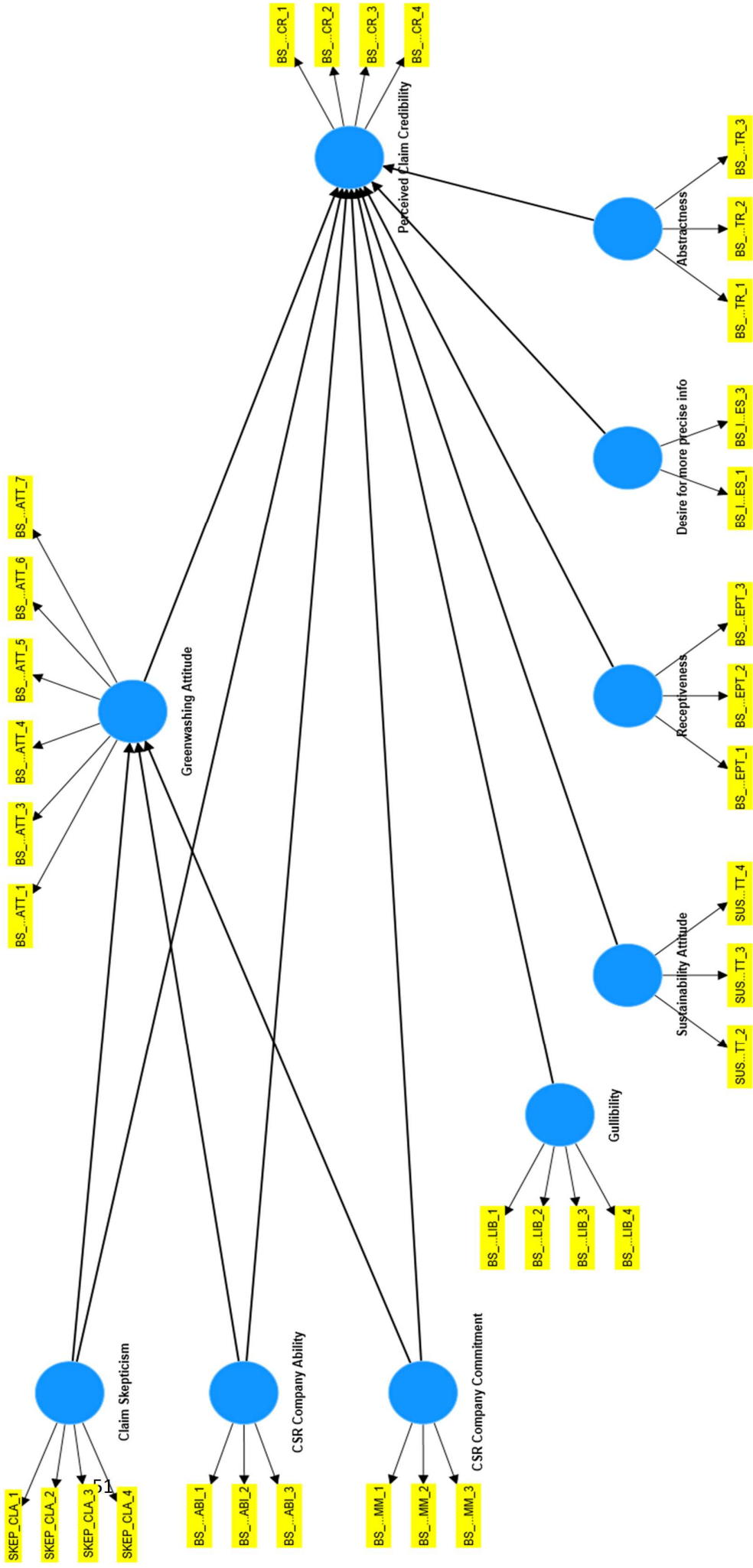


Figure 12. Measurement model for the 'greenwashing' stimulus. This image also represents its structural model, as there will be no higher order constructs.

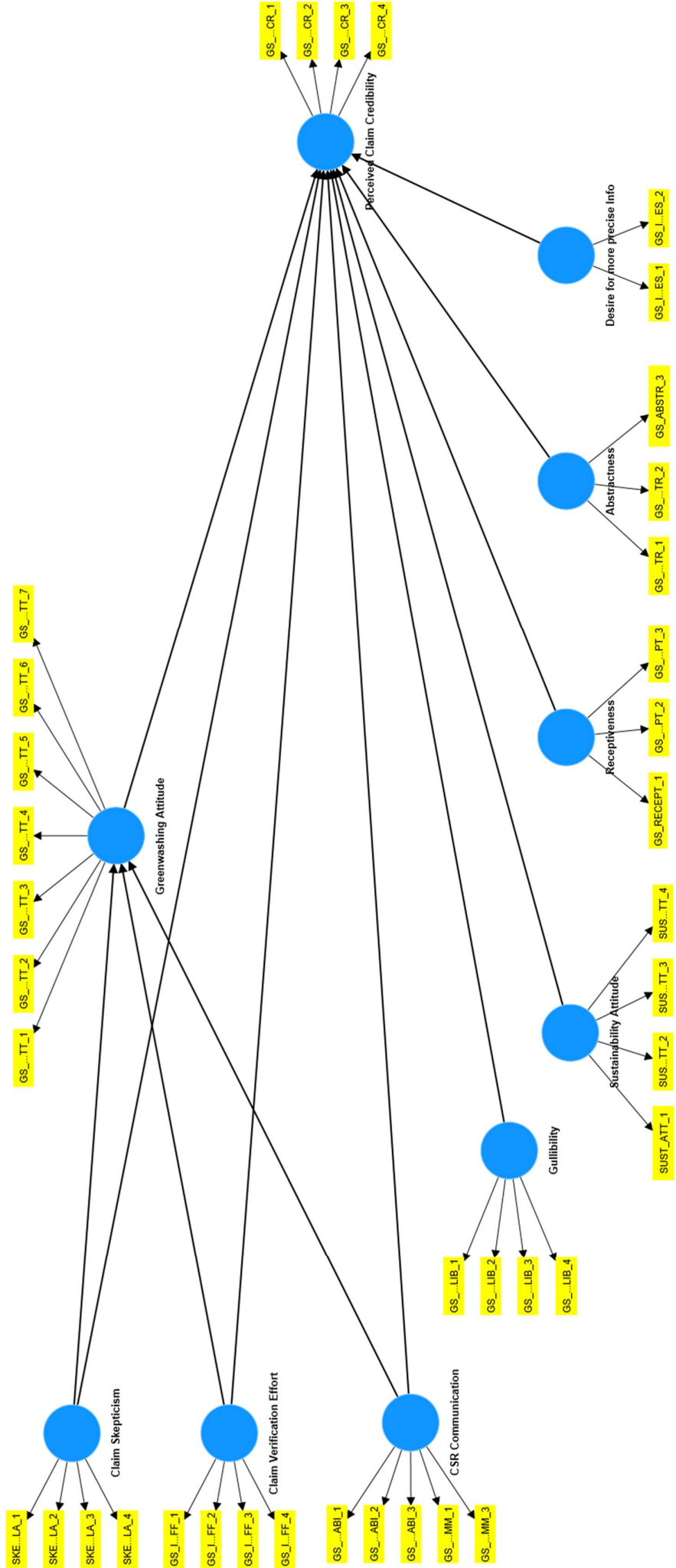


Figure 13. Measurement model for the 'credible' stimulus. As for the previous model, this image also represents its structural model since there will be no higher order constructs.

'Green washing' stimuli model	Cronbach alpha	CR	AVE	'Credible' stimuli model	Cronbach alpha	CR	AVE
Abstractness	0.880	0.926	0.806		0.890	0.932	0.819
CSR Company Ability	0.857	0.911	0.774	CSR Communication	0.925	0.943	0.768
CSR Company Commitment	0.919	0.949	0.861				
Claim Skepticism	0.767	0.847	0.584		0.767	0.851	0.589
Claim Verification Effort	-	-	-		0.780	0.861	0.612
Desire for more precise info	0.879	0.936	0.881		0.921	0.960	0.924
Greenwashing Attitude	0.814	0.865	0.520		0.908	0.927	0.644
Gullibility	0.790	0.856	0.604		0.825	0.862	0.623
Perceived Claim Credibility	0.843	0.895	0.681		0.863	0.907	0.709
Receptiveness	0.818	0.891	0.731		0.912	0.931	0.818
Sustainability Attitude	0.662	0.771	0.540		0.711	0.818	0.530

Table 4. Summary of measures of internal reliability and convergent validity. CR = Composite Reliability, AVE = Average Variance Extracted.

'Greenwashing' stimuli model	Outer loadings	'Credible' stimuli model	Outer loadings
BS_ABSTR_1 <- Abstractness	0.872	GS_ABSTR_1 <- Abstractness	0.894
BS_ABSTR_2 <- Abstractness	0.927	GS_ABSTR_2 <- Abstractness	0.925
BS_ABSTR_3 <- Abstractness	0.892	GS_ABSTR_3 <- Abstractness	0.895
BS_CSR_ABI_1 <- CSR Company Ability	0.911	GS_CSR_ABI_1 <- CSR Communication	0.875
BS_CSR_ABI_2 <- CSR Company Ability	0.792	GS_CSR_ABI_2 <- CSR Communication	0.841
BS_CSR_ABI_3 <- CSR Company Ability	0.930	GS_CSR_ABI_3 <- CSR Communication	0.897
BS_CSR_COMM_1 <- CSR Company Commitment	0.896	GS_CSR_COMM_1 <- CSR Communication	0.909
BS_CSR_COMM_2 <- CSR Company Commitment	0.943	-	-
BS_CSR_COMM_3 <- CSR Company Commitment	0.944	GS_CSR_COMM_3 <- CSR Communication	0.859
BS_GRW_ATT_1 <- Greenwashing Attitude	0.542	GS_GRW_ATT_1 <- Greenwashing Attitude	0.856
-	-	GS_GRW_ATT_2 <- Greenwashing Attitude	0.806
BS_GRW_ATT_3 <- Greenwashing Attitude	0.766	GS_GRW_ATT_3 <- Greenwashing Attitude	0.810
BS_GRW_ATT_4 <- Greenwashing Attitude	0.701	GS_GRW_ATT_4 <- Greenwashing Attitude	0.780
BS_GRW_ATT_5 <- Greenwashing Attitude	0.725	GS_GRW_ATT_5 <- Greenwashing Attitude	0.708
BS_GRW_ATT_6 <- Greenwashing Attitude	0.792	GS_GRW_ATT_6 <- Greenwashing Attitude	0.846
BS_GRW_ATT_7 <- Greenwashing Attitude	0.770	GS_GRW_ATT_7 <- Greenwashing Attitude	0.805
BS_GULLIB_1 <- Gullibility	0.584	GS_GULLIB_1 <- Gullibility	0.547
BS_GULLIB_2 <- Gullibility	0.741	GS_GULLIB_2 <- Gullibility	0.612
BS_GULLIB_3 <- Gullibility	0.913	GS_GULLIB_3 <- Gullibility	0.958
BS_GULLIB_4 <- Gullibility	0.834	GS_GULLIB_4 <- Gullibility	0.949
BS_INFODES_1 <- Desire for more precise info	0.897	GS_INFODES_1 <- Desire for more precise Info	0.977

-	-	GS_INFODES_2 <- Desire for more precise Info	0.945
BS_INFODES_3 <- Desire for more precise info	0.978	--	-
-	-	GS_VER_EFF_1 <- Claim Verification Effort	0.854
-	-	GS_VER_EFF_2 <- Claim Verification Effort	0.880
-	-	GS_VER_EFF_3 <- Claim Verification Effort	0.744
-	-	GS_VER_EFF_4 <- Claim Verification Effort	0.624
BS_PCCR_1 <- Perceived Claim Credibility	0.791	GS_PCCR_1 <- Perceived Claim Credibility	0.768
BS_PCCR_2 <- Perceived Claim Credibility	0.826	GS_PCCR_2 <- Perceived Claim Credibility	0.891
BS_PCCR_3 <- Perceived Claim Credibility	0.868	GS_PCCR_3 <- Perceived Claim Credibility	0.878
BS_PCCR_4 <- Perceived Claim Credibility	0.813	GS_PCCR_4 <- Perceived Claim Credibility	0.826
BS_RECEPT_1 <- Receptiveness	0.878	GS_RECEPT_1 <- Receptiveness	0.971
BS_RECEPT_2 <- Receptiveness	0.843	GS_RECEPT_2 <- Receptiveness	0.843
BS_RECEPT_3 <- Receptiveness	0.844	GS_RECEPT_3 <- Receptiveness	0.895
SKEP_CLA_1 <- Claim Skepticism	0.810	SKEP_CLA_1 <- Claim Skepticism	0.796
SKEP_CLA_2 <- Claim Skepticism	0.604	SKEP_CLA_2 <- Claim Skepticism	0.689
SKEP_CLA_3 <- Claim Skepticism	0.734	SKEP_CLA_3 <- Claim Skepticism	0.752
SKEP_CLA_4 <- Claim Skepticism	0.881	SKEP_CLA_4 <- Claim Skepticism	0.827
-	-	SUST_ATT_1 <- Sustainability Attitude	0.696
SUST_ATT_2 <- Sustainability Attitude	0.602	SUST_ATT_2 <- Sustainability Attitude	0.692
SUST_ATT_3 <- Sustainability Attitude	0.943	SUST_ATT_3 <- Sustainability Attitude	0.767
SUST_ATT_4 <- Sustainability Attitude	0.608	SUST_ATT_4 <- Sustainability Attitude	0.753

Table 5. Factor loadings for both measurement models.

'Greenwashing' stimulus model	ABSTR	CSR_ABI	CSR_COMM	SKEP_CLA	INFO_DES	GRW_ATT	GULLIB	PCCR	RECEPT	SUST_ATT
ABSTR										
CSR_ABI	0.728									
CSR_COMM	0.723	0.821								
SKEP_CLA	0.137	0.235	0.254							
INFO_DES	0.266	0.338	0.238	0.124						
GRW_ATT	0.560	0.613	0.641	0.335	0.214					
GULLIB	0.711	0.760	0.622	0.163	0.295	0.506				
PCCR	0.659	0.622	0.692	0.314	0.184	0.831	0.660			
RECEPT	0.716	0.577	0.650	0.099	0.146	0.512	0.691	0.656		
SUST_ATT	0.120	0.160	0.194	0.347	0.292	0.281	0.152	0.231	0.185	

Table 6. Heterotrait-monotrait ratios for the 'greenwashing' model.

ABSTR = Abstractness, CSR_ABI = CSR Ability, CSR_COMM = CSR Commitment, SKEP_CLA = Claim Skepticism, INFO_DES = Desire for more precise information, GRW_ATT = Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

'Credible' stimulus model	ABSTR	CSR Communication	SKEP_CLA	VER_EFF	INFO_DES	GRW_ATT	GULLIB	PCCR	RECEPT	SUST_ATT
ABSTR										
CSR Communication	0.693									
SKEP_CLA	0.115	0.215								
VER_EFF	0.448	0.551	0.432							
INFO_DES	0.107	0.063	0.083	0.232						
GRW_ATT	0.350	0.601	0.339	0.751	0.129					
GULLIB	0.467	0.520	0.132	0.180	0.135	0.238				
PCCR	0.513	0.789	0.206	0.707	0.184	0.823	0.344			
RECEPT	0.524	0.363	0.152	0.170	0.080	0.157	0.508	0.159		
SUST_ATT	0.202	0.192	0.343	0.271	0.145	0.154	0.182	0.172	0.162	

Table 7. Heterotrait-monotrait ratios for the 'credible' model.

ABSTR = Abstractness, SKEP_CLA = Claim Skepticism, VER_EFF = Claim Verification Effort, INFO_DES = Desire for more precise information, GRW_ATT = Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

'Greenwashing' stimulus model	Original sample	Bias	5.0%	95.0%
Perceived Claim Credibility <-> Greenwashing Attitude	0.831	0.003	0.708	0.928
CSR Company Commitment <-> CSR Company Ability	0.821	0.001	0.722	0.892
Gullibility <-> CSR Company Ability	0.760	0.000	0.647	0.856
CSR Company Ability <-> Abstractness	0.728	-0.002	0.584	0.842
CSR Company Commitment <-> Abstractness	0.723	0.000	0.592	0.818

Table 8. Tests of the 5 highest HTMT ratios in the 'greenwashing' model.

'Credible' stimulus model	Original sample	Bias	5.0%	95.0%
Perceived Claim Credibility <-> Greenwashing Attitude	0.823	0.000	0.704	0.903
Perceived Claim Credibility <-> CSR Communication	0.789	0.001	0.639	0.890
Greenwashing Attitude <-> Claim Verification Effort	0.751	0.002	0.627	0.849
Perceived Claim Credibility <-> Claim Verification Effort	0.707	0.001	0.548	0.827
CSR Communication <-> Abstractness	0.693	-0.003	0.537	0.810

Table 9. Tests of the 5 highest HTMT ratios in the 'credible' model.

3.3 – Structural model evaluation

3.3.1 - Structural model validation

To accurately assess the validity and the significance of the results, necessary to judge whether the hypotheses will be rejected or not, it is crucial to study in detail the structural models. Before evaluating the characteristics of the model, however, it is necessary to control for Common Method Bias (CMB). This bias occurs when the method of data collection influences respondents' answers, like what happens with social desirability or response styles. Since the data was gathered through a self-administered online questionnaire, it is necessary to confirm the absence of this kind of systematic error. The statistical procedure adopted to check the presence of this bias follows the suggestions of Kock (2015): after a

full-collinearity test, all VIF values of the constructs should be below the threshold value of 3.3 to prove the absence of multi-collinearity issues. The resulting VIF ranged from 1.060 to 3.250; therefore, it's safe to assume that the model is free from CMB (see Table 10).

At this point, it is possible to evaluate the in-sample and out-sample explanatory power of the model. Due to the specifics determined when reporting the sample size for this research, the minimum R² that this model will be able to detect is 0.25. For the current study, the adjusted R² are 0.376 and 0.484 for the “Greenwashing Attitude” endogenous variable and 0.594 and 0.707 for the dependent variable, “Perceived Claim Credibility”. These results suggest that these models possess a moderate explanatory power, largely above the minimum R² detectable that the sample size allows.

'Greenwashing' stimulus model	VIF	'Credible' stimulus model	VIF
SKEP_CLA -> GRW_ATT	1.060	SKEP_CLA -> GRW_ATT	1.135
CSR_ABI -> GRW_ATT	2.333	CSR Communication -> GRW_ATT	1.287
CSR_COMM -> GRW_ATT	2.368	-	-
-	-	VER_EFF -> GRW_ATT	1.404
ABSTR -> PCCR	2.405	ABSTR -> PCCR	2.022
CSR_ABI -> PCCR	3.250	CSR Communication -> PCCR	2.718
CSR_COMM -> PCCR	2.908	-	-
-	-	VER_EFF -> PCCR	2.035
SKEP_CLA -> PCCR	1.161	SKEP_CLA -> PCCR	1.268
INFO_DES -> PCCR	1.189	INFO_DES -> PCCR	1.064
GRW_ATT -> PCCR	1.802	GRW_ATT -> PCCR	2.063
GULLIB -> PCCR	2.358	GULLIB -> PCCR	1.845
RECEPT -> PCCR	1.870	RECEPT -> PCCR	1.534
SUST_ATT -> PCCR	1.140	SUST_ATT -> PCCR	1.114

Table 10. VIF values to control for CMB issues in the structural model.

ABSTR = Abstractness, SKEP_CLA = Claim Skepticism, CSR_ABI = CSR Ability, CSR_COMM = CSR Commitment, VER_EFF = Claim Verification Effort, INFO_DES = Desire for more precise information, GRW_ATT = Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

As for the predictive power, both endogenous variables have a Q^2 over 0, thus establishing their predictive relevance. To assess the predictive validity, both PLSPredict and the Cross-Validated Predictive Ability Test (CVPAT) methods were used. PLSPredict compares the errors that the model makes against the same error type computed from a naïve benchmark: since the distribution of the error predictions was mostly symmetrical, the author chose RMSE values for the evaluation. The RMSE values obtained through the PLSPredict algorithm should be lower than the ones from the naïve benchmark; when that happens, the predictive validity of that indicator is established. According to Shmueli et al. (2019), the judgement on the predictive power of the models depend on the proportion of indicators that pass this check. In both models, only one of the indicators doesn't have predictive relevance or doesn't pass the test for predictive validity; therefore, both models have medium predictive power, as the majority of indicators has predictive validity.

As for CVPAT, the prediction errors of the endogenous latent variables determine the average loss value of the model; this statistic will then be compared to the average loss value of two other predictions, one using indicator averages (IA) and the other using a linear model (LM) benchmark. Then, the difference between these values (PLS - IA and PLS - LM) should be significantly below zero: this evaluation will be done with t-tests and respective p-values. If the p-values are below the 0.05 threshold, then the predictive validity of the construct is established. The average loss differences ranged from -0.449 to -1.126, and each of them has a p-value below 0.05: for this reason, the predictive validity of the construct is confirmed once more.

The R^2 and Q^2 of each model will be reported also in Table 11. The values obtained from PLSPredict can be consulted in Table 12, while the complete

results of the CVPAT comparisons are present in Table 13 for the IA benchmark and in Table 14 for the LM one.

Albeit the structural model could be considered valid at this point, most methodological researchers recommend running robustness checks to account for non-linearity, endogeneity and unobserved heterogeneity (Hair et al., 2017; Hair et al., 2019; Sarstedt et al., 2016). For PLS-SEM, the most common and recent methods are the testing for quadratic effects for non-linearity, using the Gaussian Copula to control for endogeneity and algorithms like the finite mixture for PLS (FIMIX-PLS) for unobserved heterogeneity.

In this study however, only non-linearity will be accounted for in the next section. The Gaussian Copula method, while accurate, needs to be repeated for each possible combination of indicators to ensure that the model doesn't present endogeneity; however, the models used in this study are too complex to thoroughly check every combination. Unobserved heterogeneity, which implies the presence of sub-groups not accounted for by the dimensions and controls in the models, cannot be reliably checked because the requirements necessary to run the algorithms aren't satisfied. For example, running FIMIX-PLS needs a minimum sample size of 85 observations for each potential partition (Sarstedt et al., 2011): since the sample size for this study is 99 observations, it is not possible to test the model even for 2 unobserved partitions.

'Greenwashing' stimulus model	R-square	R-square adjusted	Q ²
Greenwashing Attitude	0.395	0.376	0.328
Perceived Claim Credibility	0.631	0.594	0.404
'Credible' stimulus model	R-square	R-square adjusted	Q ²
Greenwashing Attitude	0.504	0.489	0.446
Perceived Claim Credibility	0.734	0.707	0.533

Table 11. Explanatory (R² adjusted) and predictive (Q²) power values for each endogenous construct.

'Greenwashing' stimulus model	q ²	PLS-SEM RMSE	LM RMSE	'Credible' stimulus model	q ²	PLS-SEM RMSE	LM RMSE
BS_GRW_ATT_1	-0.006	1.794	2.187	GS_GRW_ATT_1	0.390	1.236	1.389
-	-	-	-	GS_GRW_ATT_2	0.278	1.416	1.926
BS_GRW_ATT_3	0.173	1.540	1.806	GS_GRW_ATT_3	0.299	1.493	1.706
BS_GRW_ATT_4	0.133	1.572	1.719	GS_GRW_ATT_4	0.337	1.355	1.543
BS_GRW_ATT_5	0.123	1.546	1.605	GS_GRW_ATT_5	0.257	1.594	2.082
BS_GRW_ATT_6	0.324	1.425	1.712	GS_GRW_ATT_6	0.276	1.203	1.460
BS_GRW_ATT_7	0.250	1.369	1.612	GS_GRW_ATT_7	0.114	1.520	2.093
BS_PCCR_1	0.202	1.617	1.897	GS_PCCR_1	0.219	1.499	1.847
BS_PCCR_2	0.210	1.204	1.268	GS_PCCR_2	0.313	1.226	1.400
BS_PCCR_3	0.315	1.257	1.452	GS_PCCR_3	0.335	1.125	1.211
BS_PCCR_4	0.384	1.157	1.264	GS_PCCR_4	0.591	0.908	0.894

Table 12. PLS Predict values for each indicator.

'Greenwashing' stimulus model	PLS loss	IA loss	Average loss difference	t-value	p-value
Greenwashing Attitude	2.393	2.858	-0.464	3.104	0.002
Perceived Claim Credibility	1.746	2.398	-0.652	3.411	0.001
Overall	2.134	2.674	-0.540	3.742	0.000
'Credible' stimulus model					
Greenwashing Attitude	1.985	2.750	-0.766	3.290	0.001
Perceived Claim Credibility	1.460	2.246	-0.786	4.074	0.000
Overall	1.794	2.567	-0.773	3.740	0.000

Table 13. CVPAT results against the indicator average (IA) benchmark.

'Greenwashing' stimulus model	PLS loss	LM loss	Average loss difference	<i>t</i> -value	<i>p</i> -value
Greenwashing Attitude	2.393	3.185	-0.792	4.085	0.000
Perceived Claim Credibility	1.746	2.229	-0.483	2.738	0.007
Overall	2.134	2.802	-0.668	4.366	0.000
'Credible' stimulus model					
Greenwashing Attitude	1.985	3.111	-1.126	5.275	0.000
Perceived Claim Credibility	1.460	1.909	-0.449	3.210	0.002
Overall	1.794	2.674	-0.880	5.860	0.000

Table 14. CVPAT results against the linear model (LM) benchmark.

3.3.2 – Hypotheses Results

Since the reliability and validity of both measurement and structural model has been verified, it is now possible to test the hypotheses formulated in the first chapter. The path coefficients and the corresponding *t*-values have been obtained using bootstrapping; the chosen method to compute the confidence intervals was the bias-corrected and accelerated (BCa) bootstrap, with 10000 subsamples at a significance level of 0.05. The test-type for the hypotheses was one-tailed since the literature allowed to hypothesize the sign of the path coefficients. The full results are available in Table 15 for the first model, and in Table 16 for the second model. For easier consultation of the outcomes, Table 17 reports only the hypothesized relationships and whether they were supported in either model.

Hypotheses 1.a and 1.b described the relationship between claim skepticism and the two endogenous variables, perceived claim credibility and greenwashing attitude. However, only H1.b is supported, and only for the ‘greenwashing’ model ($\beta = 0.166$, *p*-value = 0.019).

In the literature theory, the relationships of claim verification effort were encoded into H2.a and H2.b; however, to validate the measurement model for the ‘greenwashing’ stimuli, the construct had to be removed. In the

'credible' stimulus model, H2.a was partially supported ($\beta = -0.107$, p -value = 0.087), while H2.b found full support ($\beta = 0.454$, p -value < 0.001).

Concerning H3.a, H3.b, H4.a and H4.b, only the ones which postulated the negative effect of CSR ability and CSR commitment on greenwashing attitude was supported (H3.b: $\beta = -0.288$, p -value = 0.027; H4.b: $\beta = -0.319$, p -value = 0.026). In the 'credible' stimulus model, these dimensions were merged into one ("CSR Communication") and will answer the same hypotheses. Surprisingly, all hypotheses were fully supported in this model (H3.a and H4.a: $\beta = 0.394$, p -value < 0.001; H3.b and H4.b: $\beta = -0.342$, p -value < 0.001).

From theory, the greenwashing attitude should have a negative effect on perceived claim credibility. H5.a was supported in both models ('greenwashing' model: $\beta = -0.423$, p -value < 0.001; 'credible' model: $\beta = -0.454$, p -value < 0.001).

H6 described a positive relationship between gullibility and perceived claim credibility; only in the 'greenwashing' model this hypothesis is fully supported ($\beta = -0.220$, p -value = 0.013), while in the other the same hypothesis had to be rejected.

The same type of relationship should be detected when considering the sustainability attitude too; however, H7 was only partially supported only in the 'credible' model ($\beta = -0.111$, p -value = 0.066).

The last individual characteristic, receptiveness, is at the core of H8; despite its theoretical motivation, the significance of the relationship was only partially supported, and only in the 'greenwashing' model ($\beta = -0.148$, p -value = 0.078).

Regarding the relationship between abstractness and perceived claim credibility, represented by H9, both models couldn't refute the null hypothesis: H9 was rejected in both models.

Finally, H10 proposed a negative and meaningful relationship between the desire for more precise information and the dependent variable, perceived claim credibility. Only the 'credible' stimulus model fully supported the hypothesis ($\beta = -0.108$, p -value = 0.047).

Mediation effects

The specific indirect effects of the models can be measured by multiplying the direct effect of the starting latent variable with the direct effect of the mediating construct onto the target endogenous construct. These relationships were described in H5.b to H5.e, in which the greenwashing attitude of an individual mediates the effect of four distinct dimensions. However, the first model is not able to test H5.c since the latent variable is missing: in fact, it postulated a mediating effect between claim verification effort and perceived claim credibility impossible to measure and test. Furthermore, as with H3 and H4, the hypotheses will be tested through the "CSR Communication" dimension in the 'credible' model, since the original constructs had to be merged together.

The evaluation and classification of the mediation effects will follow the indications of Zhao et al. (2010), also reported by Hair et al. (2017); Figure 14 illustrates the full procedure. The possible reasons for any divergence in results will be provided in the following subchapter.

H5.b was fully supported only in the first model ($\beta = -0.070$, p -value = 0.041). Since the direct effect onto perceived claim credibility was non-significant (H1.a: $\beta = -0.086$, p -value = 0.118), it is possible to affirm that

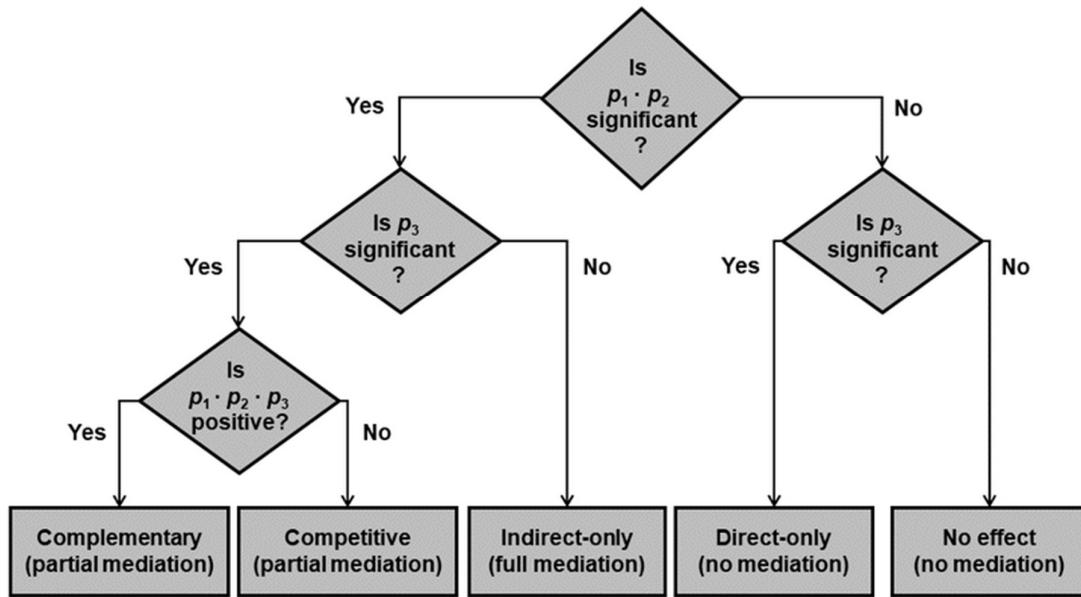


Figure 14. The evaluation process for mediation effects (Zhao et al., 2010).

the effect of claim skepticism on claim credibility is fully mediated by the greenwashing attitude, albeit only when presented with a non-credible stimulus. In fact, for the other model both relationships were not significant, suggesting instead the absence of any mediation effect.

Moving onward, H5.c can be tested only for the ‘credible’ model. In this context, the mediation effect is significant ($\beta = -0.206$, p -value = 0.001). The direct effect of claim verification effort onto perceived claim credibility was partially significant (H2.a: $\beta = -0.107$, p -value = 0.087); however, the total effect is significant ($\beta = -0.314$, t -value = 3.760, p -value < 0.001). These results imply that there is a negative complementary mediation effect occurring.

H5.d predicted a mediation effect between CSR ability and perceived claim credibility; in the first model, this relationship is only partially supported ($\beta = 0.122$, p -value = 0.055), while the direct effect (H3.a: $\beta = -0.093$, p -

value = 0.211) was non-significant. The total effect was also non-significant ($\beta = 0.028$, t -value = 0.186, p -value < 0.426), thus for this model there is no mediation effect.

For the same model, the indirect effect of CSR commitment on perceived claim credibility was significant ($\beta = -0.135$, p -value = 0.019), so H5.e is fully supported. The direct effect instead is non-significant (H4.a: $\beta = -0.144$, p -value = 0.122), so there is a full mediation effect with negative influence on the dependent variable.

For the 'credible' model, H5.d and H5.e will be evaluated through the "CSR Communication" dimension. The indirect effect is significant ($\beta = 0.156$, p -value = 0.001), like the direct effect onto perceived claim credibility (H3.a and H4.a: $\beta = 0.394$, p -value < 0.001). Surprisingly, greenwashing attitude mediates positively CSR communication: this phenomenon could be caused by the fact that people recognize high levels of both ability and commitment, thus lowering the individual greenwashing attitude and increasing the overall perceived credibility. In any case, the results highlight the presence of a complementary mediation.

Robustness check – Quadratic effects

In some contexts, nonlinear effects are common enough to be periodically accounted for, such as when researching characteristics of family businesses (Basco et al., 2022). However, many researchers call for robustness checks when using PLS-SEM, since the presence of issues such as nonlinear relationships and endogeneity can alter significantly the findings (Sarstedt et al., 2016). As mentioned previously, in this study only the presence of quadratic effects will be tested: albeit there are many types of nonlinear relationships, quadratic effects are the most common (Hair et

al., 2019). Table 18 and 19 will report all tests for quadratic effects, done within the SmartPLS 4.0 software (Ringle, 2024).

Since there is no predetermined direction of nonlinear effects suggested by theory, this assessment was conducted using the bootstrapping technique with BCa bootstrap for the computation of confidence intervals at a 0.05 significance level; the test type was two-tailed.

Path coefficients (Direct effects)	Original sample	Standard deviation	T-statistics	P values	Hypothesis	Outcome
SKEP_CLA -> GRW_ATT	0.166	0.080	2.067	0.019	1.b	SUPPORTED
CSR_ABI -> GRW_ATT	-0.288	0.149	1.927	0.027	3.b	SUPPORTED
CSR_COMM -> GRW_ATT	-0.319	0.164	1.949	0.026	4.b	SUPPORTED
SKEP_CLA -> PCCR	-0.086	0.072	1.186	0.118	1.a	REJECTED
CSR_ABI -> PCCR	-0.093	0.116	0.803	0.211	3.a	REJECTED
CSR_COMM -> PCCR	0.144	0.124	1.167	0.122	4.a	REJECTED
GRW_ATT -> PCCR	-0.423	0.112	3.775	0.000	5.a	SUPPORTED
GULLIB -> PCCR	0.220	0.099	2.213	0.013	6	SUPPORTED
SUST_ATT -> PCCR	-0.063	0.076	0.827	0.204	7	REJECTED
RECEPT -> PCCR	0.148	0.105	1.416	0.078	8	PARTIALLY SUPPORTED
ABSTR -> PCCR	0.081	0.107	0.755	0.225	9	REJECTED
INFO_DES -> PCCR	0.043	0.063	0.682	0.248	10	REJECTED
Specific indirect effects (Mediation)						
SKEP_CLA -> GRW_ATT -> PCCR	-0.070	0.040	1.744	0.041	5.b	SUPPORTED
CSR_ABI -> GRW_ATT -> PCCR	0.122	0.076	1.599	0.055	5.d	PARTIALLY SUPPORTED
CSR_COMM -> GRW_ATT -> PCCR	0.135	0.065	2.066	0.019	5.e	SUPPORTED

Table 15. Hypotheses results for the ‘greenwashing’ stimulus model.

ABSTR = Abstractness, SKEP_CLA = Claim Skepticism, CSR_ABI = CSR Ability, CSR_COMM = CSR Commitment, INFO_DES = Desire for more precise information, GRW_ATT = Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

Path coefficients (Direct effects)	Original sample	Standard deviation	T-statistics	P values	Hypothesis	Outcome
SKEP_CLA -> GRW_ATT	0.066	0.076	0.872	0.192	1.b	REJECTED
VER_EFF -> GRW_ATT	0.454	0.091	5.013	0.000	2.b	SUPPORTED
CSR Communication -> GRW_ATT	-0.342	0.096	3.571	0.000	3.b, 4.b	SUPPORTED
SKEP_CLA -> PCCR	0.045	0.066	0.680	0.248	1.a	REJECTED
VER_EFF -> PCCR	-0.107	0.079	1.362	0.087	2.a	PARTIALLY SUPPORTED
CSR Communication -> PCCR	0.394	0.099	3.997	0.000	3.a, 4.a	SUPPORTED
GRW_ATT -> PCCR	-0.454	0.096	4.731	0.000	5.a	SUPPORTED
GULLIB -> PCCR	0.051	0.088	0.574	0.283	6	REJECTED
SUST_ATT -> PCCR	0.111	0.073	1.507	0.066	7	PARTIALLY SUPPORTED
RECEPT -> PCCR	-0.110	0.092	1.192	0.117	8	REJECTED
ABSTR -> PCCR	0.043	0.083	0.523	0.301	9	REJECTED
INFO_DES -> PCCR	-0.108	0.064	1.672	0.047	10	SUPPORTED
Specific indirect effects (Mediation)						
SKEP_CLA -> GRW_ATT -> PCCR	-0.030	0.034	0.873	0.191	5.b	REJECTED
VER_EFF -> GRW_ATT -> PCCR	-0.206	0.066	3.148	0.001	5.c	SUPPORTED
CSR Communication -> GRW_ATT -> PCCR	0.156	0.048	3.246	0.001	5.d, 5.e	SUPPORTED

Table 16. Hypotheses results for the ‘credible’ stimulus model.

ABSTR = Abstractness, SKEP_CLA = Claim Skepticism, VER_EFF = Claim Verification Effort, INFO_DES = Desire for more precise information, GRW_ATT = Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

Out of all the possible quadratic effects, the only significant one is found in the ‘credible’ model, in the direct relationship between CSR communication and perceived claim credibility. This result, while unexpected, does not necessarily invalidate previous findings: since both the linear and the

Hypotheses	Supported in Model 1 ('Greenwashing')	Supported in Model 2 ('Credible')
(1.a) SKEP_CLA -> PCCR		
(1.b) SKEP_CLA -> GRW_ATT	X	
(2.a) VER_EFF -> PCCR		*
(2.b) VER_EFF -> GRW_ATT		X
(3.a) CSR_ABI -> PCCR		X
(3.b) CSR_ABI -> GRW_ATT	X	X
(4.a) CSR_COMM -> PCCR		X
(4.b) CSR_COMM -> GRW_ATT	X	X
(5.a) GRW_ATT -> PCCR	X	X
(5.b) SKEP_CLA -> GRW_ATT -> PCCR	X	
(5.c) VER_EFF -> GRW_ATT -> PCCR		X
(5.d) CSR_ABI -> GRW_ATT -> PCCR	*	X
(5.e) CSR_COMM -> GRW_ATT -> PCCR	X	X
(6) GULLIB -> PCCR	X	
(7) SUST_ATT -> PCCR		*
(8) RECEPT -> PCCR	*	
(9) ABSTR -> PCCR		
(10) INFO_DES -> PCCR		X

Table 17. Summary of supported hypotheses.

X = Fully supported ($p < 0.05$); * = Partially supported ($p < 0.10$).

quadratic approximation of the relationship are significant, both can be an adequate representation of the effect and can be used to infer conclusions. Furthermore, a possible cause for the quadratic effect could be the fact that this dimension is comprised of the indicators for CSR ability and CSR commitment: originally, the VIF values for the constructs was over 5, but the underlying nature of the relationship could have been changed when they were merged together. Lastly, since high levels of CSR communication represent high levels of CSR ability and CSR commitment at the same time, it is reasonable to assume that the relationship is quadratic.

'Greenwashing' stimulus model	Original sample	Standard deviation	T-statistics	P-values
QE (Claim Skepticism) -> Greenwashing Attitude	0.004	0.091	0.041	0.967
QE (CSR Company Ability) -> Greenwashing Attitude	-0.095	0.093	1.020	0.308
QE (CSR Company Commitment) -> Greenwashing Attitude	0.175	0.106	1.652	0.099
QE (Claim Skepticism) -> Perceived Claim Credibility	-0.032	0.065	0.490	0.624
QE (CSR Company Ability) -> Perceived Claim Credibility	0.015	0.097	0.160	0.873
QE (CSR Company Commitment) -> Perceived Claim Credibility	-0.059	0.094	0.628	0.530
QE (Greenwashing Attitude) -> Perceived Claim Credibility	0.053	0.077	0.690	0.490
QE (Gullibility) -> Perceived Claim Credibility	0.069	0.077	0.906	0.365
QE (Sustainability Attitude) -> Perceived Claim Credibility	0.010	0.048	0.213	0.832
QE (Receptiveness) -> Perceived Claim Credibility	0.096	0.083	1.157	0.247
QE (Abstractness) -> Perceived Claim Credibility	0.108	0.091	1.190	0.234
QE (Desire for more precise info) -> Perceived Claim Credibility	-0.092	0.096	0.962	0.336

Table 18. Quadratic effects of relationships in the 'greenwashing' model.

'Credible' stimulus model	Original sample	Standard deviation	T statistics	P values
QE (Claim Skepticism) -> Greenwashing Attitude	-0.127	0.072	1.767	0.077
QE (Claim Verification Effort) -> Greenwashing Attitude	0.076	0.077	0.987	0.324
QE (CSR Communication) -> Greenwashing Attitude	-0.078	0.078	1.002	0.316
QE (Claim Skepticism) -> Perceived Claim Credibility	0.009	0.050	0.177	0.859
QE (Claim Verification Effort) -> Perceived Claim Credibility	-0.005	0.064	0.079	0.937
QE (CSR Communication) -> Perceived Claim Credibility	0.180	0.079	2.286	0.022
QE (Greenwashing Attitude) -> Perceived Claim Credibility	-0.087	0.075	1.164	0.244
QE (Gullibility) -> Perceived Claim Credibility	-0.072	0.082	0.878	0.380
QE (Sustainability Attitude) -> Perceived Claim Credibility	0.057	0.058	0.972	0.331
QE (Receptiveness) -> Perceived Claim Credibility	0.029	0.081	0.365	0.715
QE (Abstractness) -> Perceived Claim Credibility	-0.064	0.065	0.987	0.323
QE (Desire for more precise Info) -> Perceived Claim Credibility	-0.001	0.067	0.022	0.983

Table 19. Quadratic effects of relationships in the 'credible' model.

3.4 – Results discussion

Due to the nature of the study, some differences in the hypotheses that would end up supported only by one model were expected; however, only H3.b, H4.b, H5.a and H5.e were verified for both models, and only H9 was fully rejected by both models (see Table 17). These outcomes are evidence in support of a different interpretation for cases of low credibility and for cases of high credibility; in other words, the confusion and difficulty detected in the academical world when dealing with credibility could be caused by fundamentally different antecedents depending on the overall perceived credibility felt in a given context.

Assuming that the antecedents for low credibility and for high credibility do in fact change, the other results can be interpreted more easily given the context of a single model. In an environment with low perceived credibility only gullibility and, to a minor extent, receptiveness are relevant precursors of claim credibility. The greenwashing attitude is the most important dimension thanks to its full mediation effect of claim skepticism and CSR commitment.

When a stimulus is perceived as highly credible, these relationships become non-significant; in their stead, the desire for more precise information becomes fully relevant and, to a minor extent, the sustainability attitude of the individual does too. The nature of the mediation effects also transforms: claim skepticism becomes irrelevant, while claim verification effort and CSR communication present complementary mediations through the greenwashing attitude.

Overall, these results may suggest the presence of a linearly increasing (or decreasing) relationship in the relevance of most direct and mediation effects when considering all possible levels of credibility. While the evaluation of whether this phenomenon happens is outside the scope of this study, the implications of the current results will be analyzed through the implementation of the Importance-Performance Map Analysis (IPMA), with a complementary point of view detailed through the Necessary Condition Analysis (NCA).

IPMA on Perceived Claim Credibility

IPMA is a strategic tool to assess how well distinct aspects or features of an object perform in comparison to how important they are to customers. By plotting the perceived importance of these attributes against their perceived performance, IPMA provides a visual representation that

highlights areas requiring improvement. Usually, it's a way for businesses to prioritize efforts and resources effectively, with the ultimate objective of focusing on the characteristics that are important but not performing well. The importance values are the total effects of the latent variables onto the dependent variable, while the performance is obtained through the rescaled latent variable scores, which are a linear combination of the rescaled indicator data, standardized between 0 and 100, and the rescaled outer weights (Ringle & Sarstedt, 2016).

The most important requirement to use the IPMA and its results is to use the same metric or quasi-metric scale. This condition was satisfied with the rescaling of the “Desire for more precise information,” from a ten-point Likert scale to a seven-point one. Despite losing some information expressed by the scale when the range is reduced, the conversion from a ten-point to a seven-point scale was determined through the formula $Y = \left(\frac{X - X_{min}}{X_{range}}\right)n$. In this formula, Y is the adjusted variable, X is the original variable, X_{min} is the minimum observed value on the original variable, X_{range} is the difference between the maximum potential score and the minimum potential score on the original variable and n is the upper limit of the rescaled variable. The comparison between original and rescaled values is reported in Table 20.

Original	1	2	3	4	5	6	7	8	9	10
Rescaled	1		2	3	4		5	6	7	

Table 20. Equivalence between the values in a 10-point and 7-point scale.

Another requirement to use IPMA is for all indicator coding to have the same scale direction, so that the maximum value represents the best outcome for the indicator. Since for some dimensions the highest value represents the worst outcome for the dependent variable (i.e., a negative total effect), these scales need to be reverse scored. The dimensions subject to this change are “Greenwashing attitude,” “Desire for more precise information,” “Claim skepticism” and “Claim verification effort;” their interpretation must also be reversed to maintain the original meaning. Finally, the last necessity to be satisfied before using IPMA was for all indicators to have a positive outer weight; this requirement was met without removing any indicators.

To extrapolate meaning from the graph generated, a last step is mandatory: to outline the averages of the importance and performance latent variable scores. The threshold to determine whether a dimension is important or is performing well is obtained by the respective average values (Ringle & Sarstedt, 2016); the threshold value for importance scores is 0.154 for the ‘greenwashing’ model and 0.183 for the ‘credible’ one. The mean performance values instead are 34.726 and 55.514 for the respective models. The importance and performance values for both models are reported in Table 21.

As Figure 15 shows, there are 3 important and underperforming dimensions which would need to be improved to increase the perceived credibility of the ‘greenwashing’ stimuli. In particular, in the lower right quadrant of the map the company’s commitment to CSR and the gullibility of the advertising targets need to increase, while the greenwashing attitude should be lower. The 3rd (“I believe the green claims in this ad are vague”; importance = 0.075, performance = 22.222) and 7th item (“This ad does not tell the truth about the product's green functionality”; importance

'Greenwashing' stimulus model	Importance	Performance
Abstractness	0.065	27,106
CSR Company Ability	0.023	31,930
CSR Company Commitment	0.225	30,118
REV Claim Skepticism	0.157	48,769
REV Desire for more precise info	-0.021	31,791
REV Greenwashing Attitude	0.441	26,447
Gullibility	0.249	18,955
Receptiveness	0.144	20,419
Sustainability Attitude	-0.064	76,997
Mean value	0,154	34,726
'Credible' stimulus model		
Abstractness	0.041	58,268
CSR Communication	0.532	64,835
REV Claim Skepticism	-0.017	49,481
REV Claim Verification Effort	0.293	55,155
REV Desire for more precise Info	0.076	37,491
REV Greenwashing Attitude	0.428	65,804
Gullibility	0.037	50,660
Receptiveness	-0.086	42,510
Sustainability Attitude	0.136	75,424
Mean value	0,183	55,514

Table 21. Importance and performance values for latent variables and threshold (mean) values for both models.

= 0.087, performance = 26.396) of the greenwashing scale are the biggest issues to address when low credibility is perceived. These findings are coherent with the characteristics valued by respondents (see Fig. 11) and the literature (Mahoney et al., 2013; Santos et al., 2023).

In a context of high perceived credibility however, gullibility is substituted by claim verification effort (Fig. 16). In addition to lowering the greenwashing attitude and maintaining high levels of CSR commitment and ability at the same time, allowing people to easily understand and verify the claims made in an ad becomes highly relevant to maintain this perception.

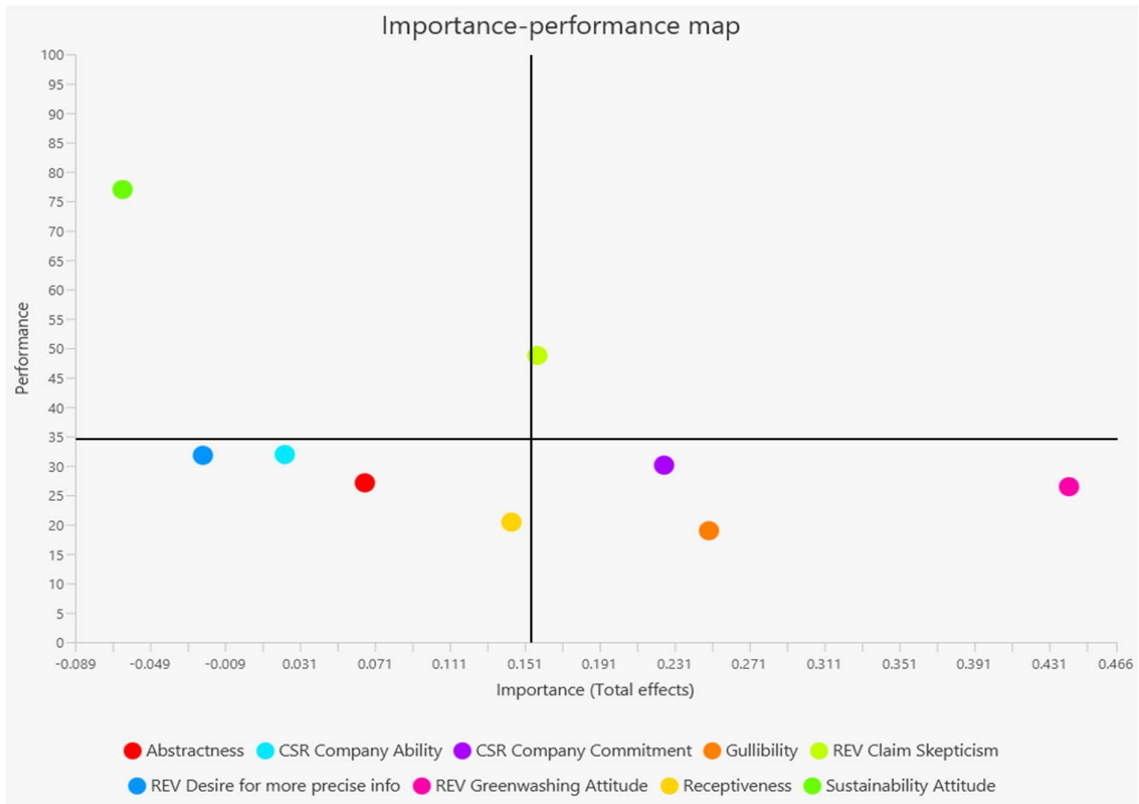


Figure 15. IPMA results for the ‘greenwashing’ stimulus model.

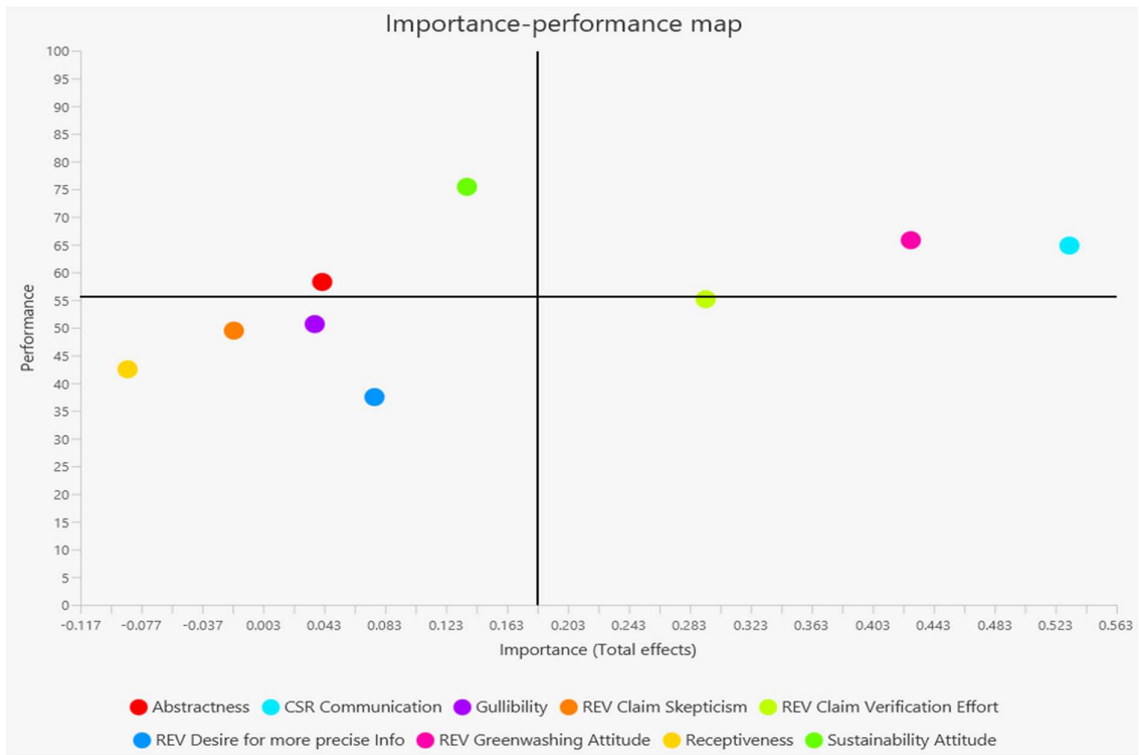


Figure 16. IPMA results for the ‘credible’ stimulus model.

In particular, the 3rd (“These types of sustainability claims are likely to confuse people I know”; importance = 0.075, performance = 49.495) and 4th item (“I find these sustainability claims easy to follow”; importance=0.082, performance=64.478) highlight how much the topic of sustainability should be treated like popular science to be understood more easily by the public. Again, these findings find empirical support in the responses of the participants (see Fig. 11) and theoretical support in the literature (Bhattacharyya, 2023; Rahman & Nguyen-Viet, 2023).

Other dimensions that show significant effect on claim credibility, like claim skepticism in low credibility conditions and desire for more precise information in high credibility ones, have a lower impact than the aforementioned constructs, and thus could be conceived as secondary. Before passing any final judgement however, it is important to address a limitation inherent to the PLS-SEM technique through the Necessary Condition Analysis (NCA).

NCA on Perceived Claim Credibility

While PLS-SEM nowadays is a standard multivariate analysis technique to investigate causal-predictive relationships, its misuse due to lacking validity checks and insufficient sample size is an issue that methodological researchers are actively trying to address (Hair et al., 2019; Sarstedt et al., 2016). The rationale is that, without the proper rigorousness in applying techniques and reporting results, results and corresponding implications may be biased, not repeatable or outright wrong. However, a limitation that no validity or robustness check can overcome is to offer another point of view on the outcomes found.

In fact, PLS-SEM empirically substantiates the determinants (X) that lead to an outcome (Y). Authors who interpret their PLS-SEM findings normally

use expressions such as ‘X increases Y’ or ‘a higher X leads to a higher Y’ (Lin & Lin, 2019). The interpretation of relationships between the determinants and the outcome therefore follows a *sufficiency* logic (Dul, 2016; Richter et al., 2020): PLS-SEM allows to understand which latent variables should be focused on to obtain a high level of the dependent variable. The NCA instead allows to understand if a certain construct is a pre-requisite to get a certain level of the final outcome and, if so, how much of that construct is needed: as the name implies, this technique operates on a *necessity* logic (Dul, 2016).

To implement NCA using PLS-SEM, the data requirements are the same as for IPMA. The results were obtained considering only the ceiling envelopment – free disposal hull (CE-FDH) method to determine the effect sizes. Finally, in order to test the significance of the necessity effects for each latent variable, the author ran NCA permutations with 10000 subsamples.

The values shown in Table 22 and 24 are the latent variable scores of that dimension. For example, to achieve 60% of the maximum perceived claim credibility, which corresponds to an average score of 4.6, there should be a minimum score of 3.466 for the perceived CSR ability, together with all the other values in the same row. However, not all dimensions are necessary to achieve that level of claim credibility. With the NCA permutation test, it’s possible to determine if a dimension is necessary by checking whether the associated p-value is below 0.05. In that case, the dimension becomes relevant only when trying to achieve a certain level of the outcome.

	PCCR	ABSTR	CSR_ABI	CSR_COMM	GULLIB	REV_SKEP_CLA	REV_INFO_DES	REV_GRW_ATT	RECEPT	SUST_ATT
0%	1,0	NN	NN	NN	NN	NN	NN	NN	NN	1.670
10%	1,6	NN	NN	NN	NN	2.113	NN	1.101	NN	1.670
20%	2,2	NN	NN	NN	NN	2.113	NN	1.632	NN	2.830
30%	2,8	1.332	NN	NN	NN	2.113	NN	1.917	NN	2.830
40%	3,4	2.000	NN	1.697	1.619	2.339	NN	2.655	NN	2.830
50%	4,0	2.000	NN	1.697	1.619	3.503	NN	3.147	2.000	2.830
60%	4,6	2.000	3.466	3.000	2.000	3.503	NN	3.441	2.000	2.830
70%	5,2	3.326	4.583	3.393	2.000	5.973	NN	7.000	2.384	5.161
80%	5,8	3.326	4.583	3.393	2.000	5.973	1.000	7.000	2.384	5.161
90%	6,4	3.326	4.583	3.393	2.000	5.973	1.000	7.000	2.384	5.161
100%	7,0	3.326	4.583	3.393	2.000	5.973	1.000	7.000	2.384	5.161

Table 22. Bottleneck table for the ‘greenwashing’ model.

NN = Not Necessary; ABSTR = Abstractness, CSR_ABI = CSR Ability, CSR_COMM = CSR Commitment, GULLIB = Gullibility, REV_SKEP_CLA = Reverse-scored Claim Skepticism, REV_INFO_DES = Reverse-scored Desire for more precise information, REV_GRW_ATT = Reverse-scored Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

	ABSTR	CSR_ABI	CSR_COMM	GULLIB	REV_SKEP_CLA	REV_INFO_DES	REV_GRW_ATT	RECEPT	SUST_ATT
Effect size	0.195	0.267	0.209	0.097	0.449	0.000	0.468	0.109	0.423
Permutation <i>p</i> value	0.111	0.047	0.125	0.266	0.000	1.000	0.000	0.241	0.778

Table 23. NCA Permutation test results for the ‘greenwashing’ model.

When the perceived credibility tends to be low, the relevant dimensions are the greenwashing attitude, the claim skepticism, and the perceived CSR ability of a company (see Table 23). As a company tries to enact a greenwashing strategy, to actually succeed it should try to lower the skepticism and greenwashing attitude of an individual, while coming off as able to implement sustainability. Table 22 highlights how there is a fine line between achieving a sufficiently high level of perceived claim credibility and trying too hard. In fact, starting from an average credibility of 70% (as felt by respondents), the necessary conditions are impossible

	PCCR	ABSTR	CSR_ Commu- nication	GULLIB	REV_ SKEP_ CLA	REV_ VER_ EFF	REV_ INFO_ DES	REV_ GRW_ ATT	RECEPT	SUST_ ATT
0%	1,0	NN	NN	NN	NN	NN	NN	NN	NN	1.336
10%	1,6	NN	NN	NN	NN	NN	NN	NN	NN	1.336
20%	2,2	NN	1.751	NN	NN	1.534	NN	2.000	NN	1.336
30%	2,8	NN	1.751	NN	NN	1.534	NN	2.000	NN	1.336
40%	3,4	NN	1.751	NN	NN	1.534	NN	2.000	NN	1.336
50%	4,0	NN	1.751	NN	NN	1.534	NN	3.113	NN	1.336
60%	4,6	NN	1.751	NN	NN	1.534	NN	3.113	NN	1.336
70%	5,2	NN	1.751	NN	NN	1.534	NN	3.113	NN	1.336
80%	5,8	NN	1.751	NN	NN	1.534	NN	3.474	NN	1.336
90%	6,4	3.000	4.749	NN	1.743	3.577	NN	3.474	NN	4.160
100%	7,0	4.057	5.130	3.054	1.743	3.577	1.000	3.474	1.000	5.053

Table 24. Bottleneck table for the ‘credible’ model.

NN = Not Necessary; ABSTR = Abstractness, GULLIB = Gullibility, REV_SKEP_CLA = Reverse-scored Claim Skepticism, REV_VER_EFF = Reverse-scored Claim Verification Effort, REV_INFO_DES = Reverse-scored Desire for more precise information, REV_GRW_ATT = Reverse-scored Greenwashing Attitude, PCCR = Perceived Claim Credibility, RECEPT = Receptiveness, SUST_ATT = Sustainability Attitude.

	ABSTR	CSR_ Commu- nication	GULLIB	REV_ SKEP_ CLA	REV_ VER_ EFF	REV_ INFO_ DES	REV_ GRW_ ATT	RECEPT	SUST_ ATT
Effect size	0.056	0.183	0.032	0.017	0.119	0.000	0.259	0.000	0.147
Permutation <i>p</i> value	0.194	0.002	0.110	0.668	0.008	0.000	0.000	0.000	0.598

Table 25. NCA Permutation test results for the ‘credible’ model.

to achieve, since an individual shouldn’t feel any skepticism toward claims and should be certain that the claim doesn’t contain a smidge of greenwashing intent. Meanwhile, in cases of high perceived credibility the situation is substantially different. Greenwashing attitude and CSR communication are still necessary, but verification effort seems to be necessary conditions for the highest levels of perceived claim credibility

(see Table 25). To achieve a satisfactory level of credibility, the requirements are much lower with respect to the other model (Table 24). However, while CSR Communication will be treated as any other dimension for the purpose of this study, it's important to remember that there are both a significant linear effect and a quadratic effect between this dimension and perceived credibility: therefore, this result should be taken with a grain of salt.

Finally, despite seemingly being necessary to achieve the highest levels of credibility, both receptiveness and the reverse of information desire do not satisfy all the requirements to be deemed necessary (Dul, 2016; Dul et al., 2020). As reiterated also by Hauff et al. (2024), three conditions should be met: there needs to be theoretical justification, the condition should have a small *p*-value and the effect size should be larger than zero: Table 25 shows that both dimensions have an effect size equal to zero, meaning that it's not possible to determine whether they are actually necessary: in the context of this paper, they will be categorized as unnecessary.

4. Conclusions

4.1 – A New Definition

The ultimate purpose of marketing campaigns is always the same: to generate interest, usually positive, in a company and in what it can offer. One of the most common methods is to demonstrate the firm's role and prominence in a given topic that is relevant to the general public; sustainability is simply the latest, due to the potential impacts it can have on lives and the affinity to individual values held by people. However, the rapid dissemination of opinions and facts pose significant challenges for companies in navigating sustainability issues. On top of the inherent complexity of the topic which includes three relevant, distinct and linked topics (Environment, Social and Governance), the companies that exploited this trend ultimately generated a huge, context-specific backlash that was baptized as greenwashing (Gagné et al., 2022; Seele & Gatti, 2017).

This phenomenon received a lot of attention from media and researchers, which extensively studied its ramifications and antecedents over many years (Ioannou et al., 2023; Kucharska & Kowalczyk, 2019). However, no paper until now discussed at length how greenwashing and its antecedents relate to a fundamental characteristic of marketing: the perceived credibility of the advertisement. In an attempt of identifying and discussing the characteristics of sustainability claims and how they could be perceived as credible in an unfavorable context due to greenwashing, the author discovered that the discussion and definitions of this concept are still fragmented (Golob et al., 2023; Jaeger & Weber, 2020). Therefore, by surveying the opinions of 99 respondents, mostly of Italian nationality, this paper tries to address this fragmentation by determining which elements

are related to perceived claim credibility, whether they are a sufficient condition, a necessary one or both, and by proposing a new definition of this concept in the context of sustainability.

Table 26 gathers the required information to craft this definition; before proposing it however, it's useful to offer a concise interpretation of the findings of this study. In particular, some dimensions are both necessary and significantly influence the level of credibility: greenwashing attitude, perceived CSR ability and commitment, and claim verification effort. On average, an increase in these constructs will increase the outcome. However, a certain level (see Tables 22 and 24) of these exogenous constructs is necessary for credibility to be perceived.

Other dimensions instead don't seem to relate at all to credibility: while they may be important in their own right, or may be related to other aspects of marketing, in this study they were found to be neither necessary nor significant. These constructs are receptiveness, sustainability attitude (or environmentalism) and abstractness (or high construal level); therefore, these aspects will not be considered as relevant to credibility in this study.

Other dimensions may have an impact on the dependent variable, but a certain level is not necessary to achieve higher credibility. It's the case of gullibility when perceived credibility is low, and of claim specificity when it's high. On average, an increase in these constructs will increase the outcome; no minimum level of the construct is needed to ensure that the outcome will manifest.

Finally, there are dimensions which are necessary and a significant determinant, but only for one model: claim skepticism falls in this

Dimensions	Significant for low perceived credibility	Significant for high perceived credibility	Necessary in low perceived credibility	Necessary in high perceived credibility
Claim Skepticism	Yes, fully mediated	No	Yes (its absence)	No
Claim verification effort	N/A	Yes, partially complementarily mediated	N/A	Yes (its absence)
CSR Ability	No	Yes, partially complementarily mediated	Yes	Yes
CSR Commitment	Yes, fully mediated		No	
Greenwashing Attitude	Yes	Yes	Yes (its absence)	Yes (its absence)
Gullibility	Yes	No	No	No
Sustainability Attitude	No	Partially (p-value < 0.10)	No	No
Receptiveness	Partially (p-value < 0.10)	No	No	No
Abstractness	No	No	No	No
Claim Specificity (+) / Information desire (-)	No	Yes	No	No

Table 26. Summary of the necessary and significant dimensions on perceived (sustainability) claim credibility.

category. This construct can be interpreted similar to the greenwashing attitude, but is valid only when certain conditions are met. This difference seem to imply that low credibility and high credibility levels are operate on partially different bases. Sadly, the veracity of this hypothesis cannot be

verified in this paper. At this point, it is possible to refine the concept of perceived claim credibility in the sustainability field with a new definition, borne from the findings of this paper:

“A sustainability claim is credible when it offers precise, easily understandable and verifiable information that is perceived as genuine and reflective of the sustainability efforts of the source.”

As discussed, this definition is unable to cover all possible cases of credibility, since there is the possibility of a partially different foundation when the perceived credibility is low. However, this definition should finally bring some clarity about the dimensions that should be prioritized when an organization is striving to become more credible.

4.2 – Theoretical Implications

Drawing upon an extensive review and synthesis of existing literature in these fields, the author has consolidated the majority of knowledge currently available on credibility in the field of sustainable marketing. This paper in particular aims to define this concept through the analysis of the answers to a self-administered survey. This way, the author can fill the gap in the literature mentioned by many researchers (Ganz & Grimes, 2018; Jaeger & Weber, 2020; Kemper & Ballantine, 2019; Kim & Song, 2020) of sustainability marketing and communication by “advancing conceptual integrations and the clarity of definitions” of perceived credibility (Golob et al., 2023). Furthermore, this empirical investigation has led to the proposal of a novel definition of perceived sustainability claim credibility, challenging established conceptualizations about the antecedents of credibility and the mediating role of greenwashing. Furthermore, the ten dimensions identified in the literature play varying roles in assessing the

credibility of sustainability claims, allowing researchers to develop new theoretical frameworks in sustainability marketing and communication.

4.3 – Managerial Implications

Building on the preceding discussion, several notable implications can be drawn from the results of this study. First of all, this study warns against organizations trying to appear credible without the ability to substantiate their claims, to avoid falling in a situation of low credibility in which most variables are out of the organization' control. To better understand the way in which an organization communicates its sustainability efforts and how it backfires, a stimulus that encompassed most greenwashing characteristics was analyzed on its credibility and ten possible antecedents. The results, summed up in Tables 15, 22, 23 and 26, give managers the ability to focus their efforts to build sustainability on few crucial dimensions. Namely, practitioners should focus on building up the CSR ability of the company while reducing over time the claim skepticism and greenwashing attitude of their target population, in order to slowly build credibility and prepare for the strategy shift that would allow a positive credibility, instead of being perceived as neutral.

Secondly, this paper allows managers to direct their marketing efforts in fewer, detailed directions when trying to use sustainability communication and their high credibility levels to their advantage. As described in Tables 16, 24, 25 and 26, and highlighted by the definition proposed in this paper, managers should direct their efforts toward divulging information relevant to the organization's activities and values in an accessible and precise way while at least maintaining the level of CSR effort that allowed the firm to be better positioned to achieve high credibility.

Another important detail is the different perception of CSR ability and CSR commitment at different credibility levels. When credibility is low, these two constructs are distinct and definite enough to determine their different effect on greenwashing attitude and credibility. Instead, when credibility is high there isn't a significant difference between these two aspects, to the point that they were indistinguishable; moreover, there is the possibility that there is an increasing return on investment in CSR communication as its level increases, due to the significant quadratic effect detected during the robustness check. Since the linear relationship was also significant, this study cannot offer a definite answer on the nature of these two constructs; however, considering the ability and the commitment communicated through marketing as two sides of the same coin confirms the categorization of marketing strategies made by Viererbl and Koch (2022) and Szabo and Webster (2021) and possibly their findings on the outcome of these strategies (see Fig. 2 and 3). Since these dimensions are entirely under an organization's control, focusing on them should be the first priority for every manager and practitioner.

Lastly, by using the importance-performance map analysis, managers can reflect on the importance of certain dimensions due to their larger effect on credibility, depending on the credibility condition (see Fig. 15 and 16). Based on this analysis alone, it's possible to visualize the immense effect of greenwashing attitudes on credibility and, consequently, on the sustainability campaigns' effectiveness. This instrument also allows to interpret more easily the relevant characteristics of the stimuli (see Fig. 5 and 6) and why the perceived credibility difference was so vast. Even if the differences between the images used in the survey may be too amplified, it's possible that the general public classifies a given advertisement as either credible or as a greenwashing attempt, as they did here.

4.4 – Limitations and Future Research

As with any research endeavor, this study is not without its limitations, which warrant careful consideration. This section discusses the constraints faced in our study and suggests avenues for future research that may address these limitations. First of all, the sample analyzed in this paper may not be representative of the population. In fact, since it was self-administered and the majority of participants lived in Italy, the possibility of a selection bias altering the results discussed in the previous chapter is high enough to warrant a repetition of this research, ideally by selecting respondents at random and by doubling the sample size to increase the statistical power (and consequently, significance) of the analysis.

A second limitation is inherent of the validation process described in chapter 3.2 and 3.3. If the objective is to understand the relevant dimensions in conditions of low and high credibility, when analyzing the answers through PLS-SEM the structural model should be the same for both cases. Alternatively, researchers could try to explore the reasons behind the different relevance of dimensions at various levels of credibility. For example, understanding how and why claim skepticism and claim verification effort are necessary and relevant only in certain credibility contexts could lead to interesting practical conclusions.

Furthermore, the analysis found partial support for some hypotheses, namely the effects of sustainability attitude onto claim credibility in the ‘credible’ model and receptiveness toward perceived credibility in the ‘greenwashing’ one. For the purposes of this study, they were considered as not supported because the significance level was set at 0.05; however, thanks to their theoretical relevance, the impact of these dimensions should be explored further.

A final limitation lies in the context and generalization power of this study. While the author tried to exhaustively control, validate and infer conclusions by using most of the tools at his disposal, due to the highly contextual nature of claim credibility in sustainability marketing the results and definition offered here should be taken as contextual evidence until other studies obtain comparable results. Furthermore, the absence of a theoretical framework in creating the conceptual model could make reproducing or integrating these results in the literature difficult. Thus, the improvement of an existing theoretical model or the creation of a new one could represent a further avenue of research in a field that is rapidly expanding due to the potential impact it has on people, organizations, and the environment.

Finally, this paper focuses on defining credibility in the context of sustainability marketing because the different definitions of sustainable marketing and communication cannot be reconciled, and in each of them credibility could have a different meaning. The definition offered in this paper is not linked to any existing approach to marketing. Likewise, researchers should try to define other concepts that are common to all communication types, such as the perceived value of a product or the characteristics of notions acquired through advertisements that leave a lasting impression on individuals. In the end, as we navigate the evolving landscape of sustainability marketing, this paper ideally is the first step towards a future where credibility is not a buzzword, but a cornerstone of meaningful and impactful communication.

Appendix 1 – Papers in the literature review

Al-Shaer & Zaman, 2018 (1.2.2)	Kucharska & Kowalczyk, 2019 (1.2.6)
Barchiesi <i>et al.</i> , 2018 (1.2.4)	Lock & Seele, 2017 (1.2.1, 1.2.9)
Bhattacharyya, 2023 (1.2.3, 1.2.5)	Lunde, 2018 (1.2.1)
Bush <i>et al.</i> , 2013 (1.2.1, 1.2.2)	Mahoney <i>et al.</i> , 2013 (1.2.3, 1.2.6)
Buvàr <i>et al.</i> , 2023 (1.2.3)	Majeed & Kim, 2022 (1.2.1)
Calabrese <i>et al.</i> , 2015 (1.2.5)	Majlath, 2017 (1.2.2, 1.2.9)
Chang, 2017 (1.2.7)	Manika <i>et al.</i> , 2015 (1.2.4)
Chen & Chang, 2013 (1.2.6, 1.2.7)	Marcatajo, 2021 (1.2.1)
Chiba <i>et al.</i> , 2018 (1.2.3)	McDonagh & Prothero, 2014 (1.2.1, 1.2.5)
Cho <i>et al.</i> , 2021 (1.2.2, 1.2.6)	Mercier, 2017 (1.2.8)
Dangelico & Vocalelli, 2017 (1.2.2, 1.2.10)	Miller & Bush, 2015 (1.2.1, 1.2.2, 1.2.3)
Ertz <i>et al.</i> , 2017 (1.2.2)	Moratis, 2017 (1.2.2, 1.2.3)
Farooq & Wikacsono, 2021 (1.2.2)	Nyilasy <i>et al.</i> , 2014 (1.2.6)
Ferrero-Ferrero <i>et al.</i> , 2023 (1.2.6)	Parguel <i>et al.</i> , 2015 (1.2.1)
Florendo & Estelami, 2019 (1.2.7)	Prabowo, 2023 (1.2.7)
Gagné <i>et al.</i> , 2022 (1.2.3, 1.2.6)	Rahman <i>et al.</i> , 2015 (1.2.2, 1.2.6)
Ganz & Grimes, 2018 (1.2.6, 1.2.11)	Rahman & Nguyen-Viet, 2023 (1.2.3, 1.2.5, 1.2.6)
Gelderman <i>et al.</i> , 2021 (1.2.4)	Sander <i>et al.</i> , 2021 (1.2.5, 1.2.8)
Golob <i>et al.</i> , 2023 (1.2.1, 1.2.5)	Santos <i>et al.</i> , 2023 (1.2.6)
Grimmelikhuijsen & Meijer, 2014 (1.2.1, 1.2.8)	Seele & Gatti, 2017 (1.2.1)
Hur <i>et al.</i> , 2020 (1.2.2)	Smith <i>et al.</i> , 2008 (1.2.9)
Ioannou <i>et al.</i> , 2023 (1.2.6)	Szabo & Webster, 2021 (1.2.6)
Jaeger & Weber, 2020 (1.2.1, 1.2.9, 1.2.10)	Tata & Prasad, 2015 (1.2.3)
Jijelava & Vanclay, 2017 (1.2.1)	Testa <i>et al.</i> , 2018 (1.2.6)
Kemper & Ballantine, 2019 (1.2.1, 1.2.5)	Viererbl & Koch, 2022 (1.2.1, 1.2.4, 1.2.5, 1.2.6)
Khare, 2015 (1.2.8)	Visentin <i>et al.</i> , 2019 (1.2.2)
Kim & Song, 2020 (1.2.1, 1.2.2)	Xiao & Shailer, 2022 (1.2.3)
Knight <i>et al.</i> , 2022 (1.2.1)	Zeisel, 2020 (1.2.3)

Appendix 2 – Questionnaire items in Italian

Perceived Claim Credibility
Queste affermazioni di sostenibilità non sono credibili.
Queste affermazioni di sostenibilità sono esagerate.
Queste affermazioni di sostenibilità sono fuorvianti.
Queste affermazioni di sostenibilità sono vere.
Claim Skepticism
La maggior parte delle affermazioni di sostenibilità sulle confezioni o nelle pubblicità sono vere.
Siccome le affermazioni di sostenibilità sono spesso esagerate, sarebbe meglio per i clienti finali se queste affermazioni venissero rimosse.
La maggior parte delle affermazioni di sostenibilità sulle confezioni o nelle pubblicità sono presenti per confondere i clienti invece che per fornire loro informazioni.
Non credo alla maggior parte delle affermazioni di sostenibilità sulle confezioni o nelle pubblicità.
Claim Verification Effort
Devo impegnarmi molto per verificare se queste affermazioni sono vere oppure no.
Dovrei lavorare sodo per verificare se questa affermazione è vera.
Queste affermazioni di sostenibilità potrebbero facilmente confondere persone che conosco.
Ritengo le affermazioni di sostenibilità fatte dalle aziende di facile comprensione.
Perceived CSR Ability
Credo che l'azienda sia abbastanza competente da poter agire per il bene comune.
Credo che l'azienda abbia abbondanti risorse per fare il bene comune.
Credo che l'azienda sia molto abile nell'agire per il bene comune.
Perceived CSR Commitment
L'azienda utilizza molte risorse per realizzare il bene comune.
L'azienda dimostra molto impegno nel perseguire il bene comune.
L'azienda sembra persistere nel fare il bene comune.
Greenwashing Attitude
Queste affermazioni sono fuorvianti per via delle parole utilizzate per descrivere le caratteristiche di sostenibilità.

Queste affermazioni sono fuorvianti per via delle immagini o caratteristiche grafiche utilizzate per descrivere le caratteristiche di sostenibilità.
Credo che queste affermazioni di sostenibilità siano vaghe.
Queste affermazioni di sostenibilità esagerano le caratteristiche e/o i modi in cui il prodotto è sostenibile.
Credo che siano state omesse informazioni importanti, per rendere più convincenti queste affermazioni di sostenibilità.
Queste affermazioni di sostenibilità contengono informazioni false sulle caratteristiche sostenibili del prodotto.
Queste affermazioni di sostenibilità non dicono il vero riguardo alle caratteristiche sostenibili del prodotto.
Gullibility - Ease of Being Persuaded
Leggendo queste affermazioni, ho avuto difficoltà a non accettare il messaggio.
Leggendo queste affermazioni, ho avuto difficoltà a ribattere ciò che il messaggio dice.
Leggendo queste affermazioni, ho avuto difficoltà a ribattere ciò che il messaggio dice.
Queste affermazioni mi hanno persuaso facilmente.
Sustainability Attitude - Environmentalism
Mi interesso di temi ambientali, sociali o economici legati alle aziende.
Le condizioni ambientali hanno effetti significativi sulla mia qualità della vita.
Sono disposto/a a fare dei sacrifici per proteggere l'ambiente.
Le mie azioni hanno un impatto sull'ambiente e/o sulla società.
Receptiveness
Queste affermazioni mi hanno reso/a più aperto/a di mente verso le questioni di sostenibilità.
Queste affermazioni di sostenibilità mi hanno fatto considerare punti di vista diversi dal mio.
Queste affermazioni di sostenibilità mi hanno reso/a più flessibile nel formulare le mie opinioni.
Abstractness
Queste affermazioni di sostenibilità spiegano i motivi per cui partecipare a progetti e iniziative di sostenibilità.
Queste affermazioni spiegano lo scopo di progetti e iniziative di sostenibilità.

Queste affermazioni riguardano il fine ultimo dei progetti e delle iniziative di sostenibilità.

Desire for More Precise Information

Quanto vorresti ottenere informazioni più dettagliate o precise?

Quanto riterresti utili delle informazioni più dettagliate o precise?

Quando soddisfatto saresti con delle informazioni più dettagliate o precise?

Bibliography

- Al-Shaer, H., & Zaman, M. (2018). Credibility of sustainability reports: The contribution of audit committees. *Business Strategy and the Environment*, 27(7), 973-986.
- Barchiesi, M. A., Castellan, S., & Costa, R. (2018). In the eye of the beholder: Communicating CSR through color in packaging design. *Journal of Marketing Communications*, 24(7), 720-733.
- Basco, R., Hair Jr, J. F., Ringle, C. M., & Sarstedt, M. (2022). Advancing family business research through modeling nonlinear relationships: Comparing PLS-SEM and multiple regression. *Journal of Family Business Strategy*, 13(3), 100457.
- Bhattacharyya, J. (2023). The structure of sustainability marketing research: a bibliometric review and directions for future research. *Asia-Pacific Journal of Business Administration*, 15(2), 245-286.
- Bush, S. R., Toonen, H., Oosterveer, P., & Mol, A. P. (2013). The 'devils triangle' of MSC certification: Balancing credibility, accessibility and continuous improvement. *Marine Policy*, 37, 288-293.
- Buvár, Á., Zsila, Á., & Orosz, G. (2023). Non-green influencers promoting sustainable consumption: Dynamic norms enhance the credibility of authentic pro-environmental posts. *Frontiers in Psychology*, 14, 1112762.
- Calabrese, A., Costa, R., & Rosati, F. (2015). A feedback-based model for CSR assessment and materiality analysis. *Accounting Forum*,
- Chang, C. (2011). Feeling ambivalent about going green: Implications for green advertising processing. *Journal of Advertising*, 19-31.
- Chang, C. (2017). A metacognitive model of the effects of susceptibility to persuasion self-beliefs on advertising effects. *Journal of Advertising*, 46(4), 487-502.
- Chen, Y.-S., & Chang, C.-H. (2013). Greenwash and green trust: The mediation effects of green consumer confusion and green perceived risk. *Journal of Business Ethics*, 114, 489-500.
- Chiba, S., Talbot, D., & Boiral, O. (2018). Sustainability adrift: An evaluation of the credibility of sustainability information disclosed by public organizations. *Accounting forum*,
- Cho, M., Park, S.-Y., & Kim, S. (2021). When an organization violates public expectations: A comparative analysis of sustainability communication for corporate and nonprofit organizations. *Public Relations Review*, 47(1), 101928.
- Dangelico, R. M., & Vocellelli, D. (2017). "Green Marketing": An analysis of definitions, strategy steps, and tools through a systematic review of the literature. *Journal of Cleaner Production*, 165, 1263-1279.
- DeSimone, J. A., Harms, P. D., & DeSimone, A. J. (2015). Best practice recommendations for data screening. *Journal of Organizational Behavior*, 36(2), 171-181.
- Dul, J. (2016). Necessary condition analysis (NCA) logic and methodology of "necessary but not sufficient" causality. *Organizational Research Methods*, 19(1), 10-52.
- Dul, J., Van der Laan, E., & Kuik, R. (2020). A statistical significance test for necessary condition analysis. *Organizational Research Methods*, 23(2), 385-395.
- Ertz, M., François, J., & Durif, F. (2017). How consumers react to environmental information: An experimental study. *Journal of International Consumer Marketing*, 29(3), 162-178.
- EUR-Lex. (2023). *Commission Delegated Regulation (EU) 2023/2772 of 31 July 2023 supplementing Directive 2013/34/EU of the European Parliament and of the Council as regards sustainability reporting standards.* EUR-Lex. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:L_202302772
- Farooq, Y., & Wicaksono, H. (2021). Advancing on the analysis of causes and consequences of green skepticism. *Journal of Cleaner Production*, 320, 128927.
- Ferrero-Ferrero, I., Muñoz-Torres, M. J., Rivera-Lirio, J. M., Escrig-Olmedo, E., & Fernández-Izquierdo, M. Á. (2023). SDG reporting: an analysis of corporate sustainability leaders. *Marketing Intelligence & Planning*, 41(4), 457-472.

- Florendo, J., & Estelami, H. (2019). The role of cognitive style, gullibility, and demographics on the use of social media for financial decision making. *Journal of Financial Services Marketing*, 24, 1-10.
- Fornell, C., & Larcker, D. F. (1981). Evaluating structural equation models with unobservable variables and measurement error. *Journal of Marketing Research*, 18(1), 39-50.
- Gagné, V., Berthelot, S., & Coulmont, M. (2022). Stakeholder engagement practices and impression management. *Journal of Global Responsibility*, 13(2), 217-241.
- Ganz, B., & Grimes, A. (2018). How claim specificity can improve claim credibility in Green Advertising: Measures that can boost outcomes from environmental product claims. *Journal of Advertising Research*, 58(4), 476-486.
- Gelderman, C. J., Schijns, J., Lambrechts, W., & Vijgen, S. (2021). Green marketing as an environmental practice: The impact on green satisfaction and green loyalty in a business-to-business context. *Business Strategy and the Environment*, 30(4), 2061-2076.
- Golob, U., Podnar, K., & Zabkar, V. (2023). Sustainability communication. *International Journal of Advertising*, 42(1), 42-51.
- Grimmelikhuijsen, S. G., & Meijer, A. J. (2014). Effects of transparency on the perceived trustworthiness of a government organization: Evidence from an online experiment. *Journal of Public Administration Research and Theory*, 24(1), 137-157.
- Hair, J. F., Hult, G. T. M., Ringle, C. M., & Sarstedt, M. (2017). *A Primer on Partial Least Squares Structural Equation Modeling (PLS-SEM)* (Second edition ed.). SAGE Publications.
- Hair, J. F., Risher, J. J., Sarstedt, M., & Ringle, C. M. (2019). When to use and how to report the results of PLS-SEM. *European business review*, 31(1), 2-24.
- Hair Jr, J. F., Black, W. C., Babin, B. J., & Anderson, R. E. (2010). *Multivariate data analysis*.
- Hall, M., & Haas, C. (2022). A Research Agenda to Understand Drivers of Digital Gullibility.
- Hauff, S., Richter, N. F., Sarstedt, M., & Ringle, C. M. (2024). Importance and performance in PLS-SEM and NCA: Introducing the combined importance-performance map analysis (ciPMA). *Journal of Retailing and Consumer Services*, 78, 103723.
- Henseler, J., Ringle, C. M., & Sarstedt, M. (2015). A new criterion for assessing discriminant validity in variance-based structural equation modeling. *Journal of the Academy of Marketing Science*, 43, 115-135.
- Hur, W. M., Moon, T. W., & Kim, H. (2020). When and how does customer engagement in CSR initiatives lead to greater CSR participation? The role of CSR credibility and customer-company identification. *Corporate Social Responsibility and Environmental Management*, 27(4), 1878-1891.
- Ioannou, I., Kassinis, G., & Papagiannakis, G. (2023). The impact of perceived greenwashing on customer satisfaction and the contingent role of capability reputation. *Journal of Business Ethics*, 185(2), 333-347.
- Jaeger, A.-K., & Weber, A. (2020). Can you believe it? The effects of benefit type versus construal level on advertisement credibility and purchase intention for organic food. *Journal of Cleaner Production*, 257, 120543.
- Jijelava, D., & Vanclay, F. (2017). Legitimacy, credibility and trust as the key components of a social licence to operate: An analysis of BP's projects in Georgia. *Journal of Cleaner Production*, 140, 1077-1086.
- Jin, L., & He, Y. (2018). How the frequency and amount of corporate donations affect consumer perception and behavioral responses. *Journal of the Academy of Marketing Science*, 46, 1072-1088.
- Kemper, J. A., & Ballantine, P. W. (2019). What do we mean by sustainability marketing? *Journal of Marketing Management*, 35(3-4), 277-309.
- Khare, A. (2015). Antecedents to green buying behaviour: a study on consumers in an emerging economy. *Marketing Intelligence & Planning*, 33(3), 309-329.
- Kim, J.-H., & Song, H. (2020). The influence of perceived credibility on purchase intention via competence and authenticity. *International Journal of Hospitality Management*, 90, 102617.

- Knight, H., Haddoud, M. Y., & Megicks, P. (2022). Determinants of corporate sustainability message sharing on social media: A configuration approach. *Business Strategy and the Environment*, 31(2), 633-647.
- Kock, N. (2015). Common method bias in PLS-SEM: A full collinearity assessment approach. *International Journal of e-Collaboration (ijec)*, 11(4), 1-10.
- Krishnan, B. C., Biswas, A., & Netemeyer, R. G. (2006). Semantic cues in reference price advertisements: The moderating role of cue concreteness. *Journal of Retailing*, 82(2), 95-104.
- Kucharska, W., & Kowalczyk, R. (2019). How to achieve sustainability?—Employee's point of view on company's culture and CSR practice. *Corporate Social Responsibility and Environmental Management*, 26(2), 453-467.
- Lembregts, C., & Pandelaere, M. (2019). Falling back on numbers: When preference for numerical product information increases after a personal control threat. *Journal of Marketing Research*, 56(1), 104-122.
- Lin, C., & Lin, M. (2019). The determinants of using cloud supply chain adoption. *Industrial management & data systems*, 119(2), 351-366.
- Lock, I., & Seele, P. (2017). Measuring credibility perceptions in CSR communication: A scale development to test readers' perceived credibility of CSR reports. *Management Communication Quarterly*, 31(4), 584-613.
- Lunde, M. B. (2018). Sustainability in marketing: A systematic review unifying 20 years of theoretical and substantive contributions (1997–2016). *AMS review*, 8(3-4), 85-110.
- Mahoney, L. S., Thorne, L., Cecil, L., & LaGore, W. (2013). A research note on standalone corporate social responsibility reports: Signaling or greenwashing? *Critical perspectives on Accounting*, 24(4-5), 350-359.
- Majeed, S., & Kim, W. G. (2022). A reflection of greenwashing practices in the hospitality industry: a scoping review. *International Journal of Contemporary Hospitality Management*, 35(3), 1125-1146.
- Majláth, M. (2017). The effect of greenwashing information on ad evaluation. *European Journal of Sustainable Development*, 6(3), 92-92.
- Manika, D., Wells, V. K., Gregory-Smith, D., & Gentry, M. (2015). The impact of individual attitudinal and organisational variables on workplace environmentally friendly behaviours. *Journal of Business Ethics*, 126, 663-684.
- Marcatajo, G. (2021). Green claims, green washing and consumer protection in the European Union. *Journal of Financial Crime*, 30(1), 143-153.
- McDonagh, P., & Prothero, A. (2014). Sustainability marketing research: Past, present and future. *Journal of Marketing Management*, 30(11-12), 1186-1219.
- Mercier, H. (2017). How gullible are we? A review of the evidence from psychology and social science. *Review of General Psychology*, 21(2), 103-122.
- Miller, A. M., & Bush, S. R. (2015). Authority without credibility? Competition and conflict between ecolabels in tuna fisheries. *Journal of Cleaner Production*, 107, 137-145.
- Mohr, L. A., Eroğlu, D., & Ellen, P. S. (1998). The development and testing of a measure of skepticism toward environmental claims in marketers' communications. *Journal of consumer affairs*, 32(1), 30-55.
- Moratis, L. (2017). The credibility of corporate CSR claims: a taxonomy based on ISO 26000 and a research agenda. *Total Quality Management & Business Excellence*, 28(1-2), 147-158.
- Nunnally, J., & Bernstein, I. H. (1994). *Psychometric Theory*. McGraw-Hill Companies, Incorporated. <https://books.google.it/books?id=rOfuAAAAMAAJ>
- Nyilasy, G., Gangadharbatla, H., & Paladino, A. (2014). Perceived greenwashing: The interactive effects of green advertising and corporate environmental performance on consumer reactions. *Journal of Business Ethics*, 125, 693-707.
- Parguel, B., Benoit-Moreau, F., & Russell, C. A. (2015). Can evoking nature in advertising mislead consumers? The power of 'executional greenwashing'. *International Journal of Advertising*, 34(1), 107-134.

- Prabowo, H. Y. (2023). When gullibility becomes us: exploring the cultural roots of Indonesians' susceptibility to investment fraud. *Journal of Financial Crime*.
- Rahman, I., Park, J., & Chi, C. G.-q. (2015). Consequences of "greenwashing": Consumers' reactions to hotels' green initiatives. *International Journal of Contemporary Hospitality Management*, 27(6), 1054-1081.
- Rahman, S. U., & Nguyen-Viet, B. (2023). Towards sustainable development: Coupling green marketing strategies and consumer perceptions in addressing greenwashing. *Business Strategy and the Environment*, 32(4), 2420-2433.
- Richter, N. F., Schubring, S., Hauff, S., Ringle, C. M., & Sarstedt, M. (2020). When predictors of outcomes are necessary: Guidelines for the combined use of PLS-SEM and NCA. *Industrial management & data systems*, 120(12), 2243-2267.
- Ringle, C. M., & Sarstedt, M. (2016). Gain more insight from your PLS-SEM results: The importance-performance map analysis. *Industrial management & data systems*, 116(9), 1865-1886.
- Ringle, C. M., Wende, Sven, & Becker, Jan-Michael. (2024). *SmartPLS 4* In (Version 4.0) Monheim am Rhein: SmartPLS. <https://www.smartpls.com>
- Russo, D., & Stol, K.-J. (2021). PLS-SEM for software engineering research: An introduction and survey. *ACM Computing Surveys (CSUR)*, 54(4), 1-38.
- Ryoo, Y., Hyun, N. K., & Sung, Y. (2017). The effect of descriptive norms and construal level on consumers' sustainable behaviors. *Journal of Advertising*, 46(4), 536-549.
- Sander, F., Föhl, U., Walter, N., & Demmer, V. (2021). Green or social? An analysis of environmental and social sustainability advertising and its impact on brand personality, credibility and attitude. *Journal of Brand Management*, 28, 429-445.
- Santos, C., Coelho, A., & Marques, A. (2023). The greenwashing effects on corporate reputation and brand hate, through environmental performance and green perceived risk. *Asia-Pacific Journal of Business Administration*.
- Sarstedt, M., Becker, J.-M., Ringle, C. M., & Schwaiger, M. (2011). Uncovering and treating unobserved heterogeneity with FIMIX-PLS: which model selection criterion provides an appropriate number of segments? *Schmalenbach Business Review*, 63, 34-62.
- Sarstedt, M., Diamantopoulos, A., Salzberger, T., & Baumgartner, P. (2016). Selecting single items to measure doubly concrete constructs: A cautionary tale. *Journal of Business Research*, 69(8), 3159-3167.
- Schmuck, D., Matthes, J., & Naderer, B. (2018). Misleading consumers with green advertising? An affect–reason–involvement account of greenwashing effects in environmental advertising. *Journal of Advertising*, 47(2), 127-145.
- Schuhwerk, M. E., & Lefkoff-Hagius, R. (1995). Green or non-green? Does type of appeal matter when advertising a green product? *Journal of Advertising*, 24(2), 45-54.
- Seele, P., & Gatti, L. (2017). Greenwashing Revisited: In Search of a Typology and Accusation-Based Definition Incorporating Legitimacy Strategies. *Business Strategy and the Environment*, 26(2), 239-252. <https://doi.org/https://doi.org/10.1002/bse.1912>
- Shmueli, G., Sarstedt, M., Hair, J. F., Cheah, J.-H., Ting, H., Vaithilingam, S., & Ringle, C. M. (2019). Predictive model assessment in PLS-SEM: guidelines for using PLSpredict. *European journal of marketing*, 53(11), 2322-2347.
- Smith, R. E., Chen, J., & Yang, X. (2008). The impact of advertising creativity on the hierarchy of effects. *Journal of Advertising*, 37(4), 47-62.
- Szabo, S., & Webster, J. (2021). Perceived greenwashing: the effects of green marketing on environmental and product perceptions. *Journal of Business Ethics*, 171, 719-739.
- Tata, J., & Prasad, S. (2015). CSR communication: An impression management perspective. *Journal of Business Ethics*, 132, 765-778.
- Testa, F., Miroshnychenko, I., Barontini, R., & Frey, M. (2018). Does it pay to be a greenwasher or a brownwasher? *Business Strategy and the Environment*, 27(7), 1104-1116.

- Venice, C. F. U. o. (2022). *TranspArEEEnS - mainstreaming Transparent Assessment of Energy efficiency in Environmental social governance ratingS*. Ca' Foscari University. Retrieved 06/02/2024 from <https://pric.unive.it/projects/transpareens/home>
- Viererbl, B., & Koch, T. (2022). The paradoxical effects of communicating CSR activities: Why CSR communication has both positive and negative effects on the perception of a company's social responsibility. *Public Relations Review*, 48(1), 102134.
- Visentin, M., Pizzi, G., & Pichierri, M. (2019). Fake news, real problems for brands: The impact of content truthfulness and source credibility on consumers' behavioral intentions toward the advertised brands. *Journal of Interactive Marketing*, 45(1), 99-112.
- Xiao, X., & Shailer, G. (2022). Stakeholders' perceptions of factors affecting the credibility of sustainability reports. *The British Accounting Review*, 54(1), 101002.
- Zeisel, S. (2020). Is sustainability a moving target? A methodology for measuring CSR dynamics. *Corporate Social Responsibility and Environmental Management*, 27(1), 283-296.
- Zhao, X., Lynch Jr, J. G., & Chen, Q. (2010). Reconsidering Baron and Kenny: Myths and truths about mediation analysis. *Journal of Consumer Research*, 37(2), 197-206.