

Sustainable Marketing and Consumer Behavior: A Comparative Analysis of Greenwashing Practices in the Food Sector

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1 INTRODUCTION

Anthropogenic climate change is one of the greatest challenges humanity is currently facing (Matasci et al., 2021). The cause of such changes is undeniably human activity (Kurowski, Rutecka-Góra & Smaga, 2022). Global awareness of environmental issues, such as climate change and environmental degradation, has been a driving force behind the prioritization of more sustainable choices in sectors such as the food industry (Vilkaite-Vaitone, 2024; Castellano et al., 2024).

According to Oliveira et al. (2022), sustainable practices have been redefining both organizational behavior and global consumption patterns, particularly in sensitive sectors like food. Environmental concerns have become increasingly widespread (Sigurdsson et al., 2024); consequently, more people are interested in and willing to pay a premium for products labeled as sustainable (Aprile & Punzo, 2022; Proi et al., 2023).

The demand for more sustainable markets is increasing, especially in the food sector (Rossi & Rivetti, 2020). De Freitas Netto et al. (2020) highlight that approximately 66% of global consumers show a willingness to invest in products that promote environmental sustainability. In the same vein, stakeholders—such as investors, governments, corporate clients, and society at large—have intensified pressure on corporations to adopt responsible behaviors and to be transparent about their environmental performance and green products (De Freitas Netto et al., 2020).

As green markets expand, they are increasingly accompanied by the phenomenon of greenwashing, defined as "the intersection of two corporate behaviors: poor environmental performance and positive communication about environmental performance" (De Freitas Netto et al., 2020). Greenwashing, also referred to as eco-washing, eco-bleaching, or green image washing—is the practice by which companies or organizations use misleading advertising to enhance the perceived environmental benefits of their products (Nugraha et al., 2024).

These strategies are employed to cultivate a positive public image by appealing to the growing consumer interest in sustainable and ethical business practices (Sciortino, Sgroi & Napoli, 2025). Companies exploit this trend through deceptive labeling or marketing tactics that suggest sustainability, even when the actual environmental benefits are minimal or entirely absent (Sciortino, Sgroi & Napoli, 2025). In the food industry, the issue of greenwashing is becoming increasingly evident. A 2022 report by the European Commission indicated that more than 42% of sustainability claims in the sector lacked verification (EU, 2021). In the same vein, TerraChoice (2010) reported that 95% of products marketed as green in Canada and the United States committed at least one of the "sins of greenwashing."

Greenwashing can negatively impact shareholder and consumer trust in green products (Delmas & Burbano, 2011). Furthermore, Ramus and Montiel (2005) and Horiuchi et al. (2009) argued that greenwashing prevents customers from understanding the consequences of their purchasing behavior by making it difficult to distinguish between trustworthy and untrustworthy claims.

According to De Lopes et al. (2023), such strategies intensify consumer skepticism, particularly among those with higher environmental awareness. Dutta-Powell et al. (2023) corroborate this view, stating that greenwashing not only undermines brand credibility but also reduces consumer willingness to engage in sustainable consumption. Another potential drawback is the diminished power of markets to drive progress toward sustainability (Schafeld, 2019).

As such, greenwashing has become a pressing topic due to its practical relevance, growing challenges, and research opportunities across different disciplines (Yang et al., 2020). A clear gap exists in greenwashing studies regarding the food sector, despite numerous reported events involving businesses across various industries (Guyader et al., 2017; Font et al., 2017; Rausch & Kopplin, 2021; Alevizou, 2021). Nonetheless, the food sector remains the most affected by greenwashing practices (Foodcycler, 2021). This is not only because a growing number of food companies fail to substantiate their eco-labeling claims, but also due to the increasing reluctance of consumers and investors to trust producer statements or invest in the food sector (Gatti, Pizzetti & Seele, 2021; Sun & Shi, 2022).

This study aims to map the influence of greenwashing on consumer behavior in the food sector, focusing on sustainable marketing practices and their implications. Through a Systematic Literature Review (SLR), the research seeks to identify and synthesize the dynamics between perceived authenticity of corporate actions, consumer trust, and adherence to sustainable consumption. By analyzing relevant studies, the objective is to understand how greenwashing can shape purchasing decisions and consumer perceptions of brands. Additionally, the study aims to provide insights for the development of business strategies and public policies that are more aligned with sustainability principles, thereby promoting more transparent and effective practices in the food sector.

Our article contributes to the sustainable marketing literature by offering a systematic and critical analysis of greenwashing practices within the food industry, a sensitive yet underexplored segment in existing research. In contrast to broader studies such as Nugraha et al. (2024), which examine greenwashing across multiple sectors, and De Freitas Netto et al. (2020), which focus on general conceptual frameworks, our study deepens the investigation by targeting a specific industry and highlighting the direct effects of greenwashing on consumer trust, skepticism, and purchasing decisions. Unlike isolated empirical studies such as those by Rejman et al. (2023) and Dreist et al. (2025), which address individual cases, our systematic review consolidates comparative evidence from diverse research, enabling the identification of recurring patterns and significant research gaps. By applying a rigorous protocols framework, this study ensures methodological robustness and offers broader practical implications for addressing greenwashing in the food sector.

2 METHODOLOGICAL PROCEDURES

This study adopted the Systematic Literature Review (SLR) as its methodological approach, applying the PRISMA method (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) (Moher et al., 2009) along with the parameters for qualitative synthesis outlined in the *Manual for Evidence Synthesis* by the Joanna Briggs Institute (JBI). This strategy aims to ensure a transparent, comprehensive, and critical analysis of the available evidence, thereby offering a deeper and well-founded understanding of the investigated theme (Snyder, 2009).

The research focuses on greenwashing in the food sector, examining its impact on consumption and consumer perceptions (Braga et al., 2019). The topic emphasizes how misleading marketing strategies affect a sector in which sustainability and consumption are closely intertwined. For the scope of the review, the PCC acronym—Population, Concept, and Context—was used to define the inclusion criteria.

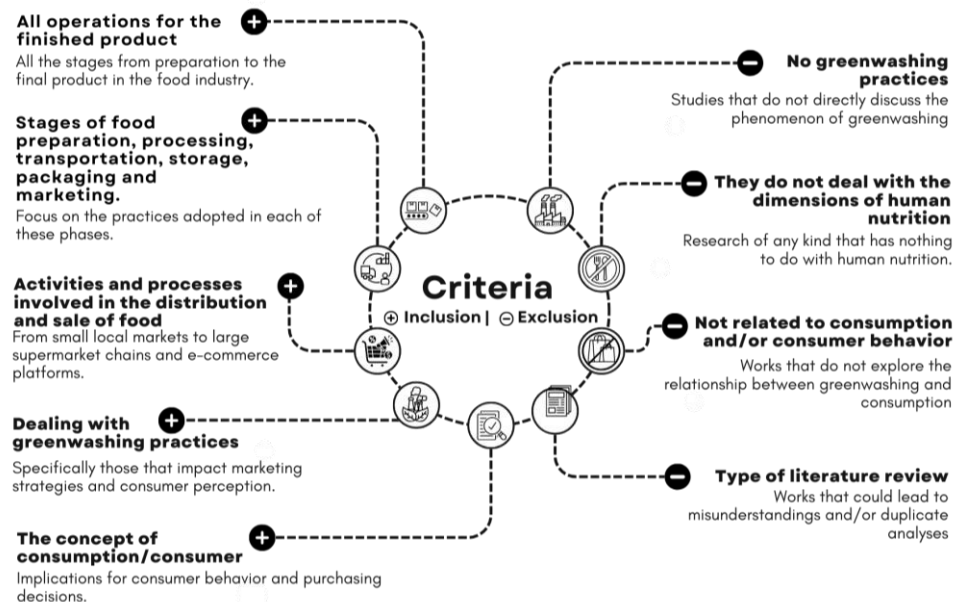
- **Population:** Food industries and consumers.
- **Concept:** Greenwashing and its influence on perceptions and purchasing decisions.
- **Context:** The food sector, with an emphasis on sustainable marketing practices.

Based on this, the research question formulated was: *How do greenwashing practices in the food industry influence consumer perception and purchasing decisions?*

2.1 Definition of inclusion and exclusion criteria

The eligibility and ineligibility criteria were broadly defined, encompassing all stages of the food production cycle, from sourcing to distribution and consumption. This approach aims to ensure the relevance and consistency of the selected studies, guaranteeing the inclusion of research directly related to the topic, as illustrated in Figure 1.

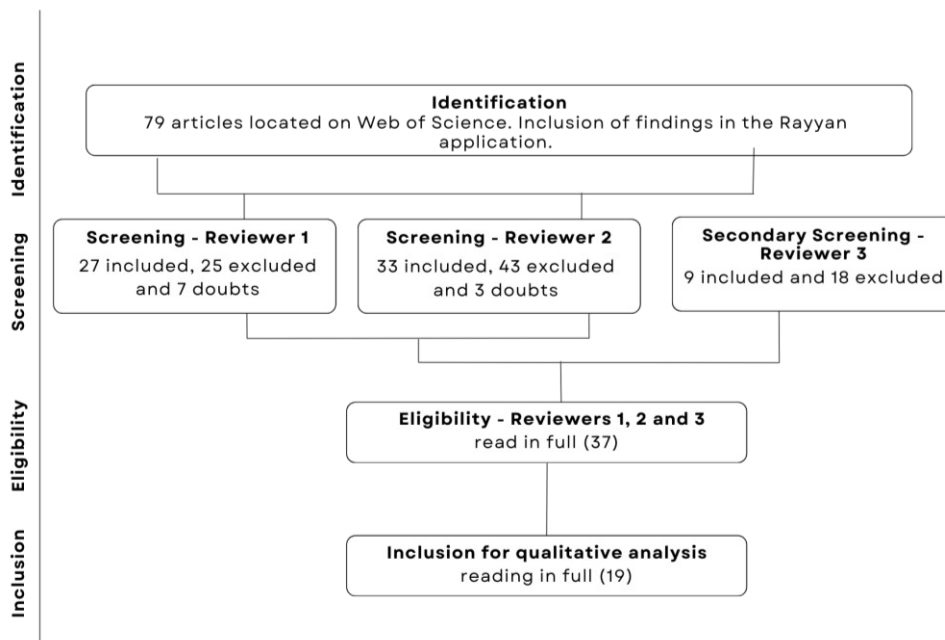
Figure 1
Inclusion and exclusion criteria



Note. Own elaboration

Following the PRISMA method, four stages compose the research flowchart: identification, screening, eligibility, and inclusion, as presented in Figure 2.

Figure 2
Research Flowchart



Note. Own elaboration

The search was conducted in the Web of Science database, chosen for its broad coverage of high-quality academic publications. To ensure methodological rigor, Boolean operators (OR and AND) were used to combine the terms “greenwashing,” “food,” and “consumption.” A time frame from 2012 to 2024 was applied to refine the results, leading to the selection of 79 articles aligned with the research scope. These articles were uploaded to the Rayyan application, developed by the Qatar Computing Research Institute (QCRI). No duplicate records were found.

The screening process was conducted in a double-blind manner by reviewers 1 and 2 using the Rayyan platform, through the reading of titles and abstracts, with the exclusion of studies that did not meet the eligibility criteria and/or did not align with the research objective. As a result, reviewer 1 included 27 documents, excluded 25, and marked 7 as uncertain; reviewer 2 included 33, excluded 43, and marked 3 as uncertain. The 27 conflicting cases were resolved by reviewer 3, resulting in 9 inclusions and 18 exclusions.

For the eligibility stage, all 37 studies were read in full by the three reviewers. We excluded 18 articles due to exclusion criteria (see Figure 1 right side). Thus we obtained 19 articles that were included based on alignment with the eligibility criteria (see Figure 1 left side), while 18 were excluded due to misalignment with the research scope.

3 RESULTS

3.1 Bibliometric mapping of existing studies

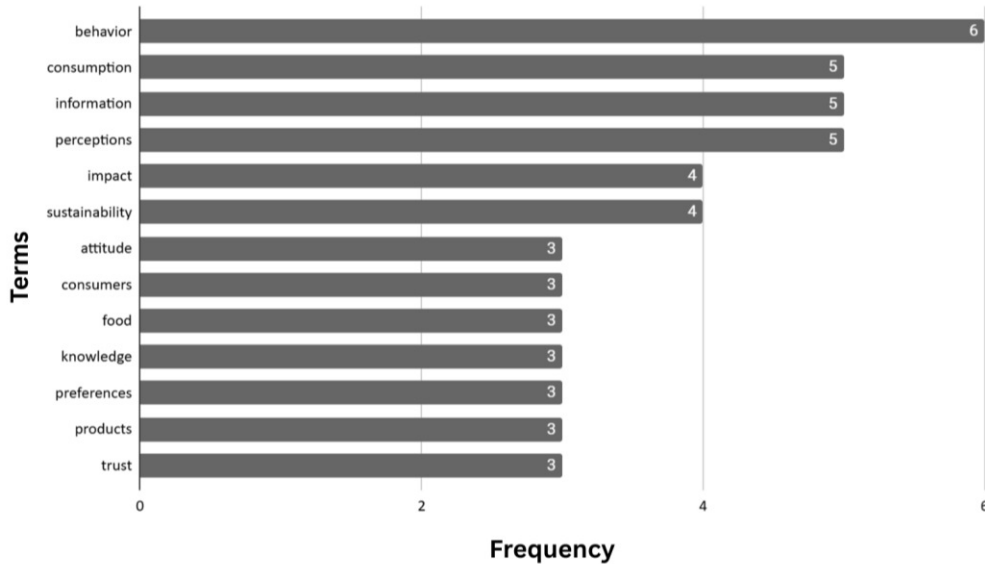
Figure 3 systematizes the evolution of scientific production on the topic of greenwashing. The graph highlights the growing number of studies addressing the practice of greenwashing in the food industry.

Figure 3

Evolution of scientific production on greenwashing in the food industry

attitude; consumers; food; knowledge; preferences; products; trust. In their review, Nugraha et al. (2024) identified five clusters through a keyword correlation analysis. Among them, Cluster 3, titled “*Sustainable marketing and consumer behavior,*” focuses on understanding consumer behavior toward sustainable practices and products, as well as marketing strategies employed in the context of greenwashing (Nugraha et al., 2024). Their findings align with the information presented in Figure 5.

Figure 5
Keyword Incidence Chart



Note. Own elaboration

3.2 Qualitative analysis of studies

Table 1 presents a synthesis of greenwashing practices in the food industry, focusing on their impact on consumers’ perceptions of sustainability and purchasing decisions. This analysis was developed based on a Systematic Literature Review (SLR), conducted in accordance with the PRISMA guidelines and the Joanna Briggs Institute (JBI) Manual—both methodologies recognized for ensuring rigor, transparency, and reproducibility in the selection and evaluation of studies. This approach was chosen to consolidate and critically analyze the current state of academic knowledge, rather than conducting empirical research or a narrative review, in order to ensure a comprehensive and reliable mapping of the topic. The study engages with previous investigations that explore greenwashing across various sectors, including food, fashion, and cosmetics, and adopts a theoretical lens grounded in the critique of greenwashing’s impact on consumer trust and the effectiveness of sustainable markets. Thus, the methodological and theoretical choices reflect a commitment to identifying and analyzing the challenges that deceptive environmental marketing poses to sustainability.

Table 1
Literature Analysis of Greenwashing Practices in the Food Industry and Consumer Perception

Study	How do greenwashing practices adopted by the food industry influence consumer perception and purchasing decisions?	Main concepts of greenwashing addressed
Cavazos et al. (2023)	<ul style="list-style-type: none"> ● False perception of sustainability ● Compromised decision-making 	<p>Institutional: business practices that promote a false “green” image. Individual: learned behavior in response to institutional greenwashing.</p>
Leblebici Kocer et al. (2023)	<ul style="list-style-type: none"> ● False perception of sustainability ● Compromised trust ● Compromised loyalty ● Negative impact on consumption of sustainable products 	<p>Compromising consumer confidence in truly sustainable initiatives.</p>
Nygaard & Silkoset (2023)	<ul style="list-style-type: none"> ● Compromising trust ● Reduced consumption of sustainable products 	<p>“Eco-opportunism” strategy: adopting a ‘green’ or sustainable stance just to attract consumers who are concerned about the environment, without making significant changes to their production processes or operations.</p>
Azazz et al. (2024)	<ul style="list-style-type: none"> ● Compromising trust 	<p>Misleading claims made by companies about their products or environmental practices.</p>
Vayona et al. (2024)	<ul style="list-style-type: none"> ● Induces error ● Encourages wishcycling 	<p>Obstacle to genuine progress and achieving the objectives of the Circular Economy in promoting sustainability</p>
Dreist et al. (2025)	<ul style="list-style-type: none"> ● Induces error ● Compromises trust ● Compromises loyalty. ● Reduced consumption of sustainable products 	<p>Not just as a concrete influence on purchasing decisions, but as 'information that is untrue or presented in a confusing or misleading way to give the false impression that it is more environmentally friendly'.</p>
Boncinelli et al. (2023)	<ul style="list-style-type: none"> ● Induces error ● Compromising trust ● Devaluation of sustainable products 	<p>Claims: use of misleading information such as omissions, false statements or ambiguous language to suggest unfounded sustainability. Executive: use of visual elements to induce the perception of environmental responsibility without any real commitment.</p>
Rejman et al. (2023)	<ul style="list-style-type: none"> ● Compromising trust ● Skepticism ● Difficulty in distinguishing authentic claims. 	<p>“SIN” useful for public policies for producers, who must be respected when declaring their socio-environmental commitments on labels.</p>
Sio et al. (2022)	<ul style="list-style-type: none"> ● Skepticism ● Compromised trust ● Reduced intention to buy eco-friendly products. 	<p>Claims of green marketing do not correspond to companies' actual environmental conduct.</p>
Nagy e Nayga (2024)	<ul style="list-style-type: none"> ● Induces error ● Compromise of trust 	<p>Facilitator of the lack of transparency on labels, allowing environmentally weak</p>

Study	How do greenwashing practices adopted by the food industry influence consumer perception and purchasing decisions?	Main concepts of greenwashing addressed
	<ul style="list-style-type: none"> ● Difficulty in distinguishing authentic claims 	companies to sell themselves as sustainable, especially in food.
Bech-Larsen, Grunert, & Tsalis (2024)	<ul style="list-style-type: none"> ● Compromises trust ● Induces error 	“Animal welfare” deception having a strong impact on purchasing intentions, especially under time pressure.
Hasan et al. (2024)	<ul style="list-style-type: none"> ● Commitment to trust ● Search for products that demonstrate real sustainable practices. 	Compromising confidence in food certifications, aggravated by the variability in standards between regions.
Sigurdsson et al. (2025)	<ul style="list-style-type: none"> ● Skepticism ● Compromised trust ● Reduced intention to buy eco-friendly products ● Hindering the expansion of the sustainable market 	The manipulator of ecological signage, the influence of the appearance of naturalness and the susceptibility of consumers to misleading labels.
Paudel & Zhou (2024)	<ul style="list-style-type: none"> ● Skepticism ● Compromised trust ● Reduced willingness to pay for certified products 	Misrepresentation of environmental claims, generating skepticism about eco-labels and their supposed benefits.
Dreist et al. (2024)	<ul style="list-style-type: none"> ● Induces error 	Misleading communication that leads consumers to believe that a product or organization is more environmentally friendly than it really is.
(Toussaint et al., 2021)	<ul style="list-style-type: none"> ● Skepticism ● Compromised trust ● Reduced intention to buy green products 	Generating a false impression about environmental responsibility, misleading consumers about their real sustainable initiatives.
Sirieix et al. (2013)	<ul style="list-style-type: none"> ● Compromising credibility ● Compromised trust ● Reduced intention to buy green products 	Green image-maker with no real commitment to sustainability.
Gider & Hamm (2019)	<ul style="list-style-type: none"> ● Greater consumer criticality ● Encouraging them to seek information ● Increased credibility of proven sustainable companies 	Misleading consumers with false environmental claims to build an image of sustainability that is not backed up by concrete or transparent actions.
Chun & Giebelhausen (2012)	<ul style="list-style-type: none"> ● Compromising trust ● Compromised decision-making ● Increased credibility of proven sustainable companies 	Disseminator of misleading or exaggerated information about environmental initiatives to improve public image without real and effective changes.

Note. Own elaboration

The analysis of the studies presented in Table 1 reveals that greenwashing practices in the food industry have significant impacts on consumer perception and behavior. From the

categorization of findings, recurring patterns can be observed, highlighting the effects of greenwashing on consumer trust, the credibility of environmental certifications, and the distortion of decision-making processes.

Several studies have indicated that greenwashing undermines consumer trust in environmental claims, making them more skeptical of brands that present themselves as sustainable. Leblebici Kocer et al. (2023) and Azazz et al. (2024) point out that deceptive practices damage corporate credibility and may negatively impact customer loyalty. Similarly, De Sio et al. (2022) emphasize that growing skepticism reduces the intention to purchase eco-friendly products, thereby hindering the advancement of the sustainable market.

Studies such as those by Dreist et al. (2025) and Boncinelli et al. (2023) demonstrate how misleading labeling leads consumers to believe that products are more sustainable than they actually are. Research by Rejman et al. (2023) highlights that inconsistencies in certification standards generate confusion and distrust, while Nygaard & Silkoset (2023) suggest that technologies such as blockchain may offer a solution to enhance the transparency and credibility of environmental certifications.

The false perception of sustainability generated by greenwashing directly influences consumer decision-making, as demonstrated by Cavazos et al. (2023) and Vayona et al. (2024). These studies indicate that misleading environmental claims can lead consumers to make unsustainable choices while believing they are contributing to environmental preservation. Hasan et al. (2024) further emphasize that variability in certification standards exacerbates this issue, making it more difficult for consumers to distinguish between genuinely sustainable products and those that merely employ greenwashing strategies.

The concept of eco-opportunism, addressed by Nygaard & Silkoset (2023), highlights how some companies adopt green rhetoric solely to attract consumers, without implementing any real changes in their production processes. Similarly, Paudel & Zhou (2024) identify that greenwashing can undermine consumers' willingness to pay a premium for sustainable products, ultimately harming companies that genuinely invest in ecological practices.

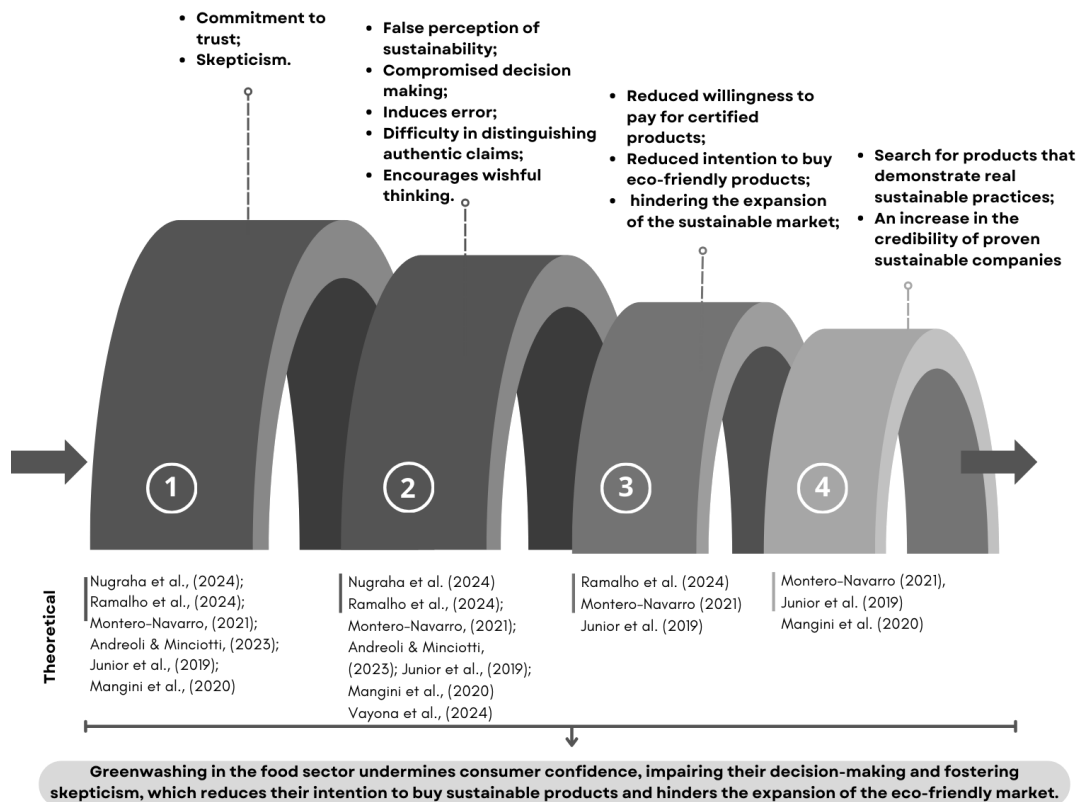
The reviewed studies indicate that greenwashing has profound effects on consumer trust, the credibility of environmental certifications, and purchasing decision-making. Strategies such as the use of misleading labels, unsubstantiated environmental claims, and lack of transparency hinder the consolidation of a sustainable market. As an alternative, authors such as Nygaard & Silkoset (2023) advocate for the use of technologies that enhance the reliability of environmental information. Thus, the implementation of stricter certification standards and transparency in corporate communication are essential to mitigate the negative effects of greenwashing and strengthen consumer trust.

4 DISCUSSIONS

This study aimed to map the influence of greenwashing on consumer behavior in the food sector, with a focus on sustainable marketing practices and their implications. Based on a Systematic Literature Review (SLR), the research sought to identify, through the analysis of relevant studies, how greenwashing can affect purchasing decisions and consumer perceptions of brands. Figure 6 illustrates the implications of greenwashing in the food industry and summarizes our main findings.

Figure 6

Categorization of the Implications of Greenwashing in the Food Industry



Nota. Elaboração própria

The results of this research highlight that the primary effect of greenwashing is the loss of consumer trust. As described in Block 1, the resulting distrust may lead consumers to avoid products labeled as sustainable, regardless of their actual authenticity (Nugraha et al., 2024; Andreoli & Minciotti, 2023; Junior et al., 2019). This phenomenon is directly linked to the rise of skepticism, which influences how consumers engage with environmental issues, reducing their involvement and encouraging a more critical stance. Andreoli and Minciotti (2023) observed that the simultaneous presence of skepticism and attentiveness results in a more rigorous evaluation of greenwashing practices, whereas their absence renders consumers more vulnerable and less discerning in the face of advertising messages.

Based on the discussions presented in Block 2, constant exposure to deceptive marketing practices reinforces distrust toward sustainability claims made by companies (Nugraha et al., 2024). This issue is particularly problematic in the food sector (Montero-Navarro, 2021), where consumers rely on the information provided on packaging to make decisions aligned with their environmental values. In a context where skepticism intensifies, the consumer decision-making process becomes more cautious and, in some cases, more complex (Mangini et al., 2020).

Moreover, greenwashing can lead to consumer misperception, as corporate claims do not always reflect reality. This causes consumers to form inaccurate perceptions about the sustainability of a company or product (Nugraha et al., 2024). This difficulty in discernment also undermines the credibility of environmental certifications, which are severely compromised by the lack of effective regulation and rigorous auditing (Ramalho et al., 2024; Montero-Navarro, 2021). As a consequence, eco-labels lose their value as decision-making tools, becoming unreliable in distinguishing genuinely sustainable products from those that merely employ green marketing strategies.

The effect of greenwashing is not limited to consumer perception; it also influences consumption habits. One example is the encouragement of *wishcycling* (Vayona et al., 2024) a practice in which consumers believe they are making sustainable choices by recycling products

that, in reality, may not be recyclable. This false confidence, fueled by exaggerated environmental claims made by companies, further undermines the effectiveness of sustainable practices.

Considering the points discussed in Block 3, this scenario has a direct impact on the sustainable market. Junior et al. (2019) demonstrated that the factors shaping consumer perceptions directly influence their purchasing decisions in the retail of sustainable products. Greenwashing decreases consumers' willingness to pay for certified products, thereby hindering the expansion of this market. The confusion generated by such practices leads consumers to become more skeptical of sustainability claims, which, on one hand, may reduce their intention to purchase sustainable products, but on the other hand, may increase demand for products that can demonstrate genuine sustainable practices (Junior et al., 2019).

Finally, as presented in Block 4, the widespread presence of greenwashing can paradoxically produce the opposite effect, strengthening the credibility of companies that demonstrate transparency and environmental responsibility. Businesses that substantiate their sustainable practices and adopt clear communication gain a competitive advantage, establishing themselves as trustworthy options in the market (Mangini et al., 2020). Based on all the findings gathered, this research concludes that greenwashing in the food sector undermines consumer trust, hinders decision-making, and fosters skepticism ultimately reducing the intention to purchase sustainable products and hindering the expansion of the eco-friendly market.

5 CONCLUSION

This study analyzed greenwashing practices in the food sector, with the aim of understanding how these strategies influence consumer perception and behavior. The investigation was conducted by means of a Systematic Literature Review (SLR), based on the guidelines of the PRISMA.

The analysis of 19 studies made it possible to map the effects of greenwashing on consumer confidence, highlighting its relationship with a reduction in the intention to buy products with a sustainable appeal and the emergence of critical perceptions in relation to environmental certifications. The results indicate that the growing adoption of green marketing strategies, without being backed up by effectively sustainable practices, contributes to consumers' difficulty in distinguishing authentic initiatives from communicational actions promoted by environmental discourses. The lack of standardization in certification systems and the lack of specific regulations increase this challenge, making the consumer environment more susceptible to misinformation.

The findings also highlight the relevance of regulatory and institutional improvements aimed at the traceability, transparency and credibility of seals and certifications, contributing to the strengthening of public policies and business practices in the field of sustainable communication.

Finally, it is recommended that research be carried out into the impacts of greenwashing in different market segments, as well as investigating the effectiveness of regulatory and educational measures to mitigate it. It also highlights the potential of emerging technologies such as blockchain and artificial intelligence to promote more transparent and traceable systems, broadening the mechanisms for tackling deceptive practices in environmental marketing.

This study offers important contributions both in theoretical terms and in practical implications for addressing greenwashing in the food sector. From a theoretical perspective, the research deepens the debate on sustainable marketing by specifically delineating the impacts of

greenwashing within a sensitive and still underexplored industry in the academic literature. Unlike broader and cross-sectoral approaches (Nugraha et al., 2024; De Freitas Netto et al., 2020), this study focuses on the consequences of misleading labeling on consumer trust, skepticism, and purchase intentions, establishing direct links between marketing strategies and consumer behavior. Furthermore, by applying rigorous protocols such as PRISMA and JBI, the research consolidates fragmented evidence and reveals recurring patterns, contributing to the conceptual advancement of the field particularly by incorporating and contextualizing the concept of eco-opportunism (Nygaard & Silkoset, 2023) within the food industry.

From a practical standpoint, the results of this systematic review provide relevant insights for companies, policymakers, and other stakeholders aiming to strengthen the sustainable market. By demonstrating that greenwashing practices undermine consumer trust, including trust in genuinely sustainable brands, the study highlights the importance of transparent communication, standardized environmental certifications, and strict oversight of sustainability claims. Additionally, it suggests the use of emerging technologies such as blockchain and digital labeling as promising tools to enhance the traceability and credibility of environmental information. Finally, the findings indicate the need for educational initiatives aimed at developing more critical consumers who are capable of distinguishing authentic sustainable practices from deceptive marketing strategies in the context of food consumption.

Despite offering valuable insights into the impact of greenwashing on consumer behavior, this study presents some limitations. First, as it is based on a Systematic Literature Review (SLR), the analysis relies on the methodological quality and scope of previously published studies, which may limit the generalizability of the findings. Moreover, the concentration of the sample on articles indexed in the Web of Science database may have restricted access to relevant publications available in other databases or written in languages other than English, thereby limiting the geographic and cultural diversity of the evidence. Finally, the study does not incorporate a primary empirical approach, which prevents the direct validation of consumer perceptions and behaviors in response to the identified practices. These limitations, however, open opportunities for future research that combine qualitative and quantitative methods, expand the range of data sources, and explore different economic sectors in a comparative perspective.

6 FUTURE RESEARCH SUGGESTIONS

Given the limitations identified, future research may advance the investigation of greenwashing effects through empirical approaches such as case studies, perception experiments, or consumer surveys conducted in real purchasing contexts. Comparative analysis across different industrial sectors such as fashion, cosmetics, and technology, could help uncover sector-specific characteristics in greenwashing strategies and their impact on consumer trust and behavior.

Furthermore, expanding the range of databases consulted, including open-access journals and literature in languages other than English, is recommended to enhance the sociocultural diversity of the evidence analyzed. Another promising avenue involves exploring the role of emerging technologies in mitigating greenwashing and rebuilding consumer trust in environmental certifications. Interdisciplinary studies that integrate perspectives from marketing, consumer psychology, and environmental regulation can also contribute to strengthening both theoretical and practical understanding of the phenomenon.

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