When green is not clean: A synthesis of evidence on greenwashing and consumer trust

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ABSTRACT

Greenwashing, misleading consumers about the environmental benefits of products or practices, presents serious obstacles to building trust in sustainable brands. This systematic review draws on 40 academic studies published between 1984 and 2024 to examine the causes, impacts, and possible solutions to greenwashing. The findings show that greenwashing weakens consumer trust, reduces brand value, and hinders progress toward sustainability goals. Emerging technologies like blockchain and artificial intelligence show promise in increasing transparency. In addition, cross-cultural and interdisciplinary research helps deepen the global understanding of greenwashing. The review also identifies key gaps in the literature, such as the long-term effects of greenwashing on trust and its influence in emerging markets. These insights are valuable for researchers, policymakers, and practitioners, and they highlight the importance of genuine sustainability practices for restoring consumer confidence.

1. Introduction

The growing global focus on sustainability has propelled green marketing to the forefront of corporate strategies as firms endeavor to align their practices with consumers' increasing demand for environmentally responsible products and services (Khan et al., 2025b; Uddin and Khan, 2016; 2018). This shift underscores the critical role of marketing in driving sustainable consumption and influencing public perceptions of corporate social responsibility (CSR). However, the rise of green marketing has also given way to the proliferation of greenwashing, defined as the act of misleading stakeholders through exaggerated or false environmental claims (Nyamekye et al., 2024). Greenwashing undermines the legitimacy of genuine sustainability efforts, erodes consumer trust, and poses ethical challenges for marketing practitioners (Nazish et al., 2024). Understanding the dynamics of greenwashing and its implications for consumer trust is crucial for fostering authentic and sustainable marketing practices. Consumer trust, a cornerstone of effective marketing, is particularly vulnerable to the effects of

greenwashing. Trust enables consumers to make confident decisions, fosters loyalty, and enhances brand equity (Quintus et al., 2024). However, when consumers perceive inconsistencies between a company's sustainability claims and its actual practices, trust deteriorates, leading to reputational damage and decreased consumer loyalty (Li et al., 2024). Studies reveal that greenwashing damages trust in individual firms and creates skepticism toward entire industries, hindering progress toward broader sustainability goals (Zaid et al., 2024). This erosion of trust is further exacerbated by the complexity and opacity of green claims, which often leave consumers ill-equipped to discern genuine efforts from deceptive practices (Sundarasen et al., 2024).

The interplay between greenwashing and consumer trust is influenced by multiple factors, including cultural norms, regulatory frameworks, and individual consumer characteristics (Nugraha et al., 2024). For instance, in markets with stringent regulatory oversight, the prevalence of greenwashing is lower, as firms face higher risks of legal and reputational consequences (Santos et al., 2024). Conversely, deceptive practices are more likely to flourish in markets with weak enforcement mechanisms, amplifying consumer distrust (Sundarasen et al., 2024). Individual factors, such as environmental awareness and prior experiences with green claims, also shape consumer perceptions and responses to greenwashing (Le et al., 2024).

These dynamics underscore the need for a nuanced understanding of the antecedents and consequences of greenwashing to inform targeted interventions.

Theoretical frameworks such as attribution theory and signaling theory provide valuable insights into the mechanisms underlying consumer responses to greenwashing (Parguel et al., 2015; Sturm et al., 2025). Attribution theory posits that consumers assign motives to corporate behaviors, influencing their trust levels and purchase intentions (Bernini et al., 2024). For example, consumers are more likely to trust firms that demonstrate consistent and verifiable sustainability efforts than those perceived as opportunistic or insincere (Santos et al., 2024). On the other hand, signaling theory highlights the importance of credible signals, such as third-party certifications, in mitigating skepticism and reinforcing trust (Vangeli et al., 2023). These theoretical perspectives are instrumental in guiding empirical investigations into the trust-greenwashing nexus and developing actionable strategies to enhance marketing authenticity.

Despite its significance, research on greenwashing and consumer trust remains fragmented. Existing studies often focus on specific aspects, such as the drivers of greenwashing or its impact on purchase behavior, without integrating these insights into a cohesive framework (Delmas and Burbano, 2011). Moreover, methodological diversity in the literature, ranging from experimental designs to qualitative case studies, further complicates the synthesis of findings (Oduro and Matarazzo, 2025). This lack of integration limits the generalizability of results and hinders the development of comprehensive strategies to address greenwashing. A systematic review that consolidates existing knowledge and identifies critical research gaps is essential for advancing theoretical and practical understanding in this area.

This review employs a hybrid systematic approach, integrating bibliometric and thematic analyses to provide a holistic perspective on the interplay between greenwashing and consumer trust. A key objective of this review is to explore the implications of greenwashing in digital marketing environments where social media and online platforms have amplified the visibility and impact of green claims (Qayyum et al., 2023). Digital platforms often serve as arenas for consumer discourse, where allegations of greenwashing can rapidly escalate and damage a brand's reputation (Nazish et al., 2024). Understanding how consumers interpret and react to greenwashing in these settings is critical for marketers aiming to navigate the challenges of digital engagement. Furthermore, the review highlights the ethical considerations associated with greenwashing, emphasizing the need for transparent and culturally sensitive marketing practices to restore and maintain consumer trust.

Lastly, this systematic review aims to synthesize the evidence on greenwashing and its impact on consumer trust, addressing critical gaps in the existing literature. The review contributes to the discourse on sustainable marketing practices and ethical corporate behavior by integrating multidisciplinary perspectives and employing robust analytical frameworks. The findings offer valuable insights for marketers, policymakers, and researchers, highlighting the importance of authenticity, transparency, and accountability in fostering trust and advancing sustainability goals.

2. Literature review

The concept of greenwashing has emerged as a critical topic in marketing and management literature, reflecting growing concerns over the authenticity of corporate sustainability claims (Bernini et al., 2024). Greenwashing is generally defined as deliberately disseminating false or exaggerated information regarding a company's environmental practices or products to mislead stakeholders (Santos et al., 2024). This phenomenon is intrinsically linked to the rise of green marketing, a strategic approach that seeks to align corporate practices with consumer demands for environmentally friendly products and services (Nugraha et al., 2024). While green marketing holds promise for fostering sustainable consumption, the prevalence of greenwashing undermines its legitimacy, raising ethical and operational challenges for marketers (Majeed and Kim, 2023).

Greenwashing manifests through various mechanisms, including misleading labeling, selective disclosure of information, and exaggerated claims about environmental impact (Netto et al., 2020). For instance, companies may highlight the environmental benefits of a single product attribute while concealing its broader ecological footprint (Galletta et al., 2024). Such practices create a disconnect between corporate rhetoric and actual sustainability outcomes, diminishing consumer trust and undermining the credibility of green marketing initiatives (Netto et al., 2020). Greenwashing is not only a strategic issue but also a cultural and institutional one, shaped by varying levels of regulatory enforcement, market dynamics, and consumer awareness across regions (Vangeli et al., 2023).

The theoretical underpinnings of greenwashing are rooted in attribution theory and signaling theory, which provide insights into consumer perceptions and responses to sustainability claims (Sundarasen et al., 2024). Attribution theory suggests that consumers evaluate the motives behind corporate green claims, distinguishing between intrinsic motivations (genuine concern for sustainability) and extrinsic motivations (profit-driven opportunism) (Gupta and Singh, 2024). When consumers perceive greenwashing, they are likely to attribute opportunistic motives to the firm, resulting in decreased trust and loyalty (Montero-Navarro et al., 2021). On the other hand, signaling theory emphasizes the role of credible signals—such as third-party certifications and transparent

reporting—in mitigating greenwashing perceptions (Pendse et al., 2022). Firms that invest in verifiable sustainability initiatives are more likely to build trust and differentiate themselves from greenwashing competitors (Beloskar et al., 2023).

Consumer trust, a central construct in marketing literature, is particularly sensitive to perceived authenticity in sustainability claims (Hallikainen and Laukkanen, 2018). Trust mediates between green marketing efforts and consumer behavior, influencing purchase intentions, brand loyalty, and advocacy (Singh et al., 2024). However, trust is fragile in greenwashing, as consumers often lack the cognitive resources to verify the accuracy of complex environmental claims (Zaid et al., 2024). This information asymmetry exacerbates skepticism and reduces the effectiveness of legitimate green marketing campaigns (Policarpo et al., 2023). Moreover, the erosion of trust extends beyond individual firms, affecting entire industries and diminishing public confidence in sustainability initiatives (Le et al., 2024).

Regulatory and institutional frameworks play a crucial role in shaping the prevalence and impact of greenwashing. In regions with stringent environmental regulations and active consumer advocacy, greenwashing practices are less pervasive due to higher risks of reputational and legal consequences (Lim et al., 2021). Conversely, weak regulatory oversight enables firms to engage in deceptive practices with minimal accountability, perpetuating a cycle of mistrust and ethical concerns (Zaid et al., 2024). This variability underscores the importance of developing global standards and collaborative mechanisms to enhance transparency and accountability in sustainability reporting (Srivastava et al., 2023).

Digital platforms and social media have further amplified the dynamics of greenwashing, providing both opportunities and challenges for marketers. On one hand, digital platforms allow firms to communicate their sustainability efforts to a broader audience, fostering engagement and advocacy (Chen and Chang, 2013). On the other hand, these platforms facilitate the rapid dissemination of information, including allegations of greenwashing, which can escalate reputational risks (Habib et al., 2025). The interactive nature of digital media also enables consumers to share experiences, exchange opinions, and collectively scrutinize corporate claims, intensifying the demand for authenticity and transparency (Vinzenz et al., 2019).

3. Methods

To ensure a systematic and comprehensive evaluation of the existing literature on greenwashing and consumer trust, this study followed a rigorous review protocol based on the PRISMA (Preferred Reporting Items for Systematic Reviews and Meta-Analyses) guidelines (Moher et al., 2015; Page et al., 2021). The methodology was structured into four key stages: Identification, screening, eligibility, and inclusion, as illustrated in the flow diagram. Each step was designed to filter and refine the dataset to ensure that only the most relevant and credible academic records were retained for the final analysis.

3.1. Identification

The first stage involved identifying relevant academic records from the Scopus database, one of the most comprehensive repositories of peer-reviewed literature. The search period was set from 1984 to 2024 to capture the historical evolution of the greenwashing concept and its impact on consumer trust. Boolean operators such as "AND" and "OR" were utilized to combine search terms like "greenwashing," "consumer trust," and "sustainability." Truncation techniques were also applied to include variations of the keywords (Maheshwari et al., 2024). This search strategy yielded an initial pool of 92 academic records.

3.2. Screening

In the screening stage, records were evaluated based on specific inclusion and exclusion criteria to ensure relevance and quality. Only English-language articles, book chapters, and reviews published in journals and books related to business, management, accounting, and sustainability were considered (Fakhar et al., 2023). This screening process eliminated irrelevant records, such as studies focusing on unrelated disciplines or non-English publications, reducing the dataset to 43 records.

3.3. Eligibility

The retained records were further assessed for eligibility based on their content, methodology, and alignment with the research objectives. Studies that lacked empirical evidence, theoretical grounding, or a clear focus on greenwashing and consumer trust were excluded from the analysis. At this stage, 41 records were deemed eligible for review after the removal of two additional irrelevant records.

3.4. Inclusion

The final stage involved including records that met all the specified criteria. A total of 40 academic records were retained for the systematic review. These records provided a robust foundation for analyzing the antecedents, mechanisms, and consequences of greenwashing in the context of consumer trust.

3.5. Data extraction and analysis

The included records were subjected to bibliometric and thematic analyses to extract key insights. Using tools like VOSviewer, bibliometric analysis helped identify trends, citation patterns, and

intellectual structures within the literature (Rashid et al., 2024a). Thematic analysis was employed to synthesize qualitative insights and categorize findings into overarching themes such as the drivers of greenwashing, its impact on consumer trust, and potential mitigation strategies (Rashid et al., 2024b).

3.6. Ensuring methodological rigor

To ensure methodological rigor, this study adhered to established guidelines for systematic reviews, including applying transparent criteria for inclusion and exclusion and using reproducible search strategies (Page et al., 2021). Combining bibliometric and thematic analyses provided a holistic understanding of the research domain, addressing quantitative and qualitative dimensions (Khan et al., 2025a). This methodological framework ensured the reliability and validity of the findings and facilitated the identification of critical research gaps and future directions in the study of greenwashing and consumer trust. The systematic approach adopted in this review underscores its contribution to advancing theoretical and practical knowledge in the field. In addition to thematic synthesis, we employed bibliographic coupling using VOSviewer to map intellectual linkages among the selected publications quantitatively. This technique

allowed us to identify research clusters and assess scholarly attention's evolution across key themes. In Fig. 1, the review protocol adapted in the current study is presented.

4. Results

The results of this systematic review provide a comprehensive synthesis of the existing evidence on greenwashing and consumer trust derived from 40 academic records retained after rigorous screening and eligibility assessment. The findings are categorized into three key thematic areas: antecedents of greenwashing, its impact on consumer trust, and strategies for mitigating greenwashing. Cross-cultural differences significantly shape how consumers interpret and react to greenwashing. For example, consumers in collectivist cultures may prioritize brand reputation and social approval, intensifying the negative impact of greenwashing, while those in individualist cultures may rely more on personal scepticism (Vangeli et al., 2023). Each theme encapsulates critical insights that contribute to advancing the theoretical and practical understanding of greenwashing in marketing and its implications for sustainable business practices.
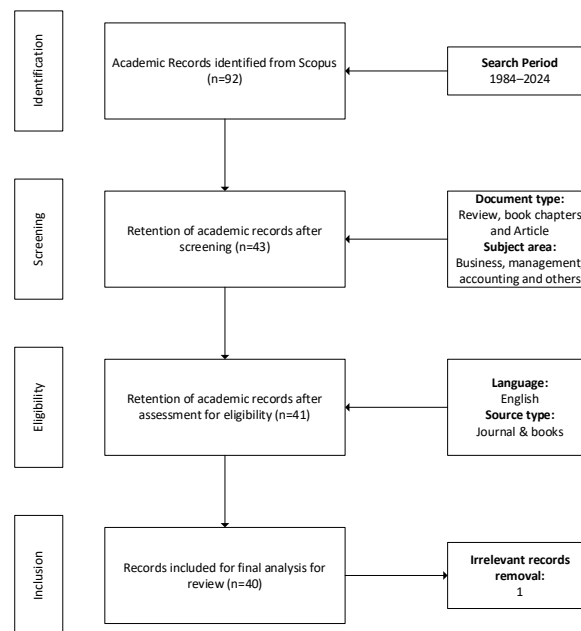

Fig. 1: Review protocol

4.1. Antecedents of greenwashing

The antecedents of greenwashing are primarily rooted in organizational motives, market dynamics, and external pressures. Several studies identify profit maximization and competitive positioning as key drivers, where firms exaggerate sustainability claims to attract environmentally conscious consumers and gain market advantage (Baxter et al., 2024; Reck et al., 2022). Internal organizational factors, such as misaligned corporate strategies and poor governance, also contribute to the prevalence

of greenwashing (Guerreiro and Pacheco, 2021). Moreover, external pressures, including regulatory voids and consumer demand for sustainable products, compel firms to overstate their environmental credentials (Seberíni et al., 2024). Notably, firms in industries with weak regulatory oversight are more prone to greenwashing, highlighting the critical role of policy enforcement in curbing deceptive practices (Li and Sun, 2022).

The influence of digital media on greenwashing has also emerged as a salient factor. Social media platforms amplify the visibility of corporate claims,

encouraging firms to project environmentally friendly images to maintain positive public perceptions (Pendse et al., 2022). However, this increased visibility also exposes firms to greater scrutiny, as consumers and advocacy groups can easily share evidence of misleading claims, leading to reputational risks (Vangeli et al., 2023). These findings underscore the multifaceted nature of greenwashing's antecedents and the interplay between organizational and external factors.

4.2. Impact of greenwashing on consumer trust

Consumer trust is significantly undermined by perceptions of greenwashing, with studies consistently demonstrating its detrimental effects on brand credibility, loyalty, and purchase intentions (Mendes et al., 2024; Srisathan and Naruetharadhol, 2025). When consumers detect inconsistencies between a firm's sustainability claims and actual practices, they are likely to attribute opportunistic motives, leading to skepticism and reduced trust (Steffen and Doppler, 2019). This erosion of trust extends beyond individual brands, affecting entire industries and diminishing the efficacy of genuine green marketing efforts (Sundarasen et al., 2024).

At the consumer level, trust dynamics are influenced by factors such as environmental awareness, cultural norms, and prior experiences with green claims (Mendes et al., 2024). For example, environmentally conscious consumers are more likely to scrutinize corporate claims and detect greenwashing, resulting in heightened skepticism (Steffen and Doppler, 2019). Furthermore, cross-cultural studies reveal that consumers in markets with strong environmental values are less tolerant of greenwashing, emphasizing the importance of cultural context in shaping trust responses (Kavitha and Kumar, 2023).

The role of third-party certifications and transparent reporting in mitigating greenwashing's impact on trust is widely acknowledged. These mechanisms serve as credible signals that enhance the perceived authenticity of corporate sustainability efforts (Damberg et al., 2024). However, the proliferation of unregulated certifications has diluted their effectiveness, necessitating the establishment of global standards to restore consumer confidence (Sanchez-Chaparro et al., 2024).

4.3. Strategies for mitigating greenwashing

The findings highlight several strategies for mitigating greenwashing and restoring consumer trust. Transparency and accountability are critical components, with firms encouraged to adopt transparent and verifiable communication practices (Sundarasen et al., 2024). Integrating robust sustainability metrics into corporate reporting frameworks can enhance the credibility of green claims, reducing consumer scepticism. Collaboration between stakeholders, including policymakers, industry associations, and consumer advocacy groups, is essential for developing regulatory mechanisms that deter deceptive practices (Wang et al., 2020). For instance, stringent penalties for false claims and the establishment of independent auditing bodies can enhance accountability and foster a culture of authenticity in green marketing (Tchanturia and Dalakishvili, 2024). Additionally, the role of education in raising consumer awareness about greenwashing is emphasized, empowering individuals to make informed decisions and hold firms accountable (Tchanturia and Dalakishvili, 2024).

Digital platforms offer both opportunities and challenges for addressing greenwashing. While these platforms facilitate transparency and engagement, they also amplify the consequences of misleading claims, necessitating careful management of digital communications (Meet et al., 2024). Firms are advised to leverage social media for proactive sustainability reporting, showcasing tangible outcomes of their environmental initiatives to build trust and credibility (Courtat et al., 2023).

5. Discussion

This systematic review reveals the interplay between greenwashing and consumer trust, shedding light on its antecedents, impacts, and potential mitigation strategies. The findings underscore the multifaceted nature of greenwashing, shaped by organizational motives, regulatory contexts, and consumer awareness levels, while emphasizing its detrimental effects on trust and sustainable market behavior. Emerging technologies such as blockchain and AI are increasingly recognized for their potential to enhance transparency and traceability in corporate sustainability reporting (Abumalloh et al., 2024; Parmentola et al., 2022). These tools can mitigate greenwashing by providing immutable records of supply chain practices and automated auditing, thereby fostering greater consumer trust.

5.1. Theoretical and managerial implications

The review highlights that greenwashing stems from various antecedents, including profit-driven motives, regulatory gaps, and the rise of green consumerism (Wang et al., 2020). Attribution theory and signaling theory provide a robust foundation for understanding consumer perceptions and responses to greenwashing (Yao et al., 2022). These theoretical lenses suggest that perceived inconsistencies in sustainability claims lead to skepticism, while credible signals such as certifications can mitigate distrust (Tchanturia and Dalakishvili, 2024). Managers must leverage these insights to craft authentic and transparent communication strategies that align with their sustainability practices, fostering long-term consumer trust and loyalty (Kavitha and Kumar, 2023). To mitigate greenwashing and rebuild consumer trust, firms

should adopt blockchain-enabled traceability systems and AI-driven monitoring tools, which enhance transparency and enable real-time detection of inconsistencies in sustainability claims (Bao et al., 2025; Yao et al., 2022). Third-party certifications and independent audits remain essential for signaling credibility, especially in sectors where consumer skepticism is high (Damberg et al., 2024; Sanchez-Chaparro et al., 2024). Marketing strategies should be culturally responsive, as trust perceptions vary across contexts; tailoring sustainability communication to local norms can reduce misinterpretation and improve effectiveness (Lee et al., 2024; Hallikainen and Laukkanen, 2018). Practitioners are also encouraged to leverage digital platforms to proactively disclose verifiable data, fostering consumer engagement and co-creating trust (Nazish et al., 2024).

The review also reveals significant cross-cultural variations in consumer responses to greenwashing, emphasizing the role of cultural norms and values in shaping trust dynamics (Lee et al., 2024). For instance, consumers in markets with strong environmental values are more critical of greenwashing, highlighting the need for culturally tailored marketing strategies (Parguel et al., 2015). Managers should consider these cultural differences when developing sustainability campaigns, ensuring that claims resonate with local audiences while maintaining global authenticity.

5.2. Impact on consumer trust

Consumer trust is identified as a critical mediating factor in the relationship between green marketing efforts and consumer behavior (Wang and Walker, 2023). The erosion of trust caused by greenwashing affects individual firms and undermines the credibility of entire industries, posing a significant barrier to achieving sustainability goals. Trust-building measures, such as third-party certifications and transparent reporting, are crucial for countering skepticism and reinforcing consumer confidence.

The findings also emphasize the fragility of trust in the digital age, where social media amplifies the visibility and scrutiny of green claims (Marcatajo, 2023). While digital platforms provide opportunities for engagement and transparency, they also expose firms to reputational risks associated with allegations of greenwashing (Sayogo et al., 2016). Managers must navigate these challenges by adopting proactive digital strategies, emphasizing accountability, and providing tangible evidence of sustainability efforts (Steffen and Doppler, 2019).

5.3. Policy and regulatory implications

The review underscores the importance of regulatory frameworks in mitigating greenwashing and fostering consumer trust. Strong enforcement mechanisms and global standards for sustainability

reporting are essential for enhancing transparency and accountability (Marko and Kusá, 2023; Sanchez-Chaparro et al., 2024). Policymakers should prioritize the development of independent auditing bodies and impose stringent penalties for false claims, creating a deterrent effect that discourages deceptive practices (Srisathan and Naruetharadhol, 2025). Collaboration between industry stakeholders, including regulators, consumer advocacy groups, and academic institutions, is critical for addressing the systemic challenges associated with greenwashing (Lin et al., 2025).

5.4. Future research directions

This review highlights key areas for advancing research on greenwashing and consumer trust. Longitudinal studies are needed to explore the long-term impacts of greenwashing on consumer trust and loyalty. Emerging technologies such as blockchain and AI offer opportunities for enhancing transparency and mitigating greenwashing, warranting further investigation (Habib et al., 2025). Cross-cultural studies can examine how cultural norms influence consumer responses to greenwashing and the effectiveness of regulatory interventions (Narula et al., 2025).

Digital marketing's role in amplifying greenwashing dynamics and consumer scrutiny needs deeper exploration, particularly the impact of social media on brand trust (Siano et al., 2022). Interdisciplinary approaches integrating psychology, sociology, and environmental science can provide holistic insights into consumer perceptions and corporate practices (Jung and Baloglu, 2025). Additionally, research should expand to emerging markets and underexplored sectors like fintech and healthcare, addressing unique challenges and opportunities in these contexts (Zaid et al., 2024). Research should explore greenwashing in the metaverse, where virtual sustainability claims may lack verification (Azhar et al., 2025; Uddin et al., 2025). Studies could assess how consumers perceive such claims and whether tools like blockchain can maintain trust in immersive digital spaces. Finally, innovative methodologies, including experimental designs and big data analytics, can enrich the field by capturing nuanced insights and trends (Jung and Baloglu, 2025).

6. Conclusion

This systematic review provides a comprehensive synthesis of the evidence surrounding greenwashing and its impact on consumer trust. The findings underscore that greenwashing is a multifaceted phenomenon driven by organizational motives, regulatory gaps, and market dynamics. Its pervasive influence undermines consumer trust, damages brand equity, and hinders progress toward sustainable development goals. By integrating insights from diverse disciplines and employing rigorous

methodologies, this review contributes to the theoretical and practical understanding of greenwashing, offering actionable recommendations for researchers, policymakers, and practitioners.

The review highlights that greenwashing erodes trust in individual brands and has broader implications for industry-wide sustainability efforts. Trust, a cornerstone of consumer relationships, is fragile and easily compromised by inconsistent or exaggerated claims (Steffen and Doppler, 2019). Furthermore, the rise of digital marketing and social media has amplified the reach and consequences of greenwashing, necessitating more transparent and credible communication strategies (Kavitha and Kumar, 2023). As such, the findings emphasize the need for firms to align their sustainability messaging with authentic practices, reinforced by third-party certifications and independent audits.

This review also underscores the critical role of regulatory frameworks in mitigating greenwashing. While current mechanisms have some deterrent effects, gaps in enforcement and the proliferation of unverified green claims dilute their efficacy (Bao et al., 2025). Policymakers must prioritize establishing global standards for sustainability reporting and introduce stringent penalties for non-compliance. Collaborative efforts involving industry associations, consumer advocacy groups, and academic institutions can strengthen these initiatives and foster a culture of accountability.

7. Limitation

The limitations of this review lie primarily in its scope and methodology. The focus on peer-reviewed articles from specific databases, such as Scopus, may have excluded relevant contributions from non-academic sources or emerging markets (Johri et al., 2024). Future reviews could adopt a broader inclusion strategy, encompassing grey literature and studies from diverse geographical contexts. Additionally, while this review synthesizes qualitative and bibliometric insights, quantitative meta-analyses could provide a more granular understanding of the relationships between greenwashing, trust, and related variables. The findings point to several promising avenues for future research. Longitudinal studies could explore the enduring effects of greenwashing on consumer trust and brand loyalty, while interdisciplinary approaches could enrich the theoretical framework by incorporating psychological and sociological perspectives. Emerging technologies like blockchain and AI also hold potential for enhancing transparency and combating deceptive practices, warranting further exploration.

Lastly, addressing greenwashing requires a concerted effort from all stakeholders. Firms must prioritize authenticity and transparency in their sustainability efforts, regulators must enforce robust standards, and consumers must remain vigilant and informed. By building trust and fostering accountability, these collective actions can pave the way for a more sustainable and equitable marketplace.

Compliance with ethical standards

Conflict of interest

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

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