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REVIEW ARTICLE

Digital greenwashing and consumer skepticism: Trust, attitude, and sustainable consumption in the online marketplace

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Abstract: This review examines the relationships between digital greenwashing, consumer skepticism, trust, and sustainable consumption behavior, with a focus on the unique challenges and opportunities in the digital marketplace. Drawing on recent literature (2018–2025), it synthesizes evidence on consumer recognition of greenwashing, the dual role of skepticism, the impact of green marketing strategies, and the influence of contextual mediators and moderators. The review finds that while transparent and verifiable communication can strengthen trust and purchase intentions, repeated exposure to deceptive claims erodes credibility and may lead to "green fatigue." Effective countermeasures require both market-driven and regulatory interventions, including standardized certifications, ESG assurance frameworks, supply chain transparency, and public awareness campaigns. Research gaps are identified in areas such as digital-specific greenwashing mechanisms, cross-cultural comparisons, longitudinal effects, and intervention testing. The paper proposes a dual approach combining trust-building communication with systemic safeguards to limit greenwashing's prevalence and enhance consumer confidence, thereby aligning marketing practices with global sustainability goals.

Keywords: *Greenwashing, Sustainable consumption, Consumer skepticism, Trust, Green marketing, Digital marketing, Policy*

Introduction

In recent time, commercial organizations are getting inclined towards adopting pro-environmental behavior for addressing sustainable development goals and ecological issues (Sun et al., 2020). Redesigning in the production and marketing strategies are considered widely for a shift towards eco-friendlier version of the products/services which will help to create a balance among people, profit and the planet(Ara et al., 2019; Sun et al., 2020). For a cleaner industrial production and consumption, it is important to understand consumers' decision making with respect to organic items and their buying intention for sustainable products.

Recent consumer surveys pointed out that in 2022; global consumers have shifted more towards green products compared to the last five years. Now, almost 30% of the global consumers buy sustainable products significantly more often and 10 % of the surveyed consumers informed about adopting environmentally sustainable life-style (Tighe, 2023). This shift highlights the increasing relevance of green marketing strategies in engaging customers and capturing a larger share of the sustainability-conscious market.

Traditionally, green marketing strategies, most of the marketers focus on the 4Ps of traditional marketing strategies, i.e., product, place, price and promotion (Bokil & Sinha, 2021; Dangelico & Vocalelli, 2017). Green product is assumed to cause no harm to the environment and human health. The eco-friendlier

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processing of 'green product', limited chemical and less hazardous substance helped these products to be purchased by environment aware customers (Dangelico & Pontrandolfo, 2010). Along with the green product, green price is the premium price consumers are willing to pay for the eco-friendly features present in these products (Kaur et al., 2022). Green place provides the place for green product which include reduced inventory cost, enhanced service to customers and better inventory management (Bhalerao, 2015). The fourth one of the marketing mix is green promotion which plays an inevitable role in promoting the eco-friendly products (Kaur et al., 2022).

Beyond the 4Ps of marketing mix, other marketing strategies, such as green advertisement, green equity, brand loyalty and green brand innovativeness play critical role in modifying consumer behavior (Y. S. Chen et al., 2020; Lin et al., 2019; Pancić et al., 2023). Green advertisement helps in communicating sustainable nature and eco-friendliness of the brand to the consumers which eventually influence consumer attitude towards sustainable consumption (Nagar, 2013; Tan et al., 2022). In addition, green equity marketing strategies represents the benefit acquired by the brand due to its sustainable options and it enhances the perceived quality of the product and therefore increase customers' willingness to pay premium price for the product (Huang et al., 2014). On the other hand, green brand loyalty refers to the preference of consumers and their commitment towards eco-friendly product. Moreover, green brand innovativeness is the ability of the brand to addresses the environmental challenges (Pancić et al., 2023).

Green marketing technique reportedly increases consumers' sustainable consumption as well as it balances limited natural resources (Duong, 2022; Yu et al., 2019). Further, it helps the companies to be more environment friendly and more inclined towards waste reduction, higher recycling mechanism and developing of new technology (Ball & Kittler, 2019). It also helps to achieve sustainable goals and social responsibility by reducing environmental pressure and mitigating environmental problems (Geng et al., 2021; Sharma, 2021). Therefore, the companies have started to align their business models with green strategies and promise more environmental benefit to the customers (Sun et al., 2020). However, some companies could not achieve these promises and depict a greener outlook falsely (Rahman & Nguyen-Viet, 2022). Therefore, perceived greenwashing has become a threat in the trust of users regarding the products' quality and sustainability (Nygaard & Silkoset, 2022).

This review paper examines the literature on digital-era greenwashing and its relationship to consumer skepticism, trust, and sustainable consumption. It synthesizes research on how marketing strategies particularly in online and social media contexts can both promote and undermine sustainable consumption, and identifies the theoretical, empirical, and practical implications for marketers, policymakers, and researchers.

Conceptual Background

This section brings together the main ideas and theories related to sustainable consumption, green marketing, greenwashing in the digital age, and consumer skepticism and trust. It shows how digital marketing can influence both positive and negative consumer responses to sustainability concept.

Sustainable consumption in the digital age

The United Nations Environment Program (UNEP) defines sustainable consumption as the use of goods and services that meet basic needs and improve quality of life while minimizing the use of natural resources, toxic materials, and waste generation throughout the product life cycle (UNEP, 2021). The Organization for Economic Co-operation and Development (OECD) backed this definition by emphasizing that sustainable consumption must not compromise the needs of future generations (Strange & Bayley, 2008).

Drivers of sustainable consumption in the digital age include growing environmental awareness, with more people recognizing the impacts of climate change, biodiversity loss, and pollution on human and planetary health; socio-ethical concerns, which create demand for products that align with values such as social justice, fair labor, and ethical sourcing; and eco-literacy, or the ability to assess and understand environmental claims

and their consequences (Diego & Judith, 2024; Dwivedi et al., 2022; Hariram et al., 2023; Herrero et al., 2023; Shayan et al., 2022).

However, several barriers remain. Price sensitivity often discourages purchases, as sustainable products tend to be more expensive; convenience bias leads consumers to choose faster or easier but less sustainable options; and skepticism arises from doubts about the authenticity of sustainability claims, often fueled by previous experiences with greenwashing (Mabkhot, 2024; Sheikh et al., 2023; Wijekoon & Sabri, 2021). In today's digital marketplace, consumer decision-making is increasingly influenced by online reviews, social media influencers, targeted advertising, and AI-driven recommendations (Antczak, 2024). While these channels can support more informed purchasing, they also increase the risk of exposure to misleading or deceptive sustainability claims (Migkos et al., 2023).

Greenwashing and its digital variants

Greenwashing occurs when companies present false or misleading information about their environmental practices or the eco-friendliness of their products (Seberíni et al., 2024). The well-known TerraChoice framework outlines "Seven Sins" of greenwashing, such as vague claims, hidden trade-offs, or irrelevant environmental messaging (Nemes et al., 2022). In the digital age, these deceptive practices have taken on new forms that are harder to detect and spread more rapidly (Ayar, 2024). Examples include influencer misrepresentation, where paid endorsements promote products as sustainable without proof; the use of false or unverified eco-labels on e-commerce platforms; misleading visuals in social media ads that imply environmental benefits without evidence; and targeted green advertising, where algorithms push unsubstantiated claims to consumers identified as eco-conscious (Baltezarevic, 2023; Coman et al., 2025). These digital forms of greenwashing can damage trust not only in specific brands but also in sustainability marketing as a whole, making it harder for genuinely eco-friendly companies to stand out (Bateman & Jackson, 2024).

Consumer skepticism and trust

Consumer skepticism is the tendency to doubt the truthfulness of marketing claims and can act as a protective mechanism against deceptive messages (Khoirina et al., 2025). While moderate skepticism can encourage more critical thinking and informed decision-making, excessive skepticism can cause consumers to dismiss even legitimate sustainability claims (Urbański & Ul Haque, 2020). Trust, on the other hand, is the belief in the honesty, integrity, and reliability of a brand and it plays a key role in connecting marketing messages with sustainable purchasing behavior (Monfort et al., 2025). Without trust, even truly green products may fail to attract consumers (Handoyo, 2024). Three main theories help explain how skepticism and trust work in this context. Signaling theory suggests that credible sustainability claims act as costly signals that are difficult to fake, meaning false claims weaken their value (Vangeli et al., 2023). Attribution theory looks at whether consumers believe a company's environmental actions are motivated by genuine concern or profit-seeking (van Prooijen et al., 2021). The elaboration likelihood model (ELM) explains that people process marketing messages either through deep evaluation (central route) or through surface cues (peripheral route), with skepticism influencing which path they take (Kumar & Khanna, 2022).

Literature Review

Recognition and perception of digital greenwashing

Consumers differ in their ability to detect digital greenwashing. Fella & Bausa, (2024) found that people often fail to spot misleading claims unless prompted to think critically, but activating a "greenwashed product" mindset improves detection. Perceptions of greenwashing can also damage behavior: Sun & Shi, (2022) showed that it creates feelings of betrayal, reducing purchase intentions, especially among environmentally responsible consumers. Tu et al., (2024) found that clear communication, authentic engagement, and visible values reduce greenwashing perceptions and strengthen a brand's green image. On social media, Fang, (2024) reported that while perceived authenticity encourages purchases, skepticism

about greenwashing may not always stop consumers from acting on influencer-driven messages. Overall, recognition is shaped by awareness, communication strategies, and media context, with skepticism playing a mixed role in actual behavior.

Impact on consumer skepticism and trust

Green skepticism influences trust and purchase behavior in mixed ways. (Widjaja et al., 2024) found it can increase green purchase intentions when paired with trust and environmental concern, though price sensitivity reduces this effect. Other studies (Albayrak et al., 2011; Kreczmańska-Gigol & Gigol, 2022) show high skepticism often lowers perceived consumer effectiveness, concern, and willingness to pay for eco-friendly products, especially when caused by greenwashing. (Y. Zhang et al., 2025) note that post-purchase disclosure of credible green attributes can ease doubts and rebuild trust. Overall, skepticism can protect against false claims but, if persistent, undermines trust, making transparency vital for green brands.

Effects on sustainable consumption intentions

Green marketing, environmental attitudes, and consumption values strongly influence sustainable consumption intentions. Neiba & Singh, (2024) found that green advertising, word of mouth, eco-labeling, and product attributes significantly boost organic purchase intentions, especially when supported by emotional and functional value. Ogiemwonyi et al., (2023) reported that environmental attitude mediates the effects of awareness, concern, and responsibility on green purchase behavior, highlighting the role of positive attitudes in turning awareness into action. Chen et al., (2024) cautioned that strong green purchase intentions may lead to "compensatory consumption" if not reinforced by consistent pro-environmental behavior. Among younger consumers, Ali et al., (2023) showed that social media, eco-branding, and eco-labeling shape green consumption intentions and support a shift toward sustainable habits. Amin & Tarun, (2021) emphasized that emotional value and green trust are the strongest predictors of intention, while Nekmahmud et al., (2022) confirmed that environmental attitudes, knowledge, and perceived control significantly drive intentions across cultures. Together, these findings suggest that sustainable consumption intentions depend on credible marketing, emotional engagement, and sustained trust, supported by both individual values and social influences.

Moderating and mediating variables

Multiple studies show that green purchasing behavior is shaped by both mediating and moderating influences. Afridi et al., (2021) found that generative concern for future generations positively affects green purchasing, and this link strengthens when consumers have a strong man–nature orientation and high perceived behavioral control. Novela et al., (2025) identified environmental attitude as a key mediator between interpersonal influence, altruism, environmental knowledge, and green purchasing, particularly among younger consumers.

Other studies highlight contextual moderators. Jan et al., (2019) showed that government support and media exposure strengthen the impact of safety values on green buying attitudes. Naaman et al., (2025) found that perceived consumer effectiveness mediates the relationship between consumer spirituality and purchase intentions, with subjective norms acting as a moderator. Woo et al., (2025) demonstrated that retailer green investments can strengthen the intention–behavior link, while Wang et al., (2022) showed that green trust moderates the effect of green brand positioning and customer value on purchase intention.

In apparel consumption, Pandey & Yadav, (2023) found that consumer involvement mediates the relationship between attitude and intention, with generation (Z & Y) moderating the strength of this link. Overall, evidence suggests that personal values, attitudes, trust, institutional factors, and demographic characteristics all influence how green purchase intentions translate into sustainable consumption behavior.

Countermeasures and regulatory approaches

Addressing greenwashing requires a combination of regulatory, organizational, and behavioral strategies. Systematic reviews (Yusoff et al., 2023) emphasize that consumer behavior drivers such as motivation, perception, and environmental knowledge must be paired with stronger policy frameworks to guide sustainable purchasing. Supply chain research shows that greenwashing weakens integration with sustainability initiatives, but information sharing between partners can mitigate this effect and improve sustainability performance (Santos et al., 2024).

Evidence from procurement contexts indicates that even experienced managers struggle to distinguish false claims from certified products, underscoring the need for standardized certification systems and improved decision-making tools (Khan & Hinterhuber, 2025). Regulatory modeling in China suggests that a mix of incentives, penalties, and accountability mechanisms can deter both corporate greenwashing and collusion with third-party certifiers (Zhang et al., 2022).

From the consumer perspective, raising greenwashing awareness reduces confusion and increases the likelihood of choosing genuinely sustainable products Apostolopoulos et al., (2025). Globally, Mulenga et al., (2025) propose integrating behavioral economics with regulation to address industry-specific risks, while Sneideriene & Legenzova, (2025) stress the development of prevention tools and assurance standards for ESG disclosures to protect reporting credibility.

Together, these findings suggest that effective countermeasures involve not only legal enforcement but also clear communication, verified certifications, transparent supply chains, and consumer education to reduce susceptibility to misleading sustainability claims.

Synthesis and Discussion

The literature on digital greenwashing, consumer skepticism, trust, and sustainable consumption reveals a complex set of interactions between marketing strategies, consumer psychology, and regulatory environments. Three main themes emerge: the central role of trust, the dual nature of skepticism, and the importance of credible communication supported by systemic safeguards.

First, trust is the critical link between green marketing and sustainable consumption. Studies consistently show that verified claims through credible eco-labels, transparent supply chains, and post-purchase disclosures strengthen trust and increase purchase intentions (Tu et al., 2024; Y. Zhang et al., 2024). Conversely, perceptions of greenwashing quickly erode trust and can override prior positive brand associations (Sun & Shi, 2022). This dynamic is consistent with the Theory of Planned Behavior (Ajzen, 1991), where trust functions as a belief component shaping attitudes and perceived behavioral control.

Second, consumer skepticism acts both as a protective mechanism and a potential barrier. Moderate skepticism encourages deeper evaluation of sustainability claims, particularly important in digital contexts where information is abundant but uneven in quality (Widjaja et al., 2024). However, persistent skepticism caused by repeated exposure to greenwashing can lead to "green fatigue," reducing engagement even with authentic brands (Rana et al., 2025). This reflects Attribution Theory (Kelley, 1973) and the Elaboration Likelihood Model (Petty & Cacioppo, 1986), where skepticism influences the depth of message processing.

Third, communication quality and authenticity remain decisive. Clear, consistent, and values-driven messaging reduces perceptions of greenwashing, while influencer credibility and algorithm-driven targeting in digital spaces can amplify or undermine authenticity (Hossain et al., 2025). The literature indicates that adapting traditional green marketing to the transparency demands of online environments is vital for success.

Contextual moderators and mediators including generativity, environmental attitudes, consumer involvement, retailer green investments, and generational differences affect how intentions translate into behavior (Afridi et al., 2021; Novela et al., 2025; Pandey & Yadav, 2023). Mediators such as environmental attitude and perceived consumer effectiveness are especially important, suggesting that even strong

purchase intentions may not lead to behavior unless the right psychological and situational conditions are met (Naaman et al., 2025; Ogiemwonyi et al., 2023).

From a governance standpoint, the literature is clear: market forces alone cannot prevent digital greenwashing. Effective countermeasures require standardized certification systems, ESG assurance frameworks, stricter enforcement, and information-sharing within supply chains (Khan & Hinterhuber, 2025; Ogiemwonyi et al., 2023). Consumer education and awareness-building also emerge as essential tools to reduce susceptibility to deceptive claims (Apostolopoulos et al., 2025).

Despite these insights, several gaps remain in the current literature. Most studies still focus on traditional greenwashing, with limited investigation into digital-specific mechanisms such as influencer-driven marketing, platform algorithms, and user-generated reviews. There is also little understanding of the long-term effects of repeated exposure to greenwashing on trust, skepticism, and consumer behavior. Research is heavily concentrated in Asia and Europe, with minimal cross-cultural comparisons. Moreover, few studies empirically test which regulatory, certification, or communication interventions are most effective in countering digital greenwashing. While generational and value-based differences are recognized, there is limited exploration of how personality traits, environmental identity, or digital literacy influence vulnerability to deceptive green claims.

Overall, the literature suggests a dual approach building trust through transparent and verifiable communication while embedding systemic safeguards to reduce greenwashing's prevalence and impact. Addressing these gaps would help researchers and practitioners design interventions that are effective in specific contexts and scalable across diverse markets and cultures.

Practical and Policy Implications

The findings of this review highlight the need for marketers, policymakers, and regulators to adopt a dual strategy in addressing digital greenwashing. For practitioners, transparent and verifiable communication supported by credible eco-labels, third-party certifications, and post-purchase disclosures should be prioritized to build consumer trust and reduce harmful skepticism. Brands must adapt their green marketing to the digital environment by ensuring influencer credibility, consistent messaging, and active consumer engagement. For policymakers, standardizing certification systems, enforcing stricter penalties for false claims, and introducing ESG reporting assurance frameworks are essential to safeguard market integrity. Public awareness campaigns and consumer education programs can further equip individuals to identify misleading claims, creating a marketplace where authentic sustainability efforts are rewarded and deceptive practices are penalized.

Conclusion

This review has examined the interplay between digital greenwashing, consumer skepticism, trust, and sustainable consumption behavior, highlighting both the challenges and opportunities in fostering genuine sustainability in the marketplace. The evidence shows that while trust is a critical driver of green purchasing, it is highly vulnerable to erosion when consumers perceive deceptive claims. Skepticism can serve as both a safeguard and a barrier, depending on how it is shaped by communication quality, contextual factors, and repeated exposure to greenwashing.

The findings point to a dual approach for advancing sustainable consumption: building consumer confidence through transparent, verifiable, and value-driven communication, and embedding systemic safeguards through regulation, certification, and education to limit the prevalence of deceptive practices. Addressing the identified research gaps particularly in digital-specific mechanisms, cross-cultural contexts, and intervention testing will be vital for developing strategies that are both effective and scalable. Ultimately, reducing greenwashing and enhancing consumer trust are essential for aligning market practices with global sustainability goals.

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