

The Greenwashing Dilemma in Green Cosmetics: How Environmental Claims Shape Consumer Perception and Brand Credibility

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ABSTRACT

With the fast-changing nature of the green cosmetics industry, an increasing number of products have become available, but it has become harder for customers to tell the difference between eco-friendly products and greenwashing because of the rise in greenwashing. This only adds to customer confusion, mistrust and concerns about brand legitimacy. The current study looks at how consumers view greenwashing and how it affects the trustworthiness of brands in the green cosmetics sector. Data obtained from 420 cosmetic customers were analyzed using quantitative survey method: descriptive statistics, exploratory factor analysis (EFA), independent sample t-tests and one-way ANOVA. The study aims to investigate consumer demographic differences and pinpoint the fundamental aspects of perceptions of greenwashing.

The results indicate that, before buying, the customers are actively evaluating both the truthfulness of the environmental claims and they are increasingly aware of the greening of the marketing. Four factors were revealed: Green product believes and mindfulness, shopper activism, transparency orientation, and environmental values and moral backing. When combined, these variables accounted for 72.31% of the variance. Also, the results reveal that transparency, authenticity, and credible sustainability communication are important factors in creating consumer trust and evaluations of brands. The findings of this study contribute to the growing knowledge about green marketing and consumer behavior by providing empirical evidence of the complex perceptions of greenwashing. Specifically, the study contributes to the literature in two ways: First, it demonstrates a four factor structure of consumers' attitudes towards greenwashing; Second, it provides consumers' attitudes towards greenwashing in the context of the four factors. They also offer valuable insights for cosmetics companies seeking to enhance their brand's reputation by actively and responsibly engaging with consumers about the environment.

Keywords *Greenwashing, green cosmetics, consumer perception, brand credibility, consumer skepticism, environmental values, and sustainability communication*

INTRODUCTION:

The rise of environmental awareness and the growing concerns of sustainable consumption have greatly altered consumer habits in various industries. There has been a significant increase in the demand for environmental-friendly, natural, non-cruelty and ethically produced cosmetics in particular (Dangelico & Vocalelli, 2017). To counter this trend, numerous cosmetic companies have adopted "green marketing" strategies, aiming to establish themselves as green companies. Such programs can foster positive brand perception and encourage sustainable consumption, but they have also been associated with greenwashing.

Greenwashing is the practice of overstating, falsifying or selectively releasing environmental information to project a picture of the company's sustainability performance that is not necessarily true (Delmas & Burbano, 2011; Lyon & Montgomery, 2015). With consumers becoming more reliant on environmental claims, eco-labels and sustainability certificates in their purchasing decisions,

misinformation in environmental communication can cause confusion and distrust of the trustworthiness of green products and brands (Chen & Chang, 2013; Torelli et al., 2020).

The question is especially important in the green cosmetic sector, for which the consumers seldom have the technical expertise to evaluate the sources of the ingredients, how they are produced and the environmental impacts. As a result, they rely on a lot of corporate sustainability communication to evaluate the authenticity of the products and the work of environmental responsibility (Koszewska 2018). Therefore, misleading environmental claims can have negative impacts on consumer trust and brand credibility, and on brand-consumer relationships over time (Chen, 2010; Nguyen et al., 2020).

However, recent research has shown that greenwashing has adverse impacts on consumer attitudes, doubt about environmental claims, and trust in such claims (Nyilasy et al., 2014; Rahman et al., 2015; Pérez et al., 2024). Moreover, transparency, accountability, and verifiable sustainability information are increasingly becoming the

key expectations of consumers before they can trust brands positioned on sustainability (Parguel et al., 2011; Sung & Kim, 2022). The literature also indicates that greenwashing undermines the sustainable marketing practices by leading to expectation disconfirmation, consumer confusion, and weaker brand-consumer relationship (Daou et al., 2025).

2. Literature Review

As people become more aware of sustainability issues around the world, the market for eco-friendly cosmetic products is growing rapidly, which is a reason for adopting green marketing strategies by companies. Singh (2025) In terms of definition, Green marketing can be defined as a value creation and value delivery through the product with respect to the needs of the consumers and minimizes the environmental impact (Dangelico & Vocalelli, 2017). Green marketing can contribute to image building and to sustainable consumption, but, when not used properly, can generate consumer suspicions about the credibility of the product and even lead to an erosion of consumer trust (Pomeroy, 2017).

Greenwashing is the practice of making false or deceptive claims about a product or business that is sold as being environmentally friendly, but which is not (Delmas & Burbano, 2011). Organizations can manipulate consumers' green values by overpromising in terms of sustainability results or by selectively reporting environmental information (Lyon & Montgomery, 2015). Consequently, consumers may struggle to differentiate real sustainable products from the ones that have been presented as 'environmental' products, causing confusion and uncertainty (Chen & Chang, 2013).

Additionally, the lack of common definitions for environmental claims and eco-labels makes consumer evaluation processes more complicated (Koszevska, 2018). As a result, consumers often use the corporate sustainability communication as an indicator for products and brands. Trust is a key component of green brand equity, and misleading environmental information can have a profound impact on consumers' trust and brand reputation (Chen, 2010).

Previous research consistently found that greenwashing has a negative impact on consumer attitudes and brand evaluations. Consumers' perception of greenwashing leads to consumer doubts and doubts regarding the effectiveness of environmental marketing claims (Nyilasy et al., 2014). Likewise, false environmental communication can lead to the disappointment and frustration of consumers, leading to a decrease in a brand's credibility and purchasing intent (Rahman et al., 2015). Additionally, it has been shown that greenwashing can negatively impact consumers' understandings of sustainable brands and reduce the potential for long-term brand-consumer relationships (Nguyen et al., 2020; Pérez et al., 2024).

Consumer awareness and environmental knowledge contribute to the assessment of sustainability claims. People with high EE have a better ability to understand environmental information and make informed buying decisions (Aman et al., 2012). But when green marketing is overused or misapplied, it can undermine the power of

environmental appeals, growing consumer doubt about them increases (Lin & Chang, 2012; Akturan, 2018). Research has also indicated that consumers are increasingly demanding transparency, accountability and verifiable sustainability information before they trust brands that have been positioned in the sustainability category (Parguel et al., 2011; Torelli et al., 2020).

Greenwashing is of special concern in the cosmetics field since consumers usually don't have the expertise to assess ingredient sourcing, manufacturing processes, environmental impacts, etc. This opens up possibilities for companies to make false or misleading claims that they may not be able to substantiate. Basheer (2025) If sustainability communication is not backed by real sustainability actions, it can eventually be seen as deception and can reduce the trustworthiness of sustainable marketing initiatives, as Peattie and Crane (2005) argue. The concerns of consumers around the authenticity of sustainability communication have also increased in emerging markets, such as India, as recent studies have shown (Khattri & Tomar, 2024; Nag & Shailesh, 2025).

The literature suggests that greenwashing leads to in general consumer confusion, scepticism and loss of trust in environmental claims. Sustainability communication has the potential to increase the credibility and trust of brands, and also to facilitate sustainable consumption, but at the same time, when communication is misleading, it can reduce consumer's trust in brands, and even damage their relationship (Sung & Kim, 2022; Vilkaitė-Vaitonė, 2024). Recent studies have also revealed that greenwashing leads to expectation disconfirmation, consumer confusion and poorer brand/customer relations, which reduces the impact of sustainable marketing activities (Daou et al., 2025). The results as a whole support the need to delve into the dimensions that underlie perceptions of the green cosmetics industry greenwashing Hodge (2025).

Research Gap

The growing body of literature on green marketing and sustainability communication has extensively examined the influence of environmental claims on consumer trust, purchase intention, brand attitude, and green buying behaviour. Previous studies have established that misleading environmental claims can generate consumer skepticism, reduce trust in green brands, and negatively affect purchasing decisions. However, much of the existing research has focused on the consequences of greenwashing rather than exploring the underlying dimensions that shape consumers' perceptions of greenwashing itself.

Furthermore, studies investigating greenwashing have largely been conducted in sectors such as food products, hospitality, textiles, and general consumer goods, while empirical evidence from the green cosmetics industry remains relatively limited. The cosmetics sector presents a unique context because consumers often lack the technical knowledge required to independently verify ingredient sourcing, production practices, environmental impact, and sustainability claims. Consequently, consumers rely heavily on brand communication and

environmental information provided by companies when evaluating product authenticity.

In addition, existing studies have primarily concentrated on developed economies, with comparatively fewer investigations conducted in emerging markets such as India, where environmental awareness, sustainable consumption patterns, and green purchasing behaviour are evolving rapidly. The extent to which Indian consumers interpret, evaluate, and respond to greenwashing practices in the cosmetics industry remains insufficiently explored.

Another important limitation in the literature is the lack of research examining the multidimensional nature of greenwashing perceptions. While previous studies have assessed variables such as trust, skepticism, and purchase intention independently, limited attention has been given to identifying the underlying factors that collectively influence consumers' perceptions of greenwashing and their subsequent evaluation of brand credibility.

Therefore, the present study seeks to address these gaps by identifying and examining the key dimensions underlying consumers' perceptions of greenwashing in the green cosmetics industry and by providing empirical evidence from the Indian consumer context. The study contributes to the literature by offering a deeper understanding of how environmental awareness, transparency expectations, consumer activism, skepticism, and ethical values collectively shape perceptions of greenwashing and influence brand credibility..

Research Objective

To identify and examine the underlying dimensions reflecting consumers' perceptions of greenwashing in the green cosmetics industry.

H0₁: There are no significant underlying factors reflecting the greenwashing nature of cosmetic products.

H1₁: Significant underlying factors exist that reflect the greenwashing nature of cosmetic products

3. Research Methodology

3.1 Research Design

The present study adopts a quantitative, descriptive, and cross-sectional research design to investigate consumers' perceptions of greenwashing in the green cosmetics industry. The study seeks to identify the underlying dimensions associated with greenwashing perceptions and examine whether these perceptions vary across different demographic groups. A survey-based approach was considered appropriate as it facilitates the collection of standardized responses from a large number of consumers and enables statistical analysis of their attitudes and perceptions.

3.2 Population and Sampling

The target population for this study comprised consumers who regularly purchase and use cosmetic products marketed with environmental or sustainability-related

claims. Since the complete population frame was not readily available, a non-probability convenience sampling technique was employed to collect responses from accessible consumers.

A total of 450 questionnaires were distributed through both online and offline modes. After screening for incomplete and inconsistent responses, 420 valid questionnaires were retained for final analysis. The sample size was considered adequate for Exploratory Factor Analysis (EFA), as previous methodological studies recommend a minimum sample size of 300 respondents and a respondent-to-item ratio exceeding 10:1 for reliable factor extraction.

3.3 Data Collection Procedure

Primary data were collected using a structured questionnaire developed based on an extensive review of literature related to green marketing, greenwashing, consumer skepticism, environmental values, transparency orientation, and brand credibility. Respondents were informed about the academic purpose of the study and their participation was voluntary. Confidentiality and anonymity of responses were ensured throughout the data collection process.

The questionnaire was administered through online survey platforms and direct distribution among cosmetic consumers in selected urban areas. Data collection was conducted over a period of three months.

3.3 Measurement of Variables

The questionnaire consisted of statements measured on a four-point Likert scale ranging from 1 = Strongly Disagree to 4 = Strongly Agree. The study incorporated variables associated with consumer perceptions of greenwashing and environmental marketing claims. The major dimensions investigated included:

Green Product Beliefs ,Greenwashing Awareness ,Consumer Skepticism, Purchase Evaluation, Brand Credibility Perception, Environmental Values, Transparency Orientation, Consumer Activism

These variables were selected based on their relevance in existing green marketing and consumer behavior literature.

3.4 Statistical Tools Used

Data analysis was conducted using the Statistical Package for Social Sciences (SPSS). Descriptive statistics were used to summarize consumer perceptions of green cosmetics and environmental claims. Exploratory Factor Analysis (EFA) with Principal Component Analysis and Varimax Rotation identified the underlying dimensions of greenwashing perceptions. Kaiser-Meyer-Olkin (KMO) Measure of Sampling Adequacy and Bartlett's Test of Sphericity were used to assess data suitability for factor analysis. Further, Independent Sample t-tests and One-Way Analysis of Variance (ANOVA) were also used to determine the difference in the perceptions of greenwashing across gender, age, education, occupation and income segments.

4. Results and Discussion

4.1 Descriptive Statistics

The descriptive analysis revealed generally positive attitudes toward environmentally friendly cosmetic products, accompanied by cautious evaluation of sustainability claims. Consumers expressed strong support for environmentally responsible companies and preferred brands that provide transparent environmental information. At the same time, respondents demonstrated substantial awareness of greenwashing practices and reported skepticism toward brands suspected of misleading environmental communication.

These findings indicate that consumers increasingly scrutinize sustainability claims and demand greater transparency and authenticity from cosmetic brands.

4.2 Exploratory Factor Analysis

The Kaiser Meyer Olkin (KMO) value was 0.928, and the Bartlett's Test of Sphericity ($\chi^2 = 8287.668$, $p < 0.001$) were both statistically significant, showing the data set to be suitable for factor analysis. The results established the appropriateness of applying Exploratory Factor Analysis (EFA).

Reliability Statistics

Cronbach's Alpha	Cronbach's Alpha Based on Standardized Items	N of Items
.963	.964	22

KMO and Bartlett's Test			
Kaiser-Meyer-Olkin Measure of Sampling Adequacy.		of	.928
Bartlett's Test of Sphericity	Approx. Square	Chi-	8287.668
	df		231
	Sig.		.000

Using Principal Component Analysis with Varimax Rotation, four factors with eigenvalues greater than one were extracted, collectively explaining 72.31% of the total variance. The extracted factors and their variance contributions are presented in Table 1.

Table 1. Extracted Factors and Variance Explained

Factor	Description	No of Items	Eigen Value
Factor 1	Green Product Beliefs and Awareness	8	5.182
Factor 2	Consumer Activism and Transparency Orientation	4	2.833

Factor 3	Purchase Evaluation and Skepticism	6	3.923
Factor 4	Environmental Values and Ethical Support	5	3.281

4.3 Factor Interpretation and Hypothesis Testing

Factor 1 encompasses consumers' environmental beliefs, awareness of greenwashing, recognition of misleading claims, and trust in environmental communication.

Factor 2 represents consumer activism, information sharing, transparency expectations, and brand-switching behavior in response to deceptive practices.

Factor 3 captures skepticism toward environmental claims and its impact on product evaluation and purchase decisions.

Factor 4 reflects environmental responsibility, ethical consumption values, support for transparent brands, and information-seeking behavior.

The identification of these four distinct dimensions confirms that consumer perceptions of greenwashing are multidimensional. Consequently, the null hypothesis (H_{01}) was rejected, and the alternative hypothesis (H_{11}) was accepted, indicating the presence of significant underlying factors that characterize greenwashing in cosmetic products.

4.4 Demographic Differences in Greenwashing Perceptions

Demographic variations across the extracted factors were analyzed using Independent Sample t-tests and One-Way ANOVA. The results are detailed in Table 2.

Table 2. Summary of Demographic Differences

Demographic Variable	Test Conducted	Significant Factors
Gender	Student's t Test	Factor 1 and Factor 4
Age	ANOVA	Factor 1, Factor 2, Factor 4
Occupation	ANOVA	Factor 1, Factor 2, Factor 3, Factor 4
Education	ANOVA	Factor 1, Factor 2, Factor 4
Income	ANOVA	Factor 1, Factor 2, Factor 3, Factor 4

4.4 Results & Discussions

The results show that there are significant differences in perceptions of greenwashing by demographic groups. Age, education, occupation, and earnings had an impact on factors like environmental awareness, transparency expectations, consumer activism, and ethical values.

Higher education and environmental awareness led to greater sensitivity towards misleading environmental claims and to greater acceptance of transparent sustainability communication.

The findings show that greenwashing has several facets in affecting consumer perceptions, which are awareness, skepticism, activism, transparency orientation, and environmental values. Resembling the findings from Nyilasy et al. (2014), these results indicate that misinformation about the environment creates a sense of consumer skepticism and negative attitudes towards green products. Likewise, they back up Chen and Chang (2013), who found that greenwashing leads to consumer confusion, and a loss of trust in green brands.

The identified dimensions are also in line with the findings of Torelli et al. (2020) who identified an increased interest in environmental communication by stakeholders, on the part of whom there is growing pressure for transparency and accountability. Moreover, the focus on environmental values and transparency orientation is in line with Aman et al. (2012) who highlighted that environmental awareness is a key factor in affecting consumer judgments and buying decisions.

In conclusion, the study's results confirm the importance of transparency, credibility, and ethical environmental communication for developing consumer trust and improving brand credibility in the green cosmetics sector. Companies that have accurate, verifiable and transparent sustainability data have a greater chance of building sustainable trust and winning a competitive advantage in ecologically aware markets.

5. Conclusion and Implications

This paper explored consumers' attitudes towards greenwashed products as well their effect on brands within the eco-friendly beauty sector. The findings reveal an increase among customers' awareness about green marketing as well a critical evaluation on whether sustainable products really exist prior to buying.

Four factors were extracted from Exploratory factor analysis to explain greenwash beliefs and attitudes.

1. Belief in Green products and knowledge about them.
2. Consumers' activism, transparency orientation.
3. Environmental Values and Ethical Support
4. Environmentalist beliefs and moral assistance.

These factors together accounted for 72.31 % of the total variance and confirmed that there are several dimensions to consumers' perception of greenwashing.

Untruthful marketing about environment led consumers' distrust towards brands whereas honest information contributed positively toward their confidence as well as reputation of these companies. In theory this research contributes to both green marketing as well as consumers' behaviour studies through highlighting how there is more than just perception of 'green washing'.

Together, these factors influence customers' perceptions of environmental sustainability statements as well as beauty products companies'. From a managerial point of

view, these results highlight an urgent requirement to promote genuine and open sustainable messaging. Companies that market cosmetics need to provide proof for their green assertions through authentic certification schemes as well as quantified results of sustainable practices they follow. Open disclosure about green programs matters a lot for gaining consumers' confidence as well maintaining company's reputation; it also helps build loyal customers base over time.

Population factors concerning attitudes toward greening may be explained by specific marketing approaches to various market niches and consumers' groups. Concerns are that it is a research of green cosmetics industry which may not be applicable for all industries due to its scope limitation. Representativeness can be affected by convenience sampling, and there is a risk of bias due to self-reporting.

Cross sectional designs do not allow us to see how people's attitudes change from year-to-year, for example. Further studies can be conducted on various industries like foods, clothes, cosmetics & house hold products for better applicability. Longitudinal and cross-cultural studies could deepen understanding of evolving consumer responses to environmental marketing and greenwashing across diverse contexts.

Lateral as well longitudinal researches can help understand changing customer reactions towards eco-marketing, greenwash etc. at various levels/contexts globally. In general, this research highlights how important it is to be transparent accountable as well honest when operating a business within organic skincare products industry

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