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Decoding Green Claims: A Sentiment and Visual Analysis of Eco-Advertising by Indian Corporations on Instagram

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ABSTRACT

As businesses emphasize environmental accountability, advertising has developed into a strategic tool for developing green marketing (Li, 2025; Ktisti et al., 2022). As public concerns about pollution, climate change, and resource depletion grow, consumers are calling for transparency and ecological consciousness (Rana & Rana, 2024). As a result, businesses purposefully promote eco-friendly themes, particularly on social media. Basic values are often highlighted, including cutting carbon emissions, ethical purchasing, conservation, and sustainable development (Nekmahmud et al., 2022). Businesses can bolster their environmental story and fulfill a green claim—the argument that their actions or products significantly improve environmental well-being—by utilizing eco-centric language and images (Zervoudi et al., 2025). When proven true, these assertions gain credibility and strike a deep chord with ethical buyers.

This study will look at the top 10 Indian companies' green advertisement postings on Instagram between 2024 and 2025, concentrating on those with the largest CSR spending in FY 2022–2023, from a variety of perspectives, according to the Forbes India report published on January 27, 2025. It seeks to pinpoint the most prevalent verbal and visual components - such as eco-claims, tone, hashtags, and imagery - used in ads with a green theme. The study examines how these strategies have changed in several industries, including banking, technology, fashion, energy, automotive, and fast-moving consumer goods. It assesses whether the social media posts support the firm's stated sustainability and corporate social responsibility objectives. Along with sector-specific differences, it also examines the level of user interaction these posts receive in terms of likes, shares, and comments. In order to better understand the emotional tone and themes in user responses, such as accusations of greenwashing, scepticism, or positive reception, sentiment analysis is employed in the study. In order to fully evaluate the effectiveness and validity of green advertising in India's online public arena, the study's ultimate purpose is to comprehend how Indian consumers view and react to eco-centric branding.

Instagram, which Statista (2023) has identified as one of the most prominent marketing platforms, is chosen for primary data collection due to its visual focus and growing relevance in brand communication. This mixed-methods approach provides valuable insights into the evolution of green advertising in India's digital public realm. With a particular emphasis on India's distinct socio-environmental context, it expands upon the paradigm developed by Kwon et al. (2023).

Introduction

Businesses are facing increasing social and environmental issues; hence, advertising has been changed a great deal in the last few years and it is now a tactical tool for promoting green marketing (Agarwal et al., 2025). The increasing awareness among consumers on issues such

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as pollution, climate change and resource depletion has made corporate ecological responsibility an important part of a company's identity (Forbes India, 2025; Li, 2025; Ktisti et al., 2022; Rana & Rana, 2024). Consumer expectations have changed as a result of this paradigm shift, particularly among younger generations like Millennials and Generation Z, who place a high value on businesses' openness, sincerity, and bold sustainability pledges (Lee & Riffe, 2019; Nekmahmud et al., 2022). According to Zervoudi et al. (2025), advertising in this context provides a platform for businesses to successfully communicate their environmental ideals, initiatives, and reliable green claims—statements that goods or services considerably improve the environment. It is more than just product promotion.

The growth of social media has greatly expanded the reach and impact of green advertising; Instagram is a particularly powerful medium due to its vast user base, interactive and visual nature, and storytelling ability (Statista, 2023; Pittman & Li, 2025). From banking to technology, fast-moving consumer goods to automotive, India's brands are actively engaging with and attracting an eco-conscious audience via Instagram, launching eco-friendly advertising campaigns across these industries. They leverage on eye-catching images, relevant hashtags, and substantiated environmental claims (Forbes India, 2025; Singh & Sharma, 2025). Brands can highlight important sustainability topics like carbon footprint reduction, ethical procurement, resource conservation, and long-term environmental stewardship because of Instagram's emphasis on picture and narrative. Successful green marketing is supported by these fundamental concepts (Nekmahmud et al., 2022).

Long-term engagement with green advertising and consumer trust in it are built through authenticity and transparency. The likes, shares, and comments from users can inform a lot about their thoughts or opinions. It is crucial to understand that there is enthusiasm and support, as well as accusations of greenwashing (Pittman & Li, 2025; Dahhan & Arenkov, 2025). The mixed-method sentiment analyses reveal sector-specific variances in the customer response, suggesting that businesses should supplement their sustainability statements with specific, quantifiable measures to avoid reputational damage and foster enduring loyalty (Schmuck et al., 2018). Thus, in the digital public sphere, in which brand credibility is constantly negotiated, eco-centric claims are subjected to a process of scrutiny and confirmation or denial by more conscious and watchful consumers.

Singh and Sharma (2025) argued that the rapid growth in environmental awareness is attributed to government programs such as the Swachh Bharat Abhiyan and financial incentives such as the National Action Plan on Climate Change (NAPCC) which support sustainable business practices. Indian companies leading the way in sustainability by integrating it into supply chains, energy efficiency, packaging, and product design. However, the gap between green attitudes and behaviours remains a serious concern due to price sensitivity and ongoing scepticism. Concerns about greenwashing (Himani & Kant, 2025). The younger generation is more receptive and easily swayed by relatable, moral, and authentic sustainability messages from digital influencers, making them influential in shaping consumer behavior (Himani & Kant, 2025). For instance, ITC, Tata, and Hindustan Unilever, using digital platforms to convey impact and foster consumer confidence and embedding green marketing into broader CSR and sustainability initiatives (Singh & Sharma, 2025).

Incorporating sustainability into the business values at every level, alongside third-party involvement, reporting, and ongoing stakeholder engagement, is crucial for ensuring environmental responsibility and fostering sustainable competitive advantage (Kwon et al., 2023; Singh & Sharma, 2025). Green advertising must go beyond transactional and image-oriented advertising, in terms of demonstrating innovation and accountability. Despite the challenges in terms of infrastructure, affordability and regulations, the Indian green market has tremendous potential for growth. This can help businesses make a positive difference and meet the ongoing changing needs of consumers who are becoming more aware of the environmental repercussions of the goods they consume (Himani & Kant, 2025; Singh & Sharma, 2025).

Being motivated by emerging consumer values, technological developments and innovations, as well as supportive government policies in India, green advertising is gaining popularity among the business world as the most important approach to current sustainability efforts. When combined with the engagement and interactive capabilities of Instagram, this advertising will give the opportunity to build trustworthy stories around eco-friendly products and services, and effectively market them to social and, more than ever, green-minded customers. The article, including theoretical framework and empirical data on green marketing in various fields, provides an idea of the key strategies used for engaging customers in the modern digital age. In turn, applying these strategies in promoting sustainability will increase business performance and can grow influence, loyalty and trust.

Literature review

Dominant Verbal and Visual Strategies in Green Marketing

To express environmental concerns, persuade customers, and establish a narrative of corporate responsibility,

companies use verbal and visual resources. These resources employ semiotic means, rhetorical techniques, and cognitive metaphors to bridge the gap between business practices and customers' expectations.

Visual strategies such as Peirce's semiotic signs (icon, index, and symbol) for credibility, emotion (ethos, pathos), and logic (logos) are paramount in storytelling (Chong et al., 2023). This is achieved by using the visual narrative of posing, submerging human models, sustainable products, and regenerated textiles into environmentally conscious landscapes to create an association between the company and environmentalism (Nervino et al., 2025). As explained by Nervino et al. (2025) and Yang & Sun (2025), the use of colour palette is intentional, as different hues carry environmental symbolism. For instance, green is associated with life, plants, and freshness, whereas blue is used to depict responsibility, trustworthiness, and calmness.

Diverse industries use different graphic styles to communicate their environmental values. In order to convey naturalness while avoiding thick, complex textual information, many fast-food and clothing firms employ "aestheticized simplicity," which prominently features abstract, earth-toned imagery, wooden décor, and minimalist green landscapes (Otto et al., 2022). On the other hand, companies must rely on accompanying language to give an image a "story" and create the necessary pathos to make the visual persuasive when the image lacks intrinsic affective power or emotional resonance (Chong et al., 2023).

In order to conceptualize complicated environmental challenges, brands frequently use intentional metaphors to frame business sustainability in easily identifiable realms. These include JOURNEY metaphors that describe sustainability as an ongoing "path forward," WAR metaphors that urge consumers to "combat" climate change, HUMAN metaphors that personify the environment as a friend or mother, WEALTH metaphors that frame natural entities as economic capital to be offset or invested in, and SPORTS metaphors that emphasize teamwork and winning in eco-efficiency (Yang & Sun, 2025).

Lexical options are designed with great care and properly categorized based on the way they are executed, as well as on the specific aspects they target (product, process, image, or environmental facts) (Leonidou et al., 2014). Organizations have three strategies to approach their audience: moral (ethics and rightness), emotional (fear, remorse, pride or delight), and rational (logical and statistical information about emissions or recycling). (Leonidou et al., 2014). The specificity of these verbal assertions greatly influences their believability. Substantive statements providing palpable environmental benefits that are deep and meaningful are more positively viewed (Fernando et al. 2014, Leonidou et al. 2014) There are some general and superficial words such as 'eco-friendly' and 'all natural' that a lot of companies use without providing enough evidence, and this can be considered as greenwashing (Fernando et al., 2014; Munir & Mohan, 2022; Aggarwal & Kadyan, 2014).

Execution and Presentation of Green Themes in Instagram Advertising Strategies

The green themes on Instagram are more than just an ad campaign. It has turned into a participatory ecosystem with a few particular digital tools provided by the platform. Also, partnerships with influencers and formats of the content are carefully executed and designed.

Despite Instagram being a highly visual medium, luxury and consumer brands tend to primarily build their environmental, social and governance (ESG) statements through verbal means and affordances. Many brands do not have images created with a specific focus on sustainability, so they rely on detailed captions with good old advertising campaign photos or stock photos that tell the sustainability story (Nervino et al., 2025). They are using a lot of medium-specific features like hashtags (#EarthDay, #carbonneutral) and mentions/tags (@ theglobalgoals) to weave their branding into other societal and sustainability conversations (Nervino et al., 2025).

Despite the significant increase in the number of posts on sustainability, it is a relatively small part of a brand's total Instagram communication, according to the content analysis (Luna-García et al., 2025). Unlike their non-sustainability posts, fashion companies purposefully use language that is quite positive in polarity and that is much more subjective (evaluative) when communicating about a green theme (Luna-García et al., 2025). Businesses do much to communicate their green efforts in a heartfelt and heartfelt way. Further, research on the fashion industry reveals that fashion companies can achieve significantly more interaction if sustainability messages are delivered through still photos, as opposed to videos, despite popular belief that video is the king of social media (Luna-García et al., 2025).

Using "Greenfluencers" and the SOR Model: The increasing use of SMIM by businesses to achieve their goals, especially when the business targets to promote sustainable lifestyles (Pereira et al., 2023) with the help of "greenfluencers" who are experts in promoting sustainable lifestyle. Based on the Stimulus-Organism-reaction (SOR) theory, the influencer's content is a stimulus that evokes a reaction from the consumer and produces consumer engagement (the organism); and consumer engagement promotes consumer brand loyalty (the reaction) (Zahran & Aljuhmani, 2025). Relatable and authentic stories are

used by influencers to encourage sustainable behaviours, such as slow fashion and zero-waste living (Zahran & Aljuhmani, 2025). This implementation leverages the Creation-Consumption-Contribution (C-C-C) concept, where customers are engaged in the brand's ethical story by creating user-generated content, posting their own content, and supporting sustainability programs (Zahran & Aljuhmani, 2025).

Green Signalling and Status: Through the use of green themes to appeal to Generation Z and Millennials, brands are taking advantage of "Costly Signalling Theory." Clothing is now a new status symbol that is going organic and eco-friendly ((Yeeun) Huh & Kim, 2024). Brands and influencers can use their wealth, cultural capital and PR sociality to showcase products that demand a premium price or a particular ethical manufacturing process and thereby make sustainable consumption very appealing for young consumers ((Yeeun) Huh & Kim, 2024).

Solving Algorithmic Challenges: Algorithms are difficult to show sponsored green themes in the background. Experts in the field of influencer marketing have to deal with the practice of 'shadow banning' which is likely to be a way that social media algorithms devalue organic content to coerce brands to pay for additional reach (Musiyiwa & Jacobson, 2023). However, the transparency of green marketing campaigns is sometimes concealed using formatting workarounds, such as using "ad" for algorithmic exposure and regulatory compliance (Musiyiwa & Jacobson, 2023).

Relationship Between the Tone of Corporate Posts and Sentiment in Consumer Comments

The tone of business social media posts has a significant impact on consumers' reactions – which can be good (engagement) or bad (commentation, scepticism, criticism, etc.)

The link between company tone and consumer attitude is greatly influenced by perceived hypocrisy (Fit) vs Scepticism. While traditional marketing recommends a high "fit" or congruence between a company's core business and its chosen CSR cause (Gaither & Austin, 2016), this can backfire spectacularly if the company is culpable in the issue it seeks to address. A study of Coca-Cola's CSR initiatives revealed that posts regarding water conservation and well-being (areas where the beverage industry negatively impacts society through water depletion and sugary products) generated significantly more negative, sceptical consumer comments, despite their high congruence (Gaither & Austin, 2016). On the other hand, the public's reaction to their push on women's empowerment—a low-congruence problem with no direct product culpability—was overwhelmingly positive. Overt CSR statements are perceived as opportunistic greenwashing when company practices collide with society well-being, which increases consumer scepticism (Gaither & Austin, 2016).

Greenwashing and "Tweet jacking": When a brand's tone is perceived as self-aggrandising, vague, or hypocritical, it invites aggressive consumer retaliation. Consumers readily identify the "sins of greenwashing" (such as the lesser-of-two-evils sin or the sin of fibbing) (Munir & Mohan, 2022; Aggarwal & Kadyan, 2014). This scepticism leads to digital backlash, such as "tweet jacking," where activists and consumers hijack a corporate hashtag to flood the feed with negative sentiment and expose corporate misdeeds (e.g., the hijacking of McDonald's #McDStories) (Lyon & Montgomery, 2013). Similarly, during large-scale external crises like the COVID-19 pandemic, corporate ads adopting a public-service or highly emotional tone ("We Are Here for You" or "We Are in This Together") faced enormous negative sentiment in comments, with users quickly pointing out corporate hypocrisy regarding poor employee treatment or bad customer service (Kelso & Altinay, n.d.).

Brand Responses to Uncivil Comments (Assertive vs. Sarcastic): Because brand activism tackles controversial, polarising issues, it inevitably attracts uncivil consumer comments. The tone a brand uses in its response to this incivility significantly shapes the ongoing sentiment of observing users. Research demonstrates that brands responding to consumer incivility with an assertive, polite, and explanatory tone generate a much more favourable consumer attitude than brands responding with a sarcastic tone (Batista et al., 2022). Sarcasm carries an underlying element of aggression and mockery, which generally harms the brand's social desirability and degrades the environment for productive discourse (Batista et al., 2022).

The Moderating Role of Customer Support: The customer's support for the brand's position is a critical boundary condition in the link between a sarcastic tone and unfavourable sentiment. The detrimental effects of a sarcastic, combative response are lessened if the watching customer strongly supports the brand's progressive cause (such as anti-sexism or LGBT+ rights) (Batista et al., 2022). Supporters of the cause see the rude commentator as a member of the "out-group" and understand the brand's sarcasm as a legitimate, corrective message rather than as unjustified violence (Batista et al., 2022). According to Batista et al. (2022), companies can therefore occasionally use an aggressive tone to their advantage, but only when preaching to a highly aligned, supporting in-group.

Deep Interactivity vs. Engagement Metrics: Lastly, a unique engagement profile is produced by the tone of sustainability posts. Compared to general lifestyle or fashion postings, green posts typically generate a larger ratio of comments, even though they may receive less surface-level engagements (like "likes") (Luna-García et al., 2025). These are much more subjective and evaluative,

as Luna-García et al. (2025) indicate, suggesting that sustainability-related concerns do not seem to be particularly popular, but do seem to drive more meaningful engagement and emotional response to the issues among "conscientious consumers."

Theoretical Integration and Analytical Framework

The present research combines several theoretical approaches to analyse and discuss the corporate green advertising phenomenon, from the perspective of message production and the audience response. The theories are not presented as separate, standalone explanations, but rather connected with a specific dimension to be analyzed in the context of the corporate sustainability communication.

Social Semiotics is the main theory used for analysing the meaning of the environment in relation to the use of visual and multimodal resources. Dominant colours, nature images, earth images, visual composition and the overall "green look and feel" of corporate Instagram posts, therefore, are seen as semiotic resources that are used to communicate environmental meanings (Bezemer & Cowan, 2020).

In addition to the semiotic analysis, Deliberate Metaphor Theory is used to analyze metaphorical representations in which the environmental concepts are communicated via visual or textual association. This perspective is especially applicable to representations that convey associations with brands, products, or activities of corporations and connect them to nature, ecological protection, purity, renewal, or sustainability (Pang & Li, 2023).

Legitimacy Theory and Impression Management Theory tackle the outlay of organizational function of sustainability communication. Legitimacy Theory aims to interpret environmental communication as a mechanism by which corporations seek to establish or maintain congruence between organizational activities and socially desired expectations about environmental responsibility. By contrast, Impression Management Theory facilitates an analysis of how corporations manage to build and present a desired environmental identity by selecting certain texts and visual representations (Conway et al., 2015).

At the audience-response level, the Stimulus–Organism–Response (SOR) theory helps understand how corporate communication affects the audience reaction. The environmental and visual aspects of posts on Instagram can be considered as the communicative stimuli, and response is examined through engagement indicators and sentiments expressed in comments left by the audience. Attribution Theory is also applied to analyse the audience's reaction to the company's sustainable communication strategy. This theory helps explain how the audience could perceive the company's intentions and credibility based on the information provided (Hochreiter et al., 2023).

Thus, the study will be using theoretical frameworks that are multifaceted, and each part is interconnected. Social Semiotics and Deliberate Metaphor Theory will contribute an understanding of how the environmental meaning is conceptualised within the discourse; Legitimacy Theory and Impression Management Theory will shed light on the type of goals that the environment-related discourses seek to achieve in the business sphere; and SOR and Attribution Theory allows exploring how people actually process the received information and which inferences they might make about the corporation's attitude toward the environment issues. This way, all parts of the theoretical background are interconnected and contribute to addressing the research problem.

Research Gap

- Despite extensive research on green marketing and sustainability communication across digital platforms, several key limitations persist in the field.
- Previous research acknowledges that greenwashing undermines consumer confidence and company credibility (Akepa, 2025), but little is known about the technological, linguistic, and regulatory strategies to improve transparency in social media green advertising.
- While psychological and cultural factors are starting to be considered in the study, more empirical data is needed for various markets and demographics, as consumers often talk about their environmental concerns without translating this to actual purchase decisions (Kumar, 2025; Sreen et al., 2021).
- The evaluation is based on likes, shares and short-term sales, and there are no well-developed and agreed indicators of real sustainability impact.
- While there is considerable research in the areas of green marketing tactics, CSR communication, green consumer behaviour models and the role of social media in sustainability, this research is still lagging in India. There is scarce literature available on the use of visually driven platforms such as Instagram by top Indian CSR spending companies for environmental responsibility communication
- This is essential in an environment where CSR is now a requirement and consumers are digital, and want to see tangible sustainability communications.
- There is a lack of research that focuses on the combination of the verbal and visual aspects of Instagram, especially given its multimodality by nature, compounded by issues of authenticity and greenwashing.
- Limited research on whether the corporate green statements on Instagram are consistent with the legal requirements in the Companies Act, CSR Rules, SEBI-BRSR disclosure and misleading advertisement laws with respect to green claims.

- These drawbacks highlight the need for targeted research into how leading CSR-spending Indian businesses use Instagram to promote audience-aligned, reliable, and efficient sustainable digital communication.

Research Objectives

- To identify and analyse the dominant verbal and visual strategies
- To examine how these companies execute and present green themes in their Instagram advertising strategies
- To investigate the relationship between the tone of corporate Instagram posts (captions/visuals) and the sentiment expressed in consumer comments.
- To analyse corporate green claims on Instagram using sentiment and visual methods.

Research Question

- What verbal and visual strategies do top Indian companies which spend the most on CSR use to communicate green themes on Instagram (2024–2025)?
- How do these companies execute and present green themes in their Instagram advertising strategies?
- How does the tone of corporate Instagram posts relate to the sentiment of consumer comments?

Accordingly, this study proposed the following hypothesis to address the third research question:

- H_0 (Null Hypothesis): There is no significant relationship between the tone of corporate Instagram posts and the sentiment of consumer responses.
- H_1 (Alternative Hypothesis): There is a significant relationship between the tone of corporate Instagram posts and the sentiment of consumer responses.

Significance of the study

This study is socially relevant because it discusses how social media is increasingly influencing public discourse, mobilization, and understanding of climate change through green advertising. Social media platforms have become crucial tools for disseminating information on climate change, mobilising grassroot movements, and facilitating audience engagement with sustainability messages (Schäfer, 2024).

But barriers such as the lack of even impact measurements, the persistent attitude-behaviour disconnect and greenwashing limit their effectiveness. These challenges demonstrate the need for real, transparent and measurable dialogue to drive consumer behaviour, boost climate responsibility and build trust.

Methodology

A mixed methods research approach was used for this research. Data collection was carried out using purposive sampling method to select only the Instagram posts of the major Indian companies with high CSR spending that are related to 'green'. The top 10 companies in India have been first shortlisted as part of the Forbes list of top 2000 companies in the world for 2022-2023. Of these 10 companies, eight had verified and publicly accessible Instagram profiles during the period of data collection and were therefore included in the final sample. The remaining two companies were excluded because they did not have verified and publicly accessible Instagram profiles that met the predefined inclusion criteria. Thus, the final corporate sample comprised eight companies.

All posts published between January 1, 2025, and September 1, 2025, were extracted using the Apify scraping tool. The dataset included engagement metrics such as likes, shares, and comments, in addition to textual and multimedia elements of corporate posts, including captions, photographs, videos, music, hashtags, and embedded links. The textual content of user comments was also collected.

From this dataset, posts were initially screened using the criteria of green advertising proposed by Banerjee, Gulas, and Iyer (1995). Posts containing one or more of the following sustainability-related keywords were identified: *green, climate, environment, sustainable/sustainability, eco-friendly, carbon neutral, renewable energy, recyclable/recycling,* and *organic/natural*. This filtering process resulted in a total of 1,054 posts. The keyword-based screening was subsequently supplemented by contextual assessment of the posts to ensure that the identified content was substantively related to environmental or sustainability communication rather than merely containing a sustainability-related term.

For the purpose of this study, a sustainability-related communication was considered relevant when the textual and/or visual content communicated an environmental attribute, sustainability initiative, environmental commitment, sustainable product or service characteristic, environmental action, or claimed environmental benefit. To distinguish substantive sustainability communication from potentially misleading or unsubstantiated environmental claims, the selected posts were assessed using three criteria: (i) specificity of the environmental claim, (ii) presence of supporting evidence or substantiation, and (iii) clarity of the environmental benefit or action being communicated. A specific claim was referring to a specific environmental action, target, product characteristic, certification, measurable outcome, or stated sustainability action. This supporting evidence comprised quantitative data, evidence from sustainability reports, certifications, recognised standards, documented initiatives or third-party verification. Articles that used environmental language that was not specific or detailed enough to provide supporting facts or information were also coded

Table 1:frequencies and percentages of the sample by green advertising across 2024-25

S. No.	*Company Name*	*Instagram Handle*	*Industry Sector*	*Total No. of Posts*	*Posts Accessible through Apify*	*Posts (2024–2025)*	*No. of Posts with Green Keywords in Caption*	*% of Green ad Post*
1	ONGC	@ongcofficial	Energy (Oil & Gas / Petroleum)	3325	1830	1178	387	32.85229202
2	Tata Steel	@tatasteelltd	Manufacturing / Steel & Mining	2431	1852	691	180	26.04920405
3	Reliance	@ reliancefoundation	Conglomerate (Energy, Petrochemicals, Retail, Telecom)	4209	1852	1029	241	23.42079689
4	Jio	@reliancejio	Telecommunications / Digital	3948	1848	667	3	0.4497751124
5	ITC	@itc_limited	FMCG / Agri-Business / Hotels	742	687	308	106	34.41558442
6	Reliance Digital	@reliancedigital	Retail / Consumer Electronics	7639	1852	630	3	0.4761904762
7	Infosys	@infosys	Technology / IT Services	1954	1583	910	112	12.30769231
8	ICICI Bank	@icicibank	Banking / Financial Services	1300	991	314	22	7.006369427
		Total		25548		5727	1054	136.9779047

as potentially unsubstantiated environmental claims.

Lack of third-party evaluations alone was not considered to be a sign of greenwashing practices on its own. The absence of validation, the use of vague sustainability claims, insufficient information concerning environmental benefits or the absence of supporting data, on the contrary, have been adopted as a criterion for possible greenwashing. This was done to prevent anyone concluding that one brand is greenwashing just because of the content on social media. To enhance the accuracy and transparency of the coding process, the criteria were applied to all of the selected posts.

Each selected post was analysed using visual content analysis. This allowed us to identify the presence or absence of any third-party validation, the prevalence of green "look-and-feel," dominant colours, and types of nature or earth imagery. Additionally, we performed a sentiment analysis of the post captions and selected user comment sections, thus enabling us to evaluate both corporate communication strategies and prominent audience responses.

Comment Selection and Audience Response

To examine audience responses to green advertising posts, comments associated with the selected Instagram posts were also considered. Since the objective of the comment analysis was to identify prominent audience reactions and themes rather than to estimate population-level consumer sentiment, the most highly engaged comment(s) were initially examined based on visible engagement indicators such as likes. However, recognizing that engagement-based selection may overrepresent particularly salient, supportive, critical, or controversial responses, the selected comments were treated as illustrative rather than representative of the complete audience response. Accordingly, comment-level findings were interpreted in conjunction with the overall engagement indicators of the posts, including likes, shares, and total comments. The analysis does not assume that the most-liked comment reflects the sentiment of all users who interacted with the post. Rather, it provides an indication of some of the most visible audience reactions to green advertising content.

Findings

Table 1 provides a list of frequencies and percentages of the total and the sample by different companies in the year 2024-25. Tables 2 list the frequencies and percentages of each variable across the sample of green advertising.

RQ1 addressed what verbal and visual strategies do top Indian companies which spend the most on CSR use to communicate green themes on Instagram (2024–2025). To answer this, all visuals from the selected Instagram posts were first downloaded and then manually examined.

The existence of third-party validation, the general green "look-and-feel," the predominant colours, and the kind of earth or nature imagery used were all methodically entered into a database. The basis for this research was the codebook created by Kwon et al. (2023), which directed the

Table 2: frequencies and percentages of executional framework across the sample of green

Sub- Categories		Count	(n) %
Presence of Third-Party Validation (Yes)		580	34.56495828
Overall, Green "Look-and-Feel"		1056	62.93206198
Dominant Colours	Orange	286	17.04410012
	Green	1342	79.9761621
	White	1626	96.90107271
	Blue	1343	80.03575685
	Brown	597	35.57806913
	Yellow	358	21.33492253
Type of Nature Imagery	Animals	46	2.74135876
	Trees	463	27.59237187
	Plants	330	19.66626937
	Natural Landscapes	294	17.52085816
	Flowers	115	6.853396901
	Earth Imagery	54	3.218116806
	Grass	113	6.73420739
	Mountains	2	0.1191895113
	None	482	28.72467223

classification of images into four main subcategories: Type of Nature/Earth Imagery, Overall, Green "Look-and-Feel," Dominant Colours, and Presence of Third-Party Validation.

Only a little percentage of the 1,678 Instagram photographs and videos (since a single Instagram post may contain multiple photographs and/or videos but is associated with only one caption, the 1,054 posts yielded a total of 1,678 individual photographs and videos for visual analysis) with a green theme had third-party endorsements (n = 580), according to the visual content analysis, indicating that external certifications were not frequently used to increase the legitimacy of green claims. Instead, companies placed considerable emphasis on cultivating a general green aesthetic, with 1,056 posts utilising earth tones, eco-symbols, and nature-inspired visual cues.

Green, blue, brown, yellow and orange were amongst the most prevalent colours, with green being the most commonly used to represent sustainability. As for nature and earth images, 1,196 posts contained material explicitly related to the environment, most frequently trees (n = 463), plants (n = 330), landscapes (n = 294), flowers (n = 115) and grass (n = 113). While some images included more than one natural element (such as vegetation, trees, flowers or animals), the images of animals were relatively infrequent (n = 46). It was also noteworthy that a significant proportion of posts (n = 482) did not include any explicit imagery relating to nature, suggesting that many companies used more symbolic colour schemes and textual 'ecological' claims than environmental imagery per se.

As far as verbal strategies are concerned, the best companies from India relied mainly on a set of textual "eco" claims and sustainability-related keywords, including "eco-friendly," "sustainable future," and "green living," and didn't rely on outside verified endorsements. Credibility was therefore not necessarily measured by third party validation (34%, n = 580/1678), suggesting that much of it was attributed based on self-claims.

The hashtags and descriptions frequently emphasized optimism, group responsibility, and consumer empowerment in an emotionally charged manner. This implies that rather than offering accurate, fact-based information, the verbal communication surrounding green advertising is intended primarily to arouse good feelings and trust.

Comparative and Theoretical Interpretation of Findings

The observed frequencies of colours, nature/earth imagery, third party validation, and audience sentiment represent an initial description of how corporations build and communicate environmental themes on Instagram. However, these patterns are best interpreted comparatively, between corporations and across sectors. Differences in the use of visual environmental cues were observed, which signal that the approach to sustainability communication was not uniform across industries, but rather reflective of differences in corporate identity,

sectoral characteristics, environmental exposure, and stakeholder expectations.

In terms of Social Semiotics Theory, the frequent use of green and nature-associated imagery is used since colours and pictures related to forests, leaves, nature, landscape, water, are common signs for nature, ecological responsibility, and environmental friendliness. The forest, water, leaves, landscape as elements that can be associated with nature, can be used as a metaphor for conveying the message of sustainable business practices and environmental responsibility using the theory of Deliberate Metaphor.

Third party validation can be an additional layer of interpretation in the analysis. In addition to contextual visual cues, use of external certification, endorsement or other validation methods can be used to bolster more meaningful credibility cues. This subtlety applies to the Costly Signalling Theory and it is that there may be verbal or non-verbal commitments, but they must be followed up by a deed. However, lack of third-party recognition should not necessarily be treated as a red flag to a company's sustainability claims, but should be considered in light of the nature and extent of their support.

The results are discussed with the help of the theories of Legitimacy Theory and Impression Management. Corporations appeal to the environmental values trying to create and maintain a certain image of being 'environmentally friendly' and to satisfy the increasing demand of the society for a sustainable development. So, not only can green visual elements serve as an informative tool, but can also play a role in corporate impression management through sustainability stories.

Alternative perspectives of the reception of this communication are audience sentiment and engagement. The two elements of sustainability posts can be viewed from an SOR perspective as stimuli, while engagement and sentiment are considered to be responses to the stimuli. In addition, Attribution Theory can be applied to the comprehension of the reaction of its audience towards sustainability posts in particular the perceived motives behind corporate sustainability communication. With this in mind, the results should be read in terms of the response of the audience and not in terms of the perceptions of the audience, nor their possible reverse causality.

Overall, the findings indicate that corporate green advertising on Instagram is effective in the form of symbolic visual representations, construction of corporate identities, cues for trust and audience response. From this comparative analysis it can be concluded, therefore, that the frequency distributions are not sufficient to grasp the meaning and potential effectiveness of sustainability communication.

Companies focused on designing a visually appealing green "look-and-feel" (n = 1056), featuring delicate colour palettes, simple shapes, and aesthetically pleasing composition. Rather than framing sustainability as a technical or activist issue, companies have chosen to depict it as a lifestyle ideal. Taken together, the actions suggest that companies preferred symbolic and artistic representation to information transfer, signifying that they place more value on visual appeal and emotion than on accountability or transparency in CSR branding on Instagram.

These companies' green-themed Instagram advertising practices were found to be visually sophisticated, brand-focused, and lifestyle-driven when executing and presenting the information. In contrast to using overt activist/protest imagery, CSR budgets appear to focus on professional aesthetics with eco-symbology thoughtfully built into the branding. Through embedding sustainability narratives into more general themes of community participation, product innovation or eco-conscious behaviours, the execution style is consistent with corporate storytelling.

Colour plays an important role as a significant semiotic resource in the visual strategies used by the organisations which employ green, blue, white, brown, and yellow to signal their environmental consciousness. Especially, nature imagery are generally used on the products and advertisements as signs of a balanced and integrated system with the ecology, although they are not a dominant visual strategy.

Although it enhances the minimalist approach in visual appeal, the use of certifications or eco-labels as a means of external credibility is rare and may undermine their creditability. The companies employed sustainability as a CSR-related frame narrative to create meanings such as "We care for the planet" and "Togetherness for a sustainable tomorrow", instead of factual disclosure practices. Overall, the leading Indian companies appeared to interpret green issues as a lifestyle discourse fitting their brands rather than activist-like lobbying. Indeed, deliberately avoiding hard facts or third-party validations, their Instagram practices featured an emphasis on symbolic colour palettes, aesthetic appeal, and emotionally driven word statements, thus reframing sustainability as a source of alternative emotionally attractive proposition.

Sentiment analysis of Instagram posts' captions and the top-liked comments was conducted using Sentiment Analysis for Excel developed by Boardflare and accessed through Microsoft AppSource (*Sentiment Analysis for Excel – Boardflare*, n.d.). The add-in provides multiple sentiment-analysis models, including Pattern, VADER, Naive Bayes, and BERT-based models. The selected model was applied consistently across the comments to obtain sentiment scores/classifications. The resulting sentiment outputs were used to identify broad patterns in audience responses to the selected green advertising posts. Given the informal and context-dependent nature of social-media communication, the automated sentiment results were

interpreted as indicative patterns rather than definitive measures of audience attitudes. This tool assigns a positive and negative sentiment score to every sentence, ranging from 0 (extremely negative) to 1 (extremely positive). A higher score indicates stronger confidence in positive sentiment. The overall sentiment rating of each text was derived from the cumulative scores of the most positive and negative sentences, thereby capturing both the valence and emotional strength of the expressions. For each post, two tone scores were calculated—one for the caption and another for the average sentiment score of user comments. These two variables were subsequently used to measure correlation.

The sentiment output generated through the Boardflare *Sentiment Analysis for Excel* add-in was used to classify the sampled Instagram comments according to their sentiment orientation. For the subsequent statistical analysis, sentiment classifications were coded consistently to facilitate comparison across posts. Positive and negative sentiment were analysed as ordered categories of sentiment, with neutral responses analysed separately in the descriptive analysis. The categorisation was applied to facilitate the automated sentiment output into analytically interpretable categories, and to analyse the relationship between the audience sentiment and engagement-related variables.

A non-normal distribution was found on the engagement-related measures and the ordinal nature of the sentiment classification made non-parametric correlation analysis suitable. Spearman's rank-order correlation coefficient (ρ) was thus used to investigate the direction and magnitude of the relationship between the sentiment and engagement variables. Spearman's correlation does not require the variables to follow a normal distribution and is appropriate for assessing monotonic associations involving ordinal or ranked data. The analysis was interpreted in terms of association rather than causation.

Emojis were interpreted using previous affective research because they were frequently used in user answers instead of textual comments. The interpretations used well-established semantic mapping frameworks and the Emoji-Dis dataset (Concannon, 2024). For example, ♡symbolized warmth or affection, 🔥 excitement and passion, 👏 admiration, 🙌 group delight, 🙏 thankfulness, and ♻rejuvenation or sustainability. Consistent with findings by Ferré et al. (2025), repeated emojis were evaluated as indications of elevated emotional intensity, while mixed forms (such as ♡🔥 or 👏🙌) indicated integrated affective meanings.

Spearman's rank-order correlation was used to examine the connection between consumer sentiment and company caption tone. Prior to analysis, captions and comments were given ranks and sentiment ratings were dichotomized (Positive = 1; Negative = 0). A very small positive association between company caption sentiment and consumer comment sentiment was found by the test, with a Spearman's rho (ρ) value of 0.087 ($\rho = 0.087$, $t = 1.668$, $df = 366$, $p = 0.096$). This implies that although there was a little increase in the likelihood of favourable replies to postings with more positive captions, the connection was not statistically significant. As a result, the alternative hypothesis (H_1) was not supported and the null hypothesis (H_0) could not be dismissed.

These results show that the sentiment of customer replies is not greatly impacted by the tone of corporate Instagram captions. The small link implies that factors other than language tone have an impact on consumer interaction with posts with a green theme.

Conclusion

The present study examined the verbal and visual strategies employed by top Indian companies—those investing most heavily in Corporate Social Responsibility (CSR)—to communicate green themes on Instagram during 2024–2025. By combining visual content analysis and sentiment analysis, the study sought to understand not only how green messages are executed and presented but also how consumers respond to them emotionally and effectively.

In terms of verbal strategies, the results suggest that Indian companies are focusing on textual eco-claims and utilising sustainability-related keywords (i.e., eco-friendly, sustainable future, green living) rather than making any specific references to certifications and approvals. Indeed, the analysis only identified 34% of posts that featured any form of external endorsements. Overall, the captions and hashtags that were used to promote the brand's commitment to sustainability adopted a positive tone and sought to appeal to customers' optimism and sense of community. In such a manner, the companies attempted to raise awareness and build a trusting relationship based on shared values rather than appeal to customers' rationality and factual knowledge.

In terms of visuals, the data revealed a clear preference for creating a green "look-and-feel" to the brand rather than using environmental imagery. In this regard, 1056 photos and videos used earth tone colours and nature-inspired graphics, with green, blue, brown, and yellow being the most common colours in these posts. At the same time, 482 posts did not include any explicit references to environmental imagery in them. Instead, they used symbolic design choices such as clean minimal layouts, soft hues and aesthetic harmony. Overall, the analysis revealed that Indian companies are not prioritising environmental content; instead, they are using nature as an element of design to appeal to the audience's aesthetics and values on Instagram. Specifically, trees, flora, and

natural landscapes were popular in the sample, but they were used as visual metaphors to convey the brands' commitment to environmental sustainability. Therefore, it can be concluded that Indian CSR communication on Instagram is focused on incorporating sustainability values into the existing brands' identity and visual design, as well as embedding eco-consciousness into customers' lifestyles rather than promoting environmental activism.

In terms of execution and presentation, the corporate green theme posts were visually polished, narrative-driven and brand-centric. In many cases, the companies were seen to incorporate elements of environmental friendliness into the narrative, making it part of a larger cause, which involved other stakeholders such as communities and customers. Moreover, brands used eco-themed signs and symbols in their narrative more actively than factual information. This can suggest that the companies prioritised aesthetic appeal over educational value in CSR communication on social media. Overall, Instagram allowed businesses to promote their CSR practices as a vital element of their brand narrative. By doing so, the companies wanted to appeal to customers' desires to improve their lifestyles, be part of the solution to global issues, and remain conscious about their choices. However, instead of providing factual information to position themselves as sustainable, the companies tried to create the imagery of sustainability through colour schemes, visual appeal, and brand storytelling.

The third component of the study investigated the relationship between the tone of corporate Instagram posts and the sentiment of consumer comments. Using the Sentiment Analysis Add-In and Spearman's rank-order correlation test, the study found only a very weak positive correlation ($\rho = 0.087$, $t = 1.668$, $df = 366$, $p = 0.096$) between the sentiment expressed in corporate captions and that reflected in consumer comments. This result is not statistically significant but it does support the null hypothesis (H_0): The tone of corporate Instagram posts is not significantly correlated with the sentiment of consumer responses. That is, while the positive framing of captions or the use of emotional words may lead to positive sentiment in the company, this does not consistently result in audiences feeling similar.

This outcome corresponds with a similar study conducted previously (Neureiter & Matthes, 2022). The results illustrate that reactions of consumers to green ad campaigns were not dependent on linguistic tone but were explained by respondents' beliefs about the ad's authenticity, their existing environmental attitudes, and their scepticism about corporate greenwashing. In other words, the outcome was determined not by the corporate tone but the perceptions and predispositions of the consumer towards the company and the environmental message. As such, this conclusion is similar to the one reached in the previous study (Neureiter & Matthes, 2022) which also illustrated that the influence of green advertising was shaped by the consumer's attitudes, awareness, and perceptions of authenticity rather than corporate tone alone. In this case, again, consumer reception is dependent on several factors beyond the company sentiment.

In summary, the research presented in this study claims that, despite active usage of symbolic and aesthetic methods to convey green messages, Indian corporations' actions do not promote environmental values and change consumer behaviour. The analysis of Instagram posts made by accounts of major Indian companies revealed that they appeal primarily to aesthetics and secondarily to the readers' sentiments while providing little actual information about their efforts to promote sustainability. Thus, it can be said that corporations do not build trust and transparent relationships with their clients when trying to communicate their green policies on social media.

Limitations of Interpretation

The findings should be interpreted within the limitations of the data and research designs used. Instagram visuals, engagement, and sentiment can inform about the observed communication features and audience's reactions to the brand's posts but cannot directly assess consumers' trust, perceived credibility, authenticity, behavioural influence, or intentions. Thus, these constructs are discussed in the paper based on the observed data and should not be over-interpreted. Likewise, the study cannot confirm whether single posts contain greenwashing or not. Identifying potentially unsubstantiated claims only provides grounds for suggesting that certain posts may include greenwashing. To actually confirm greenwashing, one would need to evaluate the truth value of the statements, supporting evidence provided by the companies, their environmental performance, and sustainability-related commitments, potentially cross-referencing the claims with the information provided by other stakeholders, such as in the sustainability reports. Future studies aiming to improve this research can focus on actually measuring the mentioned constructs, using survey or experimental designs or qualitative methods such as interviews.

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Data Availability Statement

The data that support the findings of this study are available in Google Docs. These data may be provided whenever asked or required.

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