

How Green Advertising And Cognitive Engagement (AI) Foster Green Awareness For Skincare Brands

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Abstract

The skincare industry is experiencing rapid global growth, with India emerging as one of the top five markets. Amid rising concerns over climate change and the increasing influence of technology, consumers are progressively aligning their beauty and skincare preferences with sustainable and eco-conscious choices. This leads to a growing demand for hybrid skincare solutions that combine natural and organic ingredients with personalised, tech-driven experiences. This study aims to investigate the influence of green advertising and cognitive engagement (AI), particularly through artificial intelligence, on green awareness of eco-friendly skincare brands. Using G*Power software, a sample size of 128 is determined, and data is collected through a structured online questionnaire distributed via convenience sampling in the cities of Lucknow and Kanpur, Uttar Pradesh. Descriptive statistics were employed for respondent profile data analysis. Further, using SmartPLS, the findings indicate that both green advertising and cognitive engagement (AI) significantly influence green awareness among consumers. The insights provided in this study offer valuable guidance for researchers, academicians, and industry professionals, highlighting how fostering green awareness can effectively bridge the gap between sustainability and technological advancement in the contemporary skincare market.

Keywords Green awareness, Sustainability, Climate, Green Advertising, Cognitive Engagement, Artificial Intelligence.

1. INTRODUCTION

The global skincare industry is transforming, marked by a shift in consumer preferences from conventional beauty products to eco-friendly skincare alternatives. This transition reflects a growing environmental consciousness and a collective desire among consumers to make choices that promote both personal well-being and ecological sustainability. In India, this trend has gained remarkable momentum, with the country now ranked among the top five skincare markets globally and demonstrating consistent growth projections through 2030. Climate change and heightened environmental concerns have emerged as critical factors influencing consumer behaviour. Maqbool and Khan (2023) assert that the demand for eco-friendly practices is expanding rapidly across various sectors in India. Concurrently, the widespread use of social media is playing a transformative role in shaping consumer perceptions and behaviours. Srivastava and Akhtar (2023) emphasize that digital platforms are instrumental in increasing awareness and fostering a positive outlook toward sustainable consumption. Among the key strategies driving this shift is green advertising, which communicates environmentally responsible values to consumers. Alamsyah and Ottoman (2021) underline its pivotal role in promoting sustainable product choices through targeted, eco-centric messaging. Supporting this, Khatibe et al. (2021) note that a preference for sustainable options not only reduces environmental risk but also strengthens brand loyalty among ethically conscious consumers. Government interventions have also played a supportive role, as Salman et al. (2024) highlight efforts to foster development within eco-aware consumer communities in India. Furthermore, Kim et al. (2020) argue that the depletion of natural resources and the need for efficient resource management are major drivers behind the increasing demand for green

products. Collectively, these dynamics underscore the growing relativity of sustainability in consumer decision-making and the evolving role of advertising, policy, and digital engagement in shaping the future of the skincare industry. A key element in the success of green advertising is its ability to foster cognitive engagement (AI) among consumers. According to Li (2021), such engagement is facilitated by the clarity and impact of green messages, which stimulate environmentally conscious thought processes and behaviours. However, with the rise of artificial intelligence (AI) technologies in marketing and communication, there is a growing challenge in maintaining meaningful consumer engagement. Ajayi et al. (2024) observe that brands using natural and organic components often highlight dual benefits for consumers and the environment through digital platforms enhanced by AI, though the effectiveness of these strategies remains an area of ongoing investigation. Despite existing research on green advertising and consumer awareness, limited attention has been given to the combined effect of green advertising and AI-enabled cognitive engagement on green awareness within the skincare sector, especially among young consumers in emerging economies like India. This represents a significant research gap. Hence, the present study aims to examine the influence of green advertising and cognitive engagement (AI) on green awareness for organic skincare products. By focusing on younger respondents and using a structured quantitative approach alongside theoretical evidence, this study seeks to offer practical insights for marketers, policymakers, and academics aiming to bridge sustainability and technological innovation in the skincare industry.

2. REVIEW OF LITERATURE

The literature is summarized under the heads of background of the study, a historical and modern perspective, and the identified gap.

2(a) Background –

Contemporary skincare brands are increasingly focusing on creating personalized experiences that resonate with consumer psychology, effectively transforming interest into meaningful brand engagement. In this context, Kim et al. (2020), pointed out the growing preference for organic skincare products has played a pivotal role in enhancing consumer involvement and deepening their emotional connection with brands. Hussain et al. (2016) noted that global markets are evolving to offer new avenues for engaging international consumers, thereby expanding brand reach and influence. Similarly, Pal and Khan (2015) emphasized that green advertising functions as a strategic and sustainable communication tool that simultaneously supports environmental preservation and addresses consumer needs. Earlier researchers like Khatibe et al. (2021) emphasised public and consumer engagement as the foundation for attracting and retaining customers in environmentally conscious markets. Building on this, Kumar et al. (2023) highlighted the growing relevance of cognitive engagement, particularly through artificial intelligence (AI), in sectors such as healthcare and fashion, suggesting that similar exploration is needed within the skincare industry. Furthermore, Salahodjaev (2018) underscored the importance of enhancing cognitive abilities to not only raise environmental awareness but also strengthen brand credibility in the minds of consumers. Collectively, these perspectives provide a conceptual foundation for the present study and justify the selection of key variables: green advertising, cognitive engagement (AI), and green awareness

2(b) Historical/Modern Perspective-

- **Green Advertising**

The concept of "green advertising" was first introduced by Iyer and Banerjee (1993), who described it as an effective advertising strategy that not only promotes products but also emphasises environmental responsibility among consumers. Over time, the latest developments in technology, including the rise of television and the internet, have significantly shaped public perception of advertising. As noted by McDonald and Scot (2007), these technological developments transformed advertising into a powerful medium for raising awareness about eco-friendly products. The digital revolution that gained momentum

around 2014, coupled with the widespread use of social media platforms, further amplified public consciousness regarding climate change and environmental degradation. This growing concern prompted both consumers and industry stakeholders to pay greater attention to sustainable practices. Building on this shift, Pal and Khan (2015) in their study highlighted the effectiveness and importance of green advertising in promoting environmental awareness and encouraging responsible consumer behaviour. More recently, Mansoor et al. (2022) asserted that green advertising not only helps establish a brand's eco-conscious image but also plays a critical role in nurturing consumers' environmental concern and commitment. Hence, the proposed hypothesis is:

H₁: Green advertising significantly influences green awareness for skincare brands.

- **Cognitive Engagement (AI)**

Li (2021) argues that cognitive engagement can be effectively measured and applied due to its well-established theoretical foundation and substantial educational relevance. In the context of marketing, Lieu et al. (2022) highlight that various forms of engagement, such as brand, customer, and public engagement, have traditionally served as channels for connecting with consumers. However, over time, enhanced cognitive abilities have proven to be more effective in deepening consumer interaction and commitment. With technological innovation, artificial intelligence (AI) has emerged as a transformative option across numerous industries. As noted by Ng et al. (2024), AI is now widely utilised in diverse fields, including education, art, design, marketing, branding, and healthcare. In particular, its application in literacy and learning has enabled more targeted and impactful cognitive development. As AI technologies have advanced and become increasingly integrated into consumer experiences, Jiang et al. (2024) observe in a comparative study that women, in particular, demonstrate higher engagement with brands that leverage AI. They also report feeling a greater sense of responsibility towards continuous learning, as AI tools significantly enhance their cognitive capabilities and engagement with digital content. Hence, the proposed hypothesis is:

H₂: Cognitive engagement (AI) significantly influences green awareness for skincare brands.

- **Green Awareness**

Green awareness refers to consumer preferences for products and services with environmental benefits. It encompasses an understanding of sustainability and aims to promote environmentally responsible behaviour among consumers, Alamsyah et al. (2018). Mourad and Ahmad (2012) emphasise that green awareness is crucial in fostering consumer trust in eco-friendly brands. Building on this, Alamsyah and Ottman (2021) observed that the rise of green advertising has significantly contributed to increasing consumer awareness of environmental issues. However, despite these developments, notable gaps remain in the existing literature, particularly concerning the deeper connections between green awareness, consumer trust, and the evolving role of green marketing strategies. Hence, the proposed hypothesis is:

H₃: Green advertising significantly influences cognitive engagement (AI) for skincare brands.

2(C) Gaps Identified-

Knowledge Gap: Existing research on green awareness remains limited, particularly within the context of the skincare industry. While previous studies have explored various forms of engagement, such as public engagement, consumer engagement, and brand engagement, there is a lack of focused investigation on how these forms relate specifically to green awareness in skincare. This gap highlights the need for more in-depth research to expand the theoretical understanding of sustainable consumer behaviour in this sector.

Geographical Gap: There is a noticeable scarcity of studies conducted within the Indian state of Uttar Pradesh, especially in reference to the skincare industry. Most existing research has concentrated on other regions, leaving a void in localized insights. This study addresses this gap by focusing on two key urban centres in Uttar Pradesh, Lucknow and Kanpur, to provide region-specific findings.

Industrial Gap: While green awareness has been examined in industries such as food, automotive, and fashion, the skincare sector remains underexplored. Past studies related to skincare have predominantly focused on customer satisfaction, behavioural changes, and purchasing patterns concerning cosmetic products. However, a limited number of studies address the intersection of green awareness and sustainable branding in this industry.

Therefore, this study aims to contribute both theoretically and practically by bridging these knowledge, geographical, and industrial gaps, offering a more holistic understanding of green awareness in the skincare market.

3. STATEMENT OF THE PROBLEM

Environmental change and climate crisis remain one of the most pressing global challenges, with the environmental burden intensifying each day as societies struggle to balance development with sustainability. In this context, Khatibe et al. (2021) identify public engagement as a crucial factor in attracting consumers to green skincare brands. However, their study also highlights a notable gap, suggesting that enhancing consumers' cognitive abilities may play a significant role in reducing environmental impact. Supporting this perspective, Carrion et al. (2024), in a study, found that green advertising has the potential to positively influence consumer attitudes toward eco-friendly products. Nevertheless, they stress the need for increased efforts to raise awareness among consumers about the value of green alternatives. Similarly, Mourad and Ahmad (2012) point out a gap in the effective measurement of consumer awareness regarding green brands, emphasising that current approaches may not fully capture the depth of understanding needed to influence purchasing behaviour. In the skincare industry, one of the major challenges lies in providing environmental education to consumers about the benefits and usage of sustainable products. As awareness remains limited, it continues to hinder the adoption of sustainable skincare practices. Therefore, enhancing green awareness is not only essential for consumer engagement but also critical for achieving broader environmental goals.

4. NEED OF THE STUDY

Growing environmental concerns have significantly increased the demand for natural and organic skincare products, prompting the expansion of manufacturing operations to meet rising consumer needs. Simultaneously, the integration of artificial intelligence (AI) has revolutionised access to information, allowing consumers to make informed choices with just a click. In response to these shifts, this study introduces an innovative conceptual framework, Figure 1, that examines how green advertising and cognitive engagement through AI effectively influence green awareness in the skincare industry. The strategic use of AI presents both opportunities and challenges in engaging eco-conscious consumers in today's competitive market. Conducting this study is essential to gaining a deeper understanding of emerging factors that shape green awareness. It offers valuable insights for industry professionals by presenting new, technology-driven approaches to connect with environmentally responsible consumers. Additionally, it contributes to academic discourse by proposing novel strategies aimed at reducing environmental impact while supporting the sustainable transformation of the skincare market.

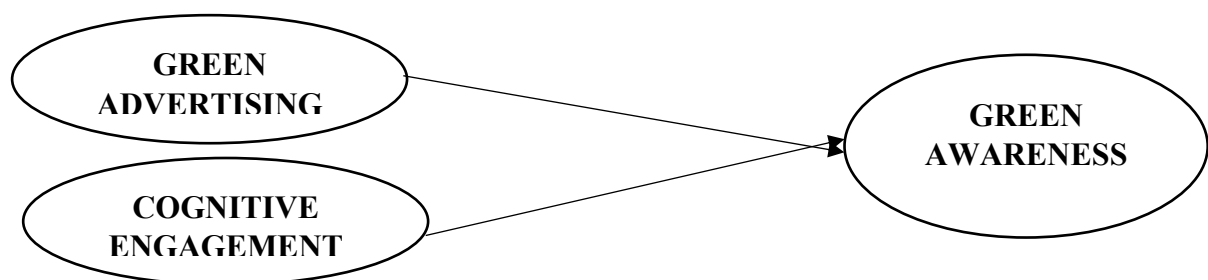


Figure 1: Conceptual Framework

5. RESEARCH METHODOLOGY

5(a) Sample Selection

We used G*Power software (Kang, H., 2021) to determine the appropriate sample size. In test familiarity, we chose t-test; in statistical test, then we chose means: ie, difference between two independent samples (two groups); and in power analysis, we chose a priori power analysis since the sample is determined before the study begins. In addition, Cohen 1988 applied a standard limit to "input parameters," which contained the following sections:

Tails- two-tailed

Effect size- 0.5

α error prob- 0.05

Power (1- β error prob)- 0.80

Allocation ratio N2/N1 - 1

According to Cohen (1988), the effect size should range between 0.2 and 0.5, with 0.5 being the best measure for magnitude estimation. The alpha error is 0.05, representing the probability of failing to accept the null hypothesis, and the power range of 0.80-0.90 determines the probability of a true effect (Bhandari, 2022). Following this criterion, G*Power studies determine a sample size of 128. We use multistage sampling for geographic selection, focusing on Uttar Pradesh's cities. The major study cities are Lucknow and Kanpur.

5(b) Sources of Data

For this study, we used quantitative data collected through primary sources using a structured questionnaire designed via Google Forms and distributed online to gather quantitative responses from participants.

Quantitative Data	
Scale used	Likert Scale (5 Point)
Constructs indication	1 (Strongly Agree); 5(Strongly Disagree)
Measures	Green Awareness, Cognitive Engagement (AI), Green Advertising
Green Awareness (5 items)	Mourad and Ahmad (2012)
Green advertising (4 Items)	Sun et al. (2020)
Cognitive Engagement (AI)	Kumar et al. (2023)
Qualitative Data	
Secondary Sources	Included peer-reviewed research articles accessed through the "Publish or Perish" software, academic books, credible websites, articles, journals, and official statistical reports.

Table 1: Authors Compilation (Sources of Data)

5(c) Study Period

The period of study is conducted from October 2024 to February 2025.

5(d) Tools Used for Analysis

We used SPSS version 25 to perform descriptive analysis of the respondents' demographic data. Since the assumptions of normality are not met by this dataset, SmartPLS 3 is employed for further analysis. Using the PLS algorithm, the model's reliability and validity were assessed. Additionally, the bootstrapping technique with two-tailed significance testing was applied to evaluate the structural paths and calculate p-values, allowing for informed decisions regarding the significance of the proposed relationships.

6. ANALYSIS OF DATA

6.1 Demographic Profile of Respondents

Demographic Variables	Group	Frequency	Percentage
Gender	Female	105	81.4%
	Male	24	18.6%
Age	Up to 25 years	77	59.7%
	25-45 years	51	39.5%
	45 & above	1	0.8%
Educational qualification	Under graduate	50	38.8%
	Post graduate	63	48.8%
	PhD	10	7.8%
	Others	6	4.7%
Income	Up to 300000	71	55%
	300000-500000	33	25.6%
	500000 & above	25	19.4%
Cities	Lucknow	82	63.6%
	Kanpur	47	35.7%
Sources that made you aware.	Television	13	10.1%
	Social Media Platforms	100	77.5%
	Websites	3	2.3%
	Word of Mouth (WOM)	13	10.1%

Table 2: Authors Compilation (Descriptive Analysis)

Table 2 demonstrates the descriptive analysis, showing the frequency distribution and percentage value that define the respondents' demographic profile. According to the profile, female respondents surpass male respondents by 81.4% to 18.6%. Furthermore, the age group analysis revealed that the age group is divided into three categories, with 59.7% of respondents aged up to 25 years, 39.5% aged 25 to 45 years, and 0.8% aged above 45 years. The educational segmentation predicted 38.8% undergraduate, 48.8% postgraduate, 7.8% PhD, and 4.7% from other educational backgrounds. In terms of income levels, 55% of respondents earn up to 300,000 p.a, 25.5% earn between 300,000 and 500,000 pa, and just 19.4% earn more than 500,000 p.a. This demographic analysis shows a mostly youthful and well-educated population. Given this research's focus on Uttar Pradesh, 63.6% of respondents were from Lucknow, and 35.7% from Kanpur city. The participants who participated were aware of green awareness through various sources, including social media platforms (77.5%), television (10.1%), word of mouth (WOM) (10.1%), and websites (2.3%).

6.2 Model Assessment

The measurement model is employed to evaluate the consistency and accuracy of the proposed constructs, ensuring that the indicators accurately reflect the underlying concepts. In contrast, the structural model focuses on analysing the collinearity statistics, path coefficients, and p-values, which are crucial for assessing the strength of the relationships between constructs (Mona Ali, 2022).

- **Measurement model¹**

CONSTRUC T	ITEMS	FL	Chronbach' (α)	Rho_ A	CR	AVE
Green Awareness (GA)	GA1: You are familiar with the environmental initiatives undertaken by the brand.	0.774	0.847	0.857	0.890	0.619

Mourad & Ahmad (2012)	GA2: You have come across environmental labels and slogans associated with the brand.	0.730				
	GA3: You understand what the environmental symbols and slogans used in this brand's marketing represent.	0.784				
	GA4: You can recall specific environmental symbols the brand has used in its marketing efforts.	0.834				
	GA5: You are more inclined to choose a brand if it displays an environmental label.	0.807				
Cognitive engagement AI (CE) Kumar et.al (2023)	CE1: I feel confident using AI technologies in skincare routines.	0.847	0.851	0.872	0.899	0.753
	CE2: I recognize the importance of AI-powered platforms in advancing skincare solutions.	0.883				
	CE3: I believe AI-enabled tools are safe to use.	0.767				
	CE4: The features of AI-driven tools can be customized to meet individual needs.	0.825				
Green Advertising (GAD) Sun et.al (2020)	GAD1: I usually pay attention to skincare advertisements that focus on environmental themes.	0.864	0.891	0.893	0.924	0.692
	GAD2: I believe skincare brands that highlight environmental issues in their advertising are commendable.	0.876				
	GAD3: I notice and consider products that feature environmentally focused advertisements.	0.870				
	GAD4: In my view, green advertising adds meaningful value	0.860				

Table 3: Author compilation

Average Variance Extracted; Factor Loadings; Composite Reliability

	Cognitive Engagement	Green Advertising	Green Awareness
Cognitive Engagement	0.832		
Green Advertising	0.419	0.868	
Green Awareness	0.610	0.561	0.787

Table 4: Authors compilation

Fornell-Larcker Criterion

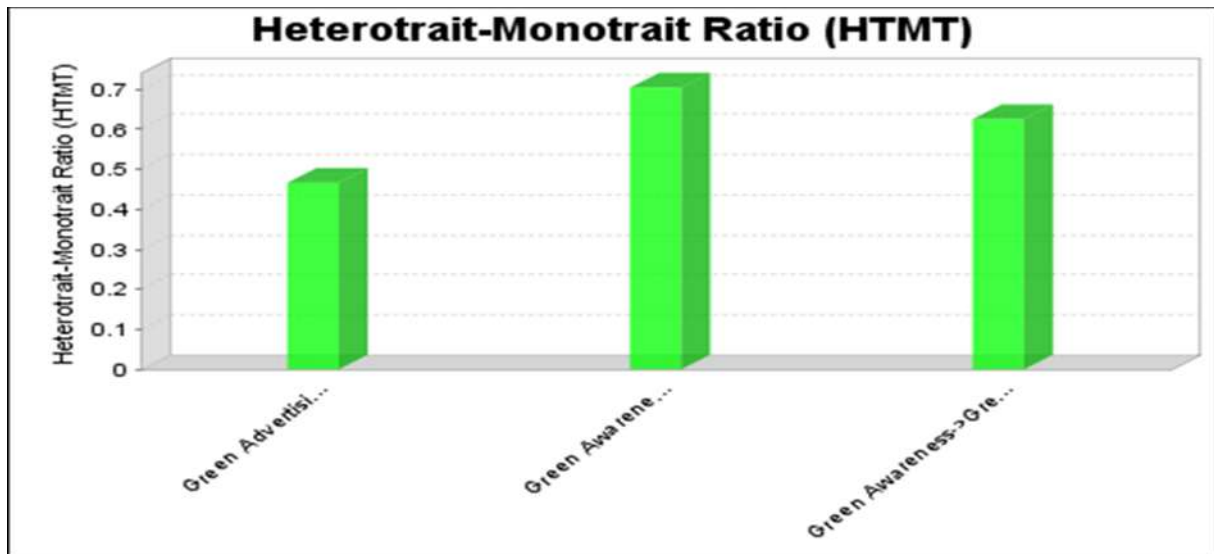


Figure 2: HTMT Ratio defining discriminant validity

The preliminary stage of analysis focuses on evaluating reliability and validity to ensure the constructs and their associated dimensions are both consistent and accurate. In this study, assessments were conducted for the reliability of the constructs, along with the convergent validity and the discriminant validity. As illustrated in **Table 3**, internal consistency is confirmed, with values for Cronbach's alpha (α), Rho_A, and composite reliability (CR) all exceeding the benchmark value of 0.70, in line with the criteria proposed by Bagozzi & Yi (1988). Convergent validity is also established, as indicated by average variance extracted (AVE) values surpassing 0.50 and factor loading values exceeding 0.70, consistent with guidelines by Hair et al. (2012). Discriminant validity, which is crucial in marketing research, is supported in **Table 4**, where the square roots of AVE for each construct are greater than their inter-construct correlations. Furthermore, **Figure 2** illustrates and confirms the model's validity using the HTMT criterion, with all correlation values remaining below the 0.85 threshold value, as recommended by Henseler (2015).

Note: CR- Composite Reliability; AVE – Average Variance Extracted; FL – Factor Loadings. HTMT - Heterotrait-Monotrait Ratio Criterion;

Structural Model ²

Hypothesis	Collinearity Statistics (Inner VIF Values)	Path Coefficient	T Value	P Value	Decision
Green advertising > Green Awareness	1.212	0.370	3.386	0.001	Supported
Cognitive Engagement > Green Awareness	1.212	0.455	3,929	0.000	Supported
Green advertising-> Cognitive Engagement	1.00	0.419	4.942	0.000	Supported

Table 5: Authors Compilation

The structural model is assessed for its overall fit using the Standardised Root Mean Square Residual (SRMR) metric. As suggested by Henseler et al. (2016), an SRMR value below 0.08 indicates an acceptable model fit. In this study, the SRMR value was found to be 0.082, which, although slightly above the ideal

threshold, still falls within a tolerable range, indicating a reasonably good model fit. Following this, the analysis proceeded to evaluate multicollinearity within the inner model by examining the Variance Inflation Factor (VIF) values. As per Henseler (2016), a VIF value of 1 indicates no multicollinearity, while values below 5 suggest low to moderate multicollinearity. **Table 5** presents the VIF results: Green Advertising → Green Awareness and Cognitive Engagement → Green Awareness both show VIF = 1.212, and Green Advertising → Cognitive Engagement has a VIF = 1.00. These results confirm that multicollinearity is not a concern and the structural paths are statistically reliable.

The study by Guerreiro and Pacheco (2021) provides the foundation for evaluating data through t-values and p-values, which determine the statistical significance of the hypotheses. As outlined by Wong (2013), using bootstrapping with two-tailed testing, a hypothesis is supported when the t-value exceeds 1.96, the p-value is below 0.05, and the path coefficient lies between -1 and +1. This indicates a statistically significant relationship, where we fail to accept the Null Hypothesis and proceed with the Alternative Hypothesis. **Table 5** reports the path coefficients, t-values, and p-values, confirming that all three proposed relationships are statistically significant. The link between Green Advertising and Green Awareness is supported with $\beta = 0.370$, $t = 3.386$, $p = 0.001$; Cognitive Engagement and Green Awareness with $\beta = 0.455$, $t = 3.929$, $p = 0.000$; and Green Advertising and Cognitive Engagement with $\beta = 0.419$, $t = 4.942$, $p = 0.000$. These findings validate the model and emphasise the relevance of the study.

Note: β =Path coefficient; p-value significance value; SRMR =Standard Root Mean Square Residual; VIF =variance inflation factor.

7. FINDINGS OF THE STUDY

This research investigates the connection between green advertising, cognitive engagement through artificial intelligence, and green awareness, confirming a statistically significant relationship among these variables, validating the gaps of customer engagement (AI) (Khatibi et.al, 2021) and validating effective measures of green awareness (Mourad & Ahmad, 2012) for different green brands. Further, (Yu et al, 2024) through a pilot study approach forecasted that green advertising significantly impacts the green purchase intention of consumers in China. Thus, in the further evaluation of the measurement model, there is a demonstration of strong reliability values and validity values, ensuring the consistency and accuracy of all the constructs used. Additionally, the demographic analysis provided insights into the characteristics of the target audience for eco-friendly skincare brands, considering factors such as age, gender, educational background, sources of awareness, and geographic location, specifically, respondents from Lucknow and Kanpur in India. Hypothesis testing identified three critical associations: between green advertising and green awareness, between cognitive engagement (AI) and green awareness, and between green advertising and cognitive engagement. These results offer practical implications for academics looking to broaden their theoretical insights, for marketers aiming to engage environmentally conscious consumers, and for industry leaders seeking to promote sustainability more effectively through strategic communication.

8. DISCUSSION

The study positions green awareness as a transformative strategy for fostering eco-consciousness among consumers across various skincare brands. With rising global temperatures and ongoing climate change, industries, particularly the skincare industry, face growing pressure to meet consumer demands through sustainable practices while also ensuring personalised brand engagement. According to recent projections (Statista, 2024), the skincare industry is expected to see substantial growth in the coming years, further intensifying the need for environmentally responsible approaches. In response to these challenges, this research explores the interrelationships between green advertising, cognitive engagement (AI), and green awareness within the skincare industry. The findings offer meaningful insights into how sustainable marketing and communication strategies can effectively enhance consumer involvement and

environmental consciousness. Furthermore, promoting green awareness not only supports more sustainable consumer behaviour but also encourages the adoption of environment-friendly practices and the integration of green technologies. This shift can ultimately make way for innovation-driven economic growth. The first objective of this study is to examine the influence of green advertising on green awareness. The analysis confirms a significant and appropriate relationship between the two variables (H1), with the statistical results indicating $\beta = 0.370$, $t = 3.386$, $p = 0.001$. The findings of this study align with prior research done by Pal & Khan (2015) & Alamsyah et al. (2021), supporting the notion that green advertising plays an important role in raising consumer awareness about sustainable skincare practices. Moreover, this relationship helps address a previously identified gap in the literature regarding the drivers of green awareness, as highlighted by Mourad and Ahmad (2012). Therefore, the results validate that sustainable advertising is an effective strategy for enhancing consumer awareness of green skincare brands, further minimising the gap in awareness studies addressed by Carrion et al. (2024).

Secondly, one of the major challenges in the skincare industry is ensuring effective customer engagement. Addressing the second objective (H2), the analysis reveals a positive and significant relationship between cognitive engagement (AI) and green awareness, with results showing $\beta = 0.455$, $t = 3.929$, $p = 0.000$. These findings align with the study of Kim et al. (2020), who highlighted the role of personalised engagement in shaping informed consumer choices and fostering stronger brand loyalty. The integration of Artificial Intelligence, through personalised content, virtual skincare consultations, and chatbot interactions, has enabled skincare brands to build more meaningful and responsive connections with their customers. This analysis further addresses a gap in existing literature by validating cognitive engagement as a contemporary and effective alternative to traditional engagement methods, as previously noted by Liu et al. (2022). The findings indicate that when consumers interact with brands through AI-enabled platforms, their levels of eco-consciousness and environmental knowledge increase.

Moreover, this enhanced awareness is most effective when driven by compelling green advertising strategies. Green messaging not only encourages consumers to adopt environmentally friendly products but also invites deeper engagement through interactive and responsive brand experiences. Supporting this, the analysis confirms a positive relationship between green advertising and cognitive engagement (AI) ($\beta = 0.419$, $t = 4.942$, $p = 0.000$). These results underscore the idea that combining sustainable advertising with cognitive engagement (AI) can amplify green awareness and nurture a stronger sense of responsibility among consumers, an increasingly crucial priority in the face of global environmental challenges. Moreover, personalisation and customisation of products help to establish a personal connection between consumers and skincare brands, which brings an opportunity for the brands to generate skincare products which is an exact match of their personalised needs.

9. CONCLUSION

Green awareness is increasingly recognised as a transformative tool that encourages consumers to adopt sustainable practices, benefiting both the environment and individuals. The statistical association identified between green advertising, cognitive engagement (AI), and green awareness demonstrates a strong level of consistency. In support of this, Alamsyah and Othman (2021) emphasised that green advertising plays a crucial role in enhancing consumer awareness. With the rise of technology and social media, there has been a notable shift in consumer behaviour toward eco-friendly skincare products. These digital platforms have enabled skincare brands to establish more direct and meaningful connections with their target audience, allowing them to better understand consumer preferences and respond with tailored, sustainable offerings. Therefore, this study contributes both theoretically and practically by bridging these knowledge, geographical, and industrial gaps, offering a holistic understanding of green awareness in the skincare industry. This can help understand their customers more with the help of

artificial intelligence using chatbots, virtual try-ons, and providing personalised skincare for every skin type.

10. LIMITATIONS & SCOPE FOR FUTURE RESEARCH

This study is geographically limited to two cities in Uttar Pradesh, Lucknow and Kanpur, and primarily focuses on a young demographic engaged with skincare products. Additionally, the small sample size may affect the generalizability of the findings, potentially introducing response bias and measurement limitations. Future studies should explore additional factors shaping green advertising and cognitive engagement, particularly in diverse industries. Researchers may also examine the relationship between brand perception and attitudes toward organic ingredients and sustainable packaging. Furthermore, qualitative investigations into consumer concerns related to privacy and ethics are warranted, especially when AI technologies are used to enhance engagement and assess green awareness.

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