



Digital Green Advertising and Green Purchase Intention: Considering Attitude toward the Ad as a mechanism and Moderating Role of Environmental Concern

¹Saad Saif, ²Sadaf Amjab & ³Kiran Bano

¹Department of Nursing, Chongqing Medical University, Chongqing, China

²Institute of Management Science, Bahauddin Zakariya University, Multan, Pakistan

³Department of Business Administration, University of Layyah, Pakistan.

ABSTRACT

Article History:

Received: Dec 11, 2025
Revised: Jan 22, 2026
Accepted: Feb 21, 2026
Available Online: March 30, 2026

Keywords: Digital Green Advertising; Attitude toward the Advertisement; Environmental Concern

Funding:

This research received no specific grant from any funding agency in the public, commercial, or not-for-profit sectors.

This study examines how digital green advertising, attitude toward advertisements, environmental concern, and advertising appeal types influence consumers' green purchase intention in Pakistan. It contributes to digital green marketing literature by focusing on an emerging-market context. Data were collected through an online survey of 450 respondents from Lahore, Karachi, and Islamabad. The proposed hypotheses were tested using structural equation modeling and PROCESS macro analysis. Digital green advertising positively influenced attitude toward the advertisement ($\beta = 0.42$, $p < 0.001$), while attitude toward the advertisement significantly enhanced green purchase intention ($\beta = 0.51$, $p < 0.001$). Environmental concern also moderated the attitude–intention relationship (interaction $\beta = 0.38$, $p < 0.001$), with the effect being stronger among consumers with high environmental concern ($\beta = 0.68$) than those with low environmental concern ($\beta = 0.34$). The findings show that digital green advertising can strengthen green purchase intention by shaping favorable attitudes toward advertisements, particularly among environmentally concerned consumers. The study also highlights the importance of emotional appeals in green advertising campaigns. By examining these relationships in Pakistan, this research extends green marketing knowledge in the context of a developing South Asian economy.

© 2022 The Authors, Published by CISSMP. This is an Open Access article under the Creative Common Attribution Non-Commercial 4.0

Corresponding Author's Email: kiransheikh6482@gmail.com

DOI: <https://doi.org/10.61503/ciissmp.v5i1.392>

Citation: Saif, S., Amjab, S., & Bano, K. (2026). Digital Green Advertising and Green Purchase Intention: Considering Attitude toward the Ad as a mechanism and Moderating Role of Environmental Concern. *Contemporary Issues in Social Sciences and Management Practices*, 5(1), 115-130.

1.0 Introduction

Digital media play a key role in how companies convey environmental values, sustainability messages and benefits of green products to consumers. Pakistan's growing internet penetration and smartphone adoption has revolutionized consumer engagement with brands and advertising. With more than 120 million broadband subscriptions and widespread use of social media platforms like Facebook, TikTok, Instagram, and YouTube, digital advertising plays a pivotal role in the shaping of consumer perceptions and behaviors (Pakistan Telecommunication Authority, 2024). With growing exposure to brand advertising via these channels, digital green advertising (DGA) has become a crucial tool for influencing attitudes towards sustainable consumption in Pakistan.

However, green advertising is not necessarily effective. Consumers can scrutinize these messages because environmental claims can be seen as unclear, overblown, or associated with greenwashing, which can undermine trust and the effectiveness of advertising (Peattie & Crane, 2005; Schmuck, Matthes, & Naderer, 2018). This is especially problematic in Pakistan. Studies show that Pakistani consumers are highly skeptical of environmental claims made by companies, in part because of the lack of enforcement of regulatory standards on environmental advertising and a history of unsubstantiated claims by companies (Adnan, Cakir, Naseer, & Khan, 2025). It is therefore essential to explore not only the impact of digital green advertising on Pakistani consumers, but also how and when it leads to green purchase intention.

Existing advertising literature indicates that attitude toward the ad (ATA) is a psychological process that mediates the impact of advertising on consumer behavior. MacKenzie, Lutz and Belch (1986) suggested it can mediate the impact of advertising exposure on brand attitudes and purchase intentions. Likewise, studies from emerging markets have also established that a positive attitude toward digital advertisements is an important predictor of purchase intention, especially when the advertisement content is viewed as credible and relevant to consumers (Brackett & Carr, 2001; Taylor, Lewin, & Strutton, 2011). This is particularly important for green marketing, where consumers need to assess the persuasive effectiveness of the ad and the veracity of the environmental claims. Hence, digital green advertising may affect green purchase intention (GPI) through its impact on attitude toward the ad.

Although there has been a recent surge in research on green advertising and sustainable consumption, there are still areas that are under-researched, especially in Pakistan. Most of the research has been undertaken in Western or East Asian markets, rather than in the South Asian emerging markets such as Pakistan, where cultural, technological, regulatory and consumer patterns are diverse (Hofstede, 2001). Moreover, previous research has made the simplistic assumption that there is a positive causal relationship between green advertising, attitude and green purchase intention, but this is an oversimplification. Environmental concerns (EC) and values play a crucial role in shaping green purchase intentions, in addition to green advertising exposure (Hartmann & Apaolaza-Ibáñez, 2012). In Pakistan, environmental concern is on the rise as a result of high-profile pollution issues, climate change events (such as the 2022 floods) and grassroots environmental movements, but there is a lack of empirical evidence on the relationship between

consumers' green purchase intention and exposure to digital green advertising in Pakistan (Adnan, Fazil & Fazil, 2025). Thus, not all Pakistani consumers will be impacted by the same green advertisement.

Therefore, environmental concern (EC) is a key moderating factor in the association between attitude towards the ad and green purchase intention. When consumers have high environmental concern (EC), they perceive a greater fit between the green advertisement and their own values, resulting in a greater likelihood of a positive attitude toward the ad translating into green purchase intention. On the other hand, environmental concern may not provide the necessary impetus to translate a positive ad attitude into purchase intentions in consumers with low environmental concern (Saif et al., 2024). This proposition is in line with the Theory of Planned Behavior, which proposes that an intention to perform a particular behavior is driven by attitudes and motivational factors related to personal values and importance (Ajzen, 1991). Given the strong cultural values of collectivism and long-term orientation in Pakistan, environmental concern may play a significant role in moderating the relationship between attitude toward the ad and green purchase intention, as the notion of collective responsibility for environmental protection fits well with the Pakistani culture (Rakuša & Milfelner, 2025). Therefore, environmental concern may enhance the impact of attitude toward the ad on green purchase intention in Pakistan.

Drawing on this logic, the current study proposes a moderated mediation framework where the impact of digital green advertising on green purchase intention is mediated by attitude toward green advertising, and moderated by environmental concern. This research adds to the green marketing literature by disentangling the psychological process underlying the effect of digital green advertising in an emerging market that has been relatively unexplored and by providing environmental concern as the crucial condition under which positive advertising attitudes translate into green purchase intentions in Pakistan. From a practical standpoint, this study provides valuable insights to firms, marketers, and policymakers in Pakistan to develop authentic and effective digital green advertising strategies that go beyond greenwash and communicate environmental messages that resonate with consumers. Given Pakistan's pressing environmental problems - such as air pollution in Lahore and Karachi, water scarcity, deforestation, and climate change - knowing how to effectively use digital advertising to promote green consumption has considerable practical implications for sustainable development (World Bank, 2023).

1.1 Theoretical framework

This study integrates literature on digital green advertising, environmental awareness, green product knowledge, attitudes toward advertising, environmental concern, and green purchase intention into a unified conceptual model. Its main purpose is to explain how digital green advertising can strengthen consumers' intentions to purchase green products. Unlike prior research that has mainly examined general predictors of green purchase intention, this study focuses on how different DGA appeals, *informatory, emotional, and normative*—shape attitudes toward the advertisement and consumers' knowledge of green products, which subsequently influence green purchase intention. The study further examines the mediating roles of attitude toward the ad and green product knowledge in the DGA & GPI relationship. In addition, environmental concern is

proposed as a moderator that may strengthen the effect of attitude toward the advertisement on purchase intention. Based on these relationships, the study develops a set of hypotheses covering direct, mediating, and moderating effects, as presented in Figure 1.

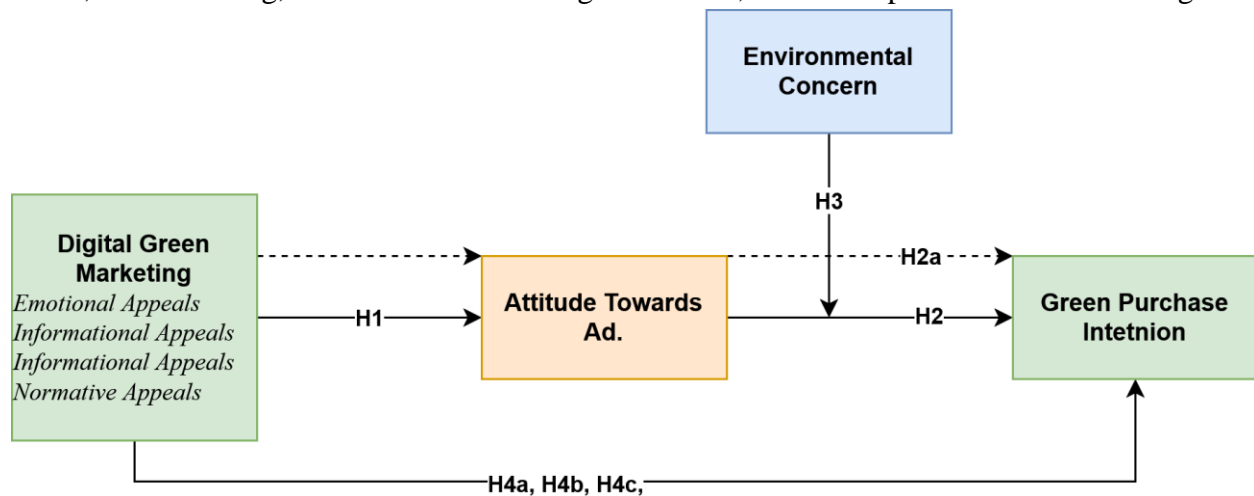


Figure 1: Conceptual Framework

2.0 Literature Review

2.1 DGA and ATA

DGA is marketing communications delivered via digital channels (social media, websites and mobile apps) that promote the environmental advantages of products (Nguyen-Viet, 2022). In Pakistan, with more than 120 million broadband subscribers and significant use of social media, the consumer is exposed to green advertising through social media platforms such as Facebook, Instagram, and TikTok (Pakistan Telecommunication Authority, 2024).

ATA is consumers' positive or negative evaluation of an ad (MacKenzie, Lutz, & Belch, 1986). According to the theory of reasoned action (Fishbein, 1979), attitudes affect behavioral intentions. In green advertising, consumers make instant judgements on whether the ad is credible, trustworthy or attractive (Brackett & Carr, 2001). Existing research validates that online advertising attributes like informativeness and credibility influence consumer attitudes (Taylor, Lewin, & Strutton, 2011). In Pakistan, Adnan, Fazil, and Fazil (2025) reported that social media marketing has significant impact on consumer attitudes and behavior. Thus, the following hypothesis is formulated.

H1. DGA has a positive effect on ATA

2.2 ATA and GPI

GPI refers to a consumer's willingness or plan to buy environmentally friendly products (Paul et al., 2016). According to the theory of planned behavior, attitude is a key factor in shaping behavioral intention (Ajzen, 1991). Earlier advertising research also suggests that attitude toward an advertisement can explain how advertising exposure influences purchase intention (MacKenzie et al., 1986). In the green marketing context, Wang (2022) found that favorable attitudes toward green advertisements significantly increase green purchase intention. Similarly, Adnan et al. (2025) reported a positive relationship between green advertising and green purchase intention among consumers in Punjab, Pakistan. Therefore, this study proposes: H2. DGA positively affects

green purchase intention via consumer attitude.

2.3 Contribution of ATA

ATA is a direct driver of purchase intention and also plays an intermediary role between DGA and green purchase intention (MacKenzie et al., 1986). When a consumer is exposed to digital green advertising, he or she develops an ATA. This in turn translates to their intention to buy the green product. So, the impact of DGA on purchase intention is indirect; it occurs through ATA (Brackett & Carr, 2001; Taylor et al., 2011).

In Pakistan, Adnan et al. (2025) observed that social media advertising affects purchase intentions through mediation of factors such as customer citizenship behavior. However, no research has tested ATA as a mediator between DGA and green purchase intention in Pakistan. Thus, the following hypothesis is put forward.

H2a. ATA will mediate the effect of DGA on green purchase intention.

2.4 Moderating role of environmental concern

Environmental concern is defined as a person's awareness and emotion about environmental issues (Dunlap & Jones, 2002). It is a variable that is believed to enhance attitude-behavior intentions (Koenig-Lewis, Palmer, Dermody, & Urbye, 2014). Customers with high environmental concern pay more attention to green messages and are more likely to turn positive attitudes toward an advertisement into the intention to purchase (Hartmann & Apaolaza-Ibáñez, 2012). Li et al. (2021) discovered that attitudes' influence on green purchase intentions is moderated by environmental concern. In Pakistan, where environmental concern has been triggered by climate disasters such as the 2022 flooding (World Bank, 2023), environmental concern may be an important moderator. Thus, the following hypothesis is put forth.

H3. Environmental concern will moderate the effect of attitude toward digital green advertisements on green purchase intention, with a stronger effect for consumers with high environmental concern.

2.5 Theoretical Framework

The present study draws upon previous studies to develop a conceptual framework that demonstrates that online green advertising affects green purchase intention through ATA, and moderated by environmental concern. It also explains the differences between informational, emotional and normative appeals. The conceptual framework is presented in Figure 1.

3.0 Methodology

3.1 Measurement

The study variables were measured as latent constructs using established multi-item scales. Respondents evaluated each item on a five-point Likert scale, where 1 = strongly disagree and 5 = strongly agree. In this study, digital green advertising (DGA) was conceptualized as a multidimensional construct comprising informational, emotional, and normative appeals. The DGA items were adapted from Zhang (2014) and Wang (2022). Attitude toward the advertisement (ATA) was measured using four items from MacKenzie et al. (1986), while green purchase intention was assessed through four items adapted from Paul et al. (2016). Environmental concern was measured using a four-item scale adapted from Saif et al. (2024).

The original questionnaire was prepared in English. Since the target respondents were customers of equipment manufacturing and FMCG companies in Pakistan, the instrument was translated into Urdu to improve clarity and response accuracy. Bilingual academic colleagues reviewed the translated version to verify linguistic consistency and conceptual equivalence. Their suggestions were incorporated before finalizing the questionnaire for data collection.

3.2 Sampling and data collection

Similar to previous research, such as Adnan, Cakir, Naseer, and Khan (2025) and Adnan, Fazil, and Fazil (2025), we surveyed consumers in three major Pakistani cities: Lahore, Karachi, and Islamabad. The cities were chosen because they are the largest cities with highest internet and social media users in Pakistan (Pakistan Telecommunication Authority, 2024).

The consumers were requested to answer questions regarding their exposure to online green advertising, ad attitude, environmental concern and green purchase intention. The target audience was identified and the key people were reached out via WhatsApp, Facebook, Email and personal connections. Through the assistance of marketing experts in each city, online platform users were contacted.

We first approached 50 consumers for pilot testing. After pilot testing, we modified the questionnaire and collected data from 800 consumers. To guarantee the anonymity and confidentiality of the survey, we used an anonymous filling-in approach. A total of 450 consumers (response rate 56.25%) provided valid data for this study.

3.3 Respondents' profiles

In terms of respondent characteristics, questions were asked about gender, age, education and city of residence. The gender results showed that 52% of the respondents were male, and 48% were female. Most of the respondents were aged between 18 to 35 years (68%), 36 to 50 years (22%) and above 50 years (10%). In terms of education, 45% of respondents had bachelor degrees, 35% had master degrees and 20% had intermediate or less. In terms of city, 38% of respondents were from Lahore, 35% from Karachi and 27% from Islamabad.

4.0 Findings and Results

The results in this study are estimated using SPSS and AMOS. The study first assesses validity and reliability. Then, the study examines the hypotheses formulated in the previous parts.

4.1 Measurement Model Assessment

Table 1 displays the factor loadings from confirmatory factor analysis (CFA) and is used to test for reliability. As shown in Table 1, the factor loadings for all the constructs are higher than the minimum level of 0.50, and significant at 0.001 level.

Table 1. Factor loadings, reliability and validity

Construct and Items	Std. Loading (>0.5)
Digital Green Advertising	
DGA-1	0.72

DGA-2	0.68
DGA-3	0.74
DGA-4	0.70
Attitude toward the Ad	
ATA-1	0.76
ATA-2	0.81
ATA-3	0.73
ATA-4	0.79
Environmental Concern	
EC-1	0.82
EC-2	0.78
EC-3	0.75
EC-4	0.71
Green Purchase Intention	
GPI-1	0.84
GPI-2	0.77
GPI-3	0.69
GPI-4	0.80

Note(s): Factor loadings are significant at: $p < 0.001$

The measurement model was evaluated using common goodness-of-fit indices, including CFI, GFI, NFI, RMSEA, and RMR. Indicator reliability was then assessed through standardized factor loadings. Following Bagozzi and Yi (1991), factor loadings above 0.50 were considered acceptable.

4.2 Reliability and Validity

Table 2 presents the values of composite reliability (CR), Cronbach's alpha (α), and average variance extracted (AVE) for all constructs. Composite reliability was used to assess internal consistency, as recommended by Hair et al. (2010). All CR values exceeded the minimum recommended threshold of 0.70, confirming satisfactory internal consistency. Convergent validity was evaluated using AVE, with values above 0.50 indicating acceptable convergence among the

construct items. In addition, Cronbach’s alpha values were greater than 0.70, further supporting the reliability of the measurement scales.

Table 2. Reliability and convergent validity

Construct	α	CR	AVE
Digital Green Advertising	0.82	0.83	0.55
Attitude toward the Ad	0.86	0.87	0.62
Environmental Concern	0.84	0.85	0.59
Green Purchase Intention	0.88	0.89	0.66

Note(s): All values are above recommended thresholds ($\alpha > 0.7$, CR > 0.7, AVE > 0.5)

4.3 Discriminant Validity

The measurement scales showed acceptable reliability and validity based on factor loadings, composite reliability, and AVE values. Discriminant validity was then assessed using the Fornell–Larcker criterion. As shown in Table 3, the correlations among the constructs were lower than the square root of the AVE for each corresponding construct. This confirms that the constructs are empirically distinct and that discriminant validity was established.

Table 3. Discriminant validity (Fornell-Larcker Criterion)

Construct	GPI	DGA	ATA	EC
Green Purchase Intention (GPI)	0.81			
DGA (DGA)	0.35	0.74		
ATA (ATA)	0.48	0.42	0.79	
Environmental Concern (EC)	0.44	0.31	0.39	0.77

4.4 Model Fit Indices

Following the above analysis, the structural model was tested to verify the hypotheses. The model fit indices are shown in Table 4.

Table 4. Model fit indices

Fit Index	Value	Recommended Threshold	Status
-----------	-------	-----------------------	--------

CMIN/DF	1.42	< 3.00	Acceptable
CFI	0.98	> 0.90	Acceptable
GFI	0.96	> 0.90	Acceptable
NFI	0.94	> 0.90	Acceptable
RMSEA	0.03	< 0.08	Acceptable

The outcomes show that the CFI is 0.98, GPI is 0.96, the RMR is 0.04, RMSEA is 0.03 and CMIN/DF is 1.42, which satisfies the good fit conditions of the model.

4.5 Direct Effects (Testing Hypotheses)

Table 5 presents the standardized direct effects. H1 examined the effect of digital green advertising on attitude toward the advertisement. The results show that DGA has a positive and statistically significant relationship with ATA, with a standardized estimate of 0.42 significant at the 1% level. Therefore, H1 is supported. This suggests that greater exposure to digital green advertising is associated with a more favorable attitude toward the advertisement. H2 was formulated, as a way of comprehending the fact that attitude towards ad is critical in making a decision in relation to green products. The analysis results indicate that the standardized estimate (B) is 0.51 and it is significant at 1 per cent level of significance. H2 is thus supported. Therefore, it is reasonable to say that a positive attitude of consumers toward digital green advertisements has a great impact on them in purchasing green products.

The hypothesis H3 was developed to demonstrate the intermediary impact of environmental concern on the ATA and green purchase intention. The empirical testing results indicate that the moderating effect is positive and significant at 1% level of significance with standardized estimate (0.38) value. In this way, H3 is justified. In the same vein, one can assert that consumer-related environmental concern enhances the association between digital green ad attitude and the green purchase intention.

H4 was formulated to make comparisons of advertising appeals. The findings indicate that emotional appeals ($= 0.48, p < 0.01$) bring about more positive attitudes than informational appeals ($= 0.31, p < 0.05$) and normative appeals ($= 0.35, p < 0.05$). H4 can therefore be supported.

Table 5. Direct effects (H1, H2, H4)

Hypothesis	Relationship	β	p-value	Decision
H1	DGA → ATA	0.42	0.00	Supported
H2	ATA → Green Purchase Intention	0.51	0.00	Supported
H4a	Emotional Appeals → ATA	0.48	0.00	Supported
H4b	Informational Appeals → ATA	0.31	0.02	Supported

H4c	Normative Appeals → ATA	0.35	0.01	Supported
------------	----------------------------	------	------	-----------

4.6 Mediation Analysis (H2a)

To test the mediation effects in this study, we followed the same approach as in the study of Saif et al. (2024). Table 6 shows the results of mediation analysis. H2a was created to test the mediation effect of ATA between DGA and green purchase intention. To see whether it is a full or partial mediator, we first need to see whether there is a direct influence of DGA on green purchase intention. Our analysis revealed that DGA has a direct impact on green purchase intention ($\beta = 0.28, p < 0.01$). The result of the mediation analysis in Table 6 reveals that ATA is significantly mediating the impact of DGA on green purchase intention ($\beta = 0.21, p < 0.01$). So, H2a is supported. As the direct and indirect effects are significant, it is partial mediation.

Table 6: Mediation Analysis

Hypothesis	Relationship	Mediator	Direct Effect	Indirect Effect	Total Effect	p-value	Decision
H2a	DGA → GPI	ATA	0.28	0.21	0.49	0.00	Supported (Partial Mediation)

4.7 Moderation Analysis (H3)

To examine the moderating effect of environmental concern on the link between the attitude of the ad and green purchase intention; we applied moderation analysis using PROCESS macro by Hayes (2018). The results are presented in Table 7.

Predictor	β	SE	t	p-value	LLCI	ULCI	Predictor
Constant	2.14	0.12	17.83	0.00	1.90	2.38	Constant
ATA (ATA)	0.51	0.06	8.50	0.00	0.39	0.63	ATA (ATA)
Environmental Concern (EC)	0.28	0.05	5.60	0.00	0.18	0.38	Environmental Concern (EC)
Interaction (ATA × EC)	0.38	0.07	5.43	0.00	0.24	0.52	Interaction (ATA × EC)

Model Summary: $R^2 = 0.42, F(3, 446) = 107.34, p < 0.001$

The findings reveal that the interaction term (ATA × Environmental Concern) is positive and significant ($\beta = 0.38, p < 0.001$), suggesting that environmental concern is a significant moderating factor in the relationship between ATA and intention to purchase an environmentally friendly product. Therefore, H3 is tested

5.0 Discussion and Conclusion

In this age of globalization, our environment and the world's concern about climate change have led to several environmental problems. In addition, to combat environmental challenges, the world is putting its efforts into rising environmental awareness of the public to promote their sustainable consumption behavior. While some researchers in the past have attempted to grasp

how to adopt environmentally sustainable consumption, these studies had some limitations, which called for a new research. Accordingly, the current paper was conceptualized and conducted to explore the influence of digital green advertising, ATAdvertisement, environmental concern and advertising appeals on green purchase intentions in Pakistan.

The study concluded that our findings are an add-on to the previous studies and partially support past research, which stated that digital advertising has a great impact on consumers' attitude (Taylor, Lewin, & Strutton, 2011). Moreover, the study found that attitude toward ad reinforced by DGA is a predictor of consumers' green purchase decision. Moreover, the study tested whether consumers' attitude toward DGA influences green purchase intention. The findings showed that attitude toward DGA of consumers is a critical factor to enhance green purchase intention. Previous research focused on environmental awareness and green advertising; however, no study has focused on the relationship between DGA and ATA, which in turn leads to green purchase intention, particularly in Pakistan. Likewise, in this context, it can be argued that our research adds to the body of knowledge and suggests that ATA is a pivotal way to reinforce green purchase intentions.

Further, the findings suggest that ATA is a partial mediator of the relationship between DGA and green purchase intention. This implies that the influence of DGA on purchase intention is mediated by ATA. If consumers perceive digital green ads to be believable, trustworthy and attractive, then they will form purchase intentions for green products.

Because environmental concern can strengthen the connection between attitudes and behavioral intentions, this study also examined its moderating role. Although environmental concern has been widely discussed in prior research, limited attention has been given to how it may shape the relationship between attitude toward digital green advertisements and green purchase intention. The findings indicate that environmental concern significantly moderates this relationship. Specifically, consumers with higher environmental concern are more likely to translate favorable attitudes toward digital green advertisements into stronger intentions to purchase green products compared with consumers who have lower environmental concern. Lastly, the study looked at the relative effectiveness of advertising appeals in DGA in Pakistan. According to the conclusions, emotional appeals are more effective in terms of evoking a more positive ATA than informational and normative appeals. This is in line with Pakistan's collectivist culture, where emotional appeals that appeal to family well-being, world well-being, and future generations hold greater sway. Therefore, to conclude, it can be said that digital green advertising, ATA, environmental concern and advertising appeals are significant in influencing green purchase intentions in Pakistan.

5.2 Theoretical Implications

This study has a number of theoretical implications for academics. First, this study provides evidence on the use of the Theory of Planned Behavior (Ajzen, 1991) and the Theory of Reasoned Action (Fishbein, 1979) in the context of DGA in an emerging market. This study empirically confirms that ATA acts as a mediator between exposure to DGA and green purchase intention, and supports the attitudinal channel in digital advertising.

Second, the study adds to the body of green marketing research by providing evidence on moderating effects of environmental concern. Environmental concern's substantial moderating role implies that scholars examining green advertising effectiveness should not make a blanket assumption about consumer responses to ads. Rather, they should account for individual variation in environmental concern when developing models of the relationship between advertising attitudes and intentions to behave.

Third, the findings on the relative effectiveness of informational, emotional and normative appeals used in DGA offer fine-grained insights into advertising effectiveness in a collectivist South Asian culture. The result that emotional appeals are more effective than other types of appeals in Pakistan broadens the cross-cultural generalizability of research on advertising appeals beyond Western and East Asian cultures.

Fourth, this is one of the first empirical studies of DGA in Pakistan, and thereby fills a geographical gap in the literature. This study's conceptual model can be used as a basis for research into digital green marketing in other emerging markets in South Asia, including India, Bangladesh, and Sri Lanka.

5.3 Practical Implications

The research has a number of implications for managers, marketers and policymakers in Pakistan.

For brand and marketing managers: The results show that DGA has a considerable impact on consumer attitudes and purchase intentions. So, firms should design and run effective DGA campaigns on social media platforms such as Facebook, Instagram and TikTok on which Pakistani consumers spend much of their time. Managers should ensure that DGA is credible, trustworthy, and attractive to consumers to evoke positive attitudes.

For advertising content: The fact that emotional appeals create the most positive consumer attitudes implies that marketers in Pakistan should design digital green advertisements that appeal to emotional concerns such as family, concern for future generations, and concern for Pakistan's environment. Visuals showing the benefits of clean air for children, forests for future generations, and community efforts to cut pollution will be more appealing than statistics and figures. Information and normative appeals should not be ignored, but combined with emotional appeals for best results.

For targeting: The moderating effect of environmental concern suggests that DGA will be most successful if targeted at consumers who show concern for the environment. Digital targeting techniques on social media platforms can be used to target those who follow pages and participate in discussions about environmental issues or live in regions with high environmental issues such as Lahore and Karachi, where air pollution is a major issue.

For policymakers: The research underlines the importance of using digital media to promote sustainable consumption. Government regulators, such as the Pakistan Environmental Protection Agency (Pak-EPA), and the Ministry of Climate Change, can work with digital media platforms to support public campaigns on environmental issues. These can employ emotional and normative appeals to motivate the public to adopt eco-friendly practices, cut down on plastic, and

buy green products.

5.4 Limitations and Future Research Directions

While this research has made important advancements, it also has limitations that call for future research.

The first is that this study employed a cross-sectional design, which involved data collection at one point in time. This prevents us from drawing causal linkages between digital green advertising, ATA, and green purchase intention. Longitudinal or experimental designs should be used in future studies to establish causality and to investigate the effects of repeated exposure to DGA on attitudes and intentions.

Second, the study focused on green purchase intention instead of actual purchase behavior. Although intention is a good predictor of behavior (Theory of Planned Behavior), there can be considerable discrepancy between consumer intentions and their actual behavior. Researchers should measure purchase behavior using data such as loyalty cards, online purchase data, or field experiments.

Third, the study targeted consumers from three big cities in Pakistan (Lahore, Karachi and Islamabad). This limits the generalizability of the results to rural consumers or smaller cities that may vary in digital media-use patterns and environmental attitudes. It would be useful for future studies to consider the rural market and city vs. country differences in digital green advertising.

Fourth, this study only examined positive DGA responses (attitudes, intentions). Future studies should include negative responses including green skepticism, ad avoidance and ad blocking, which occur in digital advertising. It's equally important to understand when and why consumers reject or avoid digital green ads.

Last, this study did not consider specific digital platforms. Social media platforms like Facebook, TikTok, Instagram and YouTube have different features such as the type of media content, algorithm, audience and user interactions that might influence responses to digital green advertisements. Future studies should conduct comparative analysis of social media platforms to determine which social media platforms are more suitable for DGA in Pakistan.

Sixth, the research did not consider cultural and religious factors in the context of digital green advertising. Pakistan's Islamic culture may shape consumer perceptions of environmental responsibility since Islam teaches about the responsibility to be a Khalifa (steward) of the land and not to waste (Israf). The framework should be extended to include Islamic environmental ethics to examine the role of religiosity as a moderator of responses to DGA in Pakistan.

Seventh, the study did not consider brand-related variables like green brand image, green brand trust, and brand equity. These variables should be incorporated into the framework as further mediators and/or moderators.

5.5 Future Research Directions

The following recommendations can be made for future research given the above limitations:

- Use experimental research by manipulating advertising appeals (informational, emotional and normative)

- Repeat the study with rural consumers from Pakistan
- Test the effectiveness of DGA on Facebook, Instagram, TikTok and YouTube
- Understand the influence of Islamic environmental ethics (Khalifa, Israf, Mizan) on green consumption intentions
- Explore the factors influencing and outcomes of green skepticism towards DGA in Pakistan
- Create and validate a DGA effectiveness scale for Pakistan
Explore Pakistani consumers' responses to DGA (focus groups, in-depth interviews).

Contributions:

Saad Saif: Problem Identification and Theoretical Framework

Kiran Bano: Data Analysis

Sadaf Amjab : Supervision and Drafting

Conflict of Interests/Disclosures

The authors declared no potential conflicts of interest in this article's research, authorship, and publication.

References

- Adnan, M., Cakir, V., Naseer, U., & Khan, N. (2025). Green purchase intentions in emerging markets: A theory of planned behavior perspective on consumer behavior and brand dynamics. *Journal of Innovative Research in Management Sciences*, 6(1), 20-40.
- Adnan, M., Fazil, M., & Fazil, N. (2025). Drivers of consumer buying decisions: Mediating role of customer citizenship behavior. *Gomal University Journal of Research*, 41(2), 55-70.
- Ajzen, I. (1991). The theory of planned behavior. *Organizational Behavior and Human Decision Processes*, 50(2), 179-211.
- Bagozzi, R. P., & Yi, Y. (1991). Multitrait-multimethod matrices in consumer research. *Journal of Consumer Research*, 17(4), 426-439.
- Brackett, L. K., & Carr, B. N. (2001). Cyberspace advertising vs. other media: Consumer vs. mature student attitudes. *Journal of Advertising Research*, 41(5), 23-32.
- Cialdini, R. B., Reno, R. R., & Kallgren, C. A. (1990). A focus theory of normative conduct: Recycling the concept of norms to reduce littering in public places. *Journal of Personality and Social Psychology*, 58(6), 1015-1026.
- Duffett, R. G. (2017). Influence of social media marketing communications on young consumers' attitudes. *Young Consumers*, 18(1), 19-39.
- Dunlap, R. E., & Jones, R. E. (2002). Environmental concern: Conceptual and measurement issues. In R. E. Dunlap & W. Michelson (Eds.), *Handbook of environmental sociology* (pp. 482-524). Greenwood Press.
- Fishbein, M. (1979). A theory of reasoned action: Some applications and implications. American Psychological Association.
- Freeman, R. E., Harrison, J. S., Wicks, A. C., Parmar, B. L., & De Colle, S. (2010). *Stakeholder theory: The state of the art*. Cambridge University Press.
- Gazi, M. A. I., Al Masud, A., Yusof, M. F., Billah, M. A., Islam, M. A., & Hossain, M. A. (2024). The green mindset: How consumers' attitudes, intentions, and concerns shape their purchase decisions. *Environmental Research Communications*, 6(2), 025009.
- Goh, S. K., & Balaji, M. (2016). Linking green skepticism to green purchase behavior. *Journal of Cleaner Production*, 131, 629-638.

- Hair, J., Anderson, R., Babin, B., & Black, W. (2010). *Multivariate data analysis: A global perspective* (7th ed.). Pearson.
- Hartmann, P., & Apaolaza-Ibañez, V. (2012). Consumer attitude and purchase intention toward green energy brands: The roles of psychological benefits and environmental concern. *Journal of Business Research*, 65(9), 1254-1263.
- Hayes, A. F. (2018). *Introduction to mediation, moderation, and conditional process analysis: A regression-based approach* (2nd ed.). Guilford Press.
- Hoang, D. V., & Tung, L. T. (2024). Environmental concern, perceived marketplace influence and green purchase behavior: The moderation role of perceived environmental responsibility. *International Journal of Sociology and Social Policy*, 44(11/12), 1024-1039.
- Hofstede, G. (2001). *Culture's consequences: Comparing values, behaviors, institutions, and organizations across nations* (2nd ed.). Sage Publications.
- Kim, C., & Choi, Y. J. (2019). How message framing in green advertising influences consumers' attitude and purchase intention: The moderating role of environmental concern. *International Journal of Advertising*, 38(6), 816-835.
- Koenig-Lewis, N., Palmer, A., Dermody, J., & Urbye, A. (2014). Consumers' evaluations of ecological packaging – Rational and emotional approaches. *Journal of Environmental Psychology*, 37, 94-105.
- Lapa, L. (2021). Green advertising appeals and consumer attitudes: A systematic review. *Journal of Marketing Communications*, 27(7), 732-752.
- Li, G., Yang, L., Zhang, B., Li, X., & Chen, F. (2021). How do environmental values impact green product purchase intention? The moderating role of green trust. *Environmental Science and Pollution Research*, 28(33), 46020-46034.
- MacKenzie, S. B., Lutz, R. J., & Belch, G. E. (1986). The role of attitude toward the ad as a mediator of advertising effectiveness: A test of competing explanations. *Journal of Marketing Research*, 23(2), 130-143.
- Nguyen-Viet, B. (2022). Understanding the influence of eco-label, and green advertising on green purchase intention: The mediating role of green brand equity. *Journal of Food Products Marketing*, 28(2), 87-103.
- Pakistan Telecommunication Authority. (2024). **Annual report 2023-24**. Islamabad: Government of Pakistan.
- Paul, J., Modi, A., & Patel, J. (2016). Predicting green product consumption using theory of planned behavior and reasoned action. *Journal of Retailing and Consumer Services*, 29, 123-134.
- Peattie, K., & Crane, A. (2005). Green marketing: Legend, myth, farce or prophesy? *Qualitative Market Research*, 8(4), 357-370.
- Rakuša, N., & Milfelner, B. (2025). Cultural moderators of green product purchase intention: An examination through the lens of the theory of planned behavior. *SAGE Open*, 15(3).
- Sabir, Y., & Zolkepli, I. A. (2025). The impact of social media advertisement on youth as consumers of green products. *Jurnal Komunikasi Borneo*, 13(1), 45-62.
- Saif, S., Zameer, H., Wang, Y., & Ali, Q. (2024). The effect of retailer CSR and consumer environmental responsibility on green consumption behaviors: mediation of environmental concern and customer trust. *Marketing Intelligence & Planning*, 42(1), 149-167.
- Schmuck, D., Matthes, J., & Naderer, B. (2018). Misleading consumers with green advertising? An affect–reason–involvement account of greenwashing effects in advertising. *Journal of Advertising*, 47(2), 127-145.

Taylor, D. G., Lewin, J. E., & Strutton, D. (2011). Friends, fans, and followers: Do ads work on social networks? *Journal of Advertising Research*, 51(1), 258-275.

Trindade, A. (2025). The green ad chain reaction: The perceived value as a bridge between advertising appeals, brand attachment, and purchase intentions [Master's dissertation]. Polytechnic University of Leiria.

Wang, L. (2022). Green advertising appeals and consumer purchase intention: The mediating role of perceived value. *Frontiers in Psychology*, 13, 935540.

White, K., Habib, R., & Hardisty, D. J. (2019). How to SHIFT consumer behaviors to be more sustainable: A literature review and guiding framework. *Journal of Marketing*, 83(3), 22-49.

World Bank. (2023). Pakistan development update: Restoring fiscal sustainability. Washington, DC: World Bank Group.

Zhang, B. (2014). The effect of message appeal on green advertising effectiveness. *International Journal of Business and Management*, 9(10), 112-120.