Indus Journal of Social Sciences
Online ISSN: 2960-219X
Print ISSN: 2960-2203
Volume 4, Number 1, 2026, Pages 771 – 782
Journal Home Page
https://induspublishers.com/IJSS/about

The Role of Green Brand Trust and Perceived Greenwashing in Digital Green Advertising

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ARTICLE INFO

Article History:

Received:	*December*	*19, 2025*
Revised:	*January*	*16, 2026*
Accepted:	*February*	*10, 2026*
Available Online:	*February*	*26, 2026*

Keywords:

Digital green advertising, Green purchase intentions, Green brand trust, Perceived greenwashing, Green skepticism

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ABSTRACT

This study examines the impact of digital green advertising, along with the perceptions of greenwashing, trust in green brands and overall environmental skepticism on the intentions of consumers to buy green products in the Pakistani market. The research provides new theoretical knowledge on the topic of green consumption behavior in an emerging economy setting. The paper developed some hypotheses based on the existing theories and literature. The hypothesis was tested using large sample data that was collected through online survey. The hypothesis was tested using structural equation modeling. The study results reveal that digital green advertising has a significant effect on perceived greenwashing. However, the authors found evidence of direct influence of digital green advertising on green brand trust. The results show that digital green advertising has an indirect effect on green purchase intentions via green brand trust and perceived greenwashing. Similarly, green skepticism moderates the effects of digital green advertising on perceived greenwashing and digital green advertising on green brand trust. The study analyses the effect of digital green advertising, perceived greenwashing, green brand trust and green skepticism on green purchase intentions that is crucial for green consumption. Similarly, the research adds to the literature on environmental awareness and management of environmental protection through green purchases.

1. Introduction

The current consumption trends have exerted a lot of pressure on the natural ecosystems leading to increasing concern among the people about the degradation of the environment. The governments of the world have reacted by enacting more stringent environmental laws. However, to manage the

environment effectively, businesses, consumers, and regulators must collaborate (Zhang et al., 2019). Public and consumer support for environmental protection is based on their environmental awareness and green information they receive through digital media; therefore, digital green advertising is important for environmental governance and protection (Kardos, Gabor & Cristache, 2019).

There are several reasons that push consumers to green purchasing. Researchers argue that the increasing interest of citizens in ecological concerns has compelled manufacturers to switch to more environmentally friendly production technologies via innovative technologies. Sustainable development, however, cannot be attained by supply-side changes but demand-side changes in consumption patterns are also necessary (Saif et al., 2025). Similarly, promoting green consumption with green production could be the solution to achieve sustainable development goals of the United Nations. In today's digital world, online advertising is a major means of communication. Digital green advertising is advertising through social media, websites and mobile apps that promotes the environmental advantages of products (Nguyen-Viet, 2022). Compared to conventional advertising, green advertisements in the digital environment can be interactive, personalized and sharable, which can affect the consumer response to green marketing messages (Wang, 2022).

However, green advertising is not necessarily persuasive. Peattie and Crane (2005) suggested that consumers because of misleading and inflated environmental claims often view green marketing with suspicion. An emerging issue in green marketing is greenwash, in which firms make deceptive or unproven environmental claims about their products. Lyon and Montgomery (2015) described greenwash as "the selective disclosure of positive information about a company's environmental or social performance without full disclosure of negative information, so as to create an overly positive corporate image".

Trust is a key element of company-consumer relationships, especially in green marketing where product claims are often hard to independently verify (Waqas et al., 2026). Chen (2010) defined green trust as a consumer's willingness to rely on a product, service or brand based on the expectations of its environmental performance. Greenwash is shown to impact negatively on green trust (Chen and Chang, 2012). Green trust leads to favorable purchase intentions.

Green advertising strategies face a major hurdle in consumer skepticism. Mohr, Eroglu and Ellen (1998) developed a scale for measuring environmental claim skepticism, which was defined as a consumer's propensity to doubt the validity of environmental claims. Obermiller and Spangenberg (1998) also defined consumer skepticism as a tendency to disbelieve advertising claims. Goh and Balaji (2016) highlighted that green skepticism has a negative impact on green purchase behavior. Elevated green skepticism may lead consumers to doubt even genuine green advertising claims.

Despite the burgeoning research on green advertising and green consumption, there are still gaps in knowledge, especially in developing countries such as Pakistan. Existing research has explored either green trust or greenwashing, but few have addressed how these two mechanisms work together as a double-edged sword from digital green advertising to green purchase intention. Further, little research has focused on the moderating effect of green skepticism on these pathways. As such, this study seeks to investigate the influence of digital green advertising on perceived greenwashing, trust in green brands and green purchase intention in Pakistan while moderated by green skepticism.

1.1 Theoretical Framework

This study is based on the theoretical framework of the Theory of Planned Behavior developed by Ajzen (1991) where the attitude of a person towards a particular behavior is a key predictor of his or her behavioral intention. Applying this framework to the advertising situations, MacKenzie, Lutz, and Belch (1986) established that the attitude of consumers towards advertisements mediates the connection between the exposure to advertisements and the purchase decisions made later. This study synthesizes existing research into the new conceptual framework suggesting two mediating mechanisms and moderating role of green skepticism. The proposed conceptual framework is shown in Figure 1.

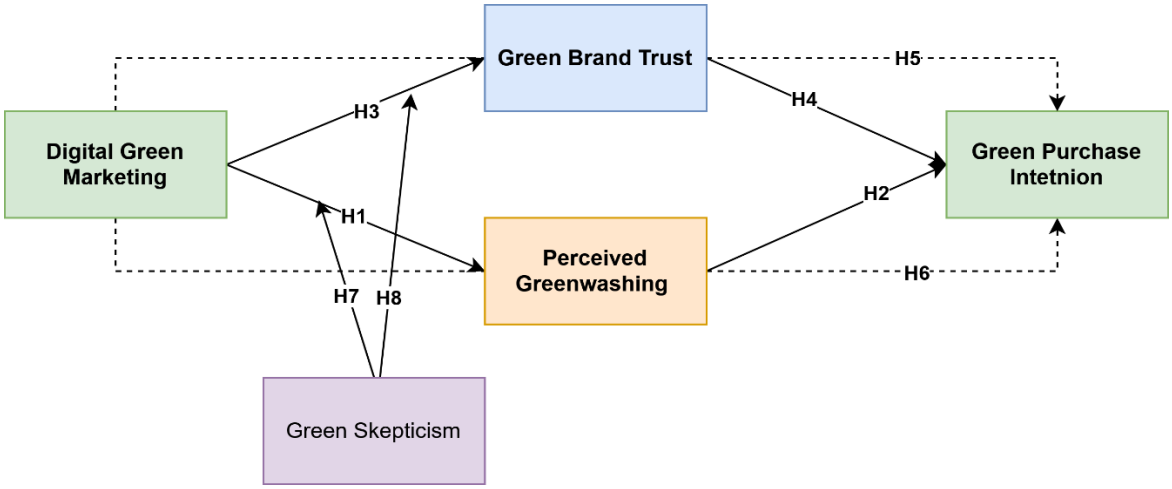

Figure 1: Conceptual Framework

2. Literature Review

2.1 Digital Green Advertising and Greenwash

Digital green advertising encompasses promotional content distributed through electronic channels including social media platforms, company websites, and mobile applications, with an emphasis on communicating environmental product attributes (Nguyen-Viet, 2022). Within Pakistan, digital media have become the predominant channel through which consumers access environmental information.

Nevertheless, not all green marketing is truthful and reflective of companies' environmental practices. Greenwash is a type of marketing communications that present an inaccurate picture of environmental performance (Lyon & Montgomery, 2015). Greenwash has been shown to have a negative impact on green brand image and green trust (Chen & Chang, 2012). Greenwashing in the digital environment may be more common as digital communication channels facilitate the quick and easy spread of unsubstantiated claims with minimal regulation. Once consumers detect greenwashing, they form negative attitudes towards the brand and green claims. Hence, we propose that

H1. Exposure to digital green advertising has a positive effect on consumers' perceptions of greenwashing.

2.2 Perceived Greenwashing and Green Purchase Intention

Perceived greenwashing is consumers' belief that a firm is overstating, misstating or lying about its environmental claims (Chen & Chang, 2012). Consumers who believe a brand is greenwashing are less inclined to trust the brand and purchase its products.

Numerous studies have shown that perceived greenwashing has a negative effect on green purchase intention. Goh and Balaji (2016) reported that green skepticism (similar to perceived greenwashing) has a negative influence on green purchasing. Environmental claims are considered misleading by consumers when they perceive greenwashing, and they perceive the green claims of these products to be misleading. As such, we hypothesize:

H2. Higher levels of perceived greenwashing lead to lower intentions among consumers to purchase environmentally friendly products.

2.3 Online Green Advertising and Green Brand Trust

Green brand trust is the willingness to rely on a brand based on its perceived credibility, benevolence and environmental performance (Chen, 2010). Online green advertising can be a signal that firms use to convey environmental messages to consumers. Advertisements that communicate clear, verifiable and relevant information can build trust. On the other hand, claims that are not specific or claims that are overstated can destroy trust.

In a study of retailer corporate social responsibility and consumer environmental responsibility impact on strengthening consumers green consumption practices, we found that customer trust is a mediator of the link with green behavior. In Pakistan, where environmental concerns are growing, successful digital green advertising can result in brand trust. Thus, we propose that:

H3. Greater exposure to digital green advertising enhances green brand trust

2.4 Green Brand Trust and Green Purchase Intention

Green brand trust has a significant impact on green purchase intention. When consumers perceive that the environmental claims of the brand are true and that the brand will follow through on its environmental promises, they will be more likely to purchase the brand's products. Green brand trust reduces the perceived risk of buying green products as consumers may not be able to assess the environmental aspects themselves.

Research has demonstrated that green trust positively impacts green purchase intention, to name a few. Ullah et al. (2024) found that trust plays a significant role in sustainable impulse buying. Therefore, we put forward this hypothesis.

H4. Green brand trust positively impacts green purchase intention.

2.5 Green Brand Trust and Perceived Greenwash as Mediating Mechanism

The effect of digital green advertising on purchase intention is moderated by consumers' perceptions. We propose two mediating effects. First, digital green advertising can evoke positive consumer responses through green brand trust (Saif et al., 2024). Second, digital green advertising can evoke negative responses from consumers through perceptions of greenwash (Chen & Chang, 2012).

These are the positive and negative responses of consumers to digital green advertising. In Pakistan, where consumer trust in brands and advertising varies, it is important to examine the role of these mediating variables. So, we propose the following hypotheses.

H5. Green brand trust mediates the effect of digital green advertising on green purchase intention.

H6. Greenwash perception plays a mediating role in the link between digital green advertising and green purchase intention.2.6 Moderating Effect of Green Skepticism.

2.6 Moderating Relationship

Green skepticism is consumers' general distrust in the truthfulness and veracity of environmental advertising claims (Mohr et al., 1998). Skepticism is a consumer trait that affects the processing and reactions to persuasive appeals (Obermiller & Spangenberg, 1998).

Green skepticism is expected to influence both pathways from digital green advertising. For the positive link (digital green advertising → green brand trust), skepticism moderates the effect in a negative direction because skeptical consumers are reluctant to believe environmental claims, even if they are true. For the negative pathway (digital green advertising → perceived greenwashing), high skepticism enhances the link because skeptical consumers are more likely to view environmental claims as misleading (Goh & Balaji, 2016).

In the Pakistani market, where green skepticism may be higher due to experiences with deceptive advertising, the moderating effect of green skepticism is of significant importance. As such, the following hypotheses are put forth.

H7. Green skepticism will strengthen the relationship between digital green advertising and perceived greenwashing, such that the positive link is stronger for consumers with high green skepticism.

H8. Green skepticism moderates the relationship between digital green advertising and green brand trust, such that the positive relationship is stronger for consumers with high green skepticism.

3. Methodology

3.1 Measurement

We measured all study variables using multi-item latent constructs. Respondents rated each statement on a five-point scale ranging from strongly disagree (1) to strongly agree (5). Digital green advertising was operationalized as a composite higher-order construct. We used four items from the study of Nguyen-Viet (2022) to measure digital green advertising. We adopted four-item scale of Chen and Chang (2012) to measure perceived greenwash. We used four-item scale of Chen (2010) to measure green brand trust. We used four-item scale of Mohr et al. (1998) to measure green skepticism. We adopted four-item scale of Paul et al. (2016) to measure green purchase intention.

We developed/adopted the statements of questionnaire in English. Our target audience were the consumers having green knowledge. We translated the statements in Urdu language due to language barriers. We asked the academics who are proficient in written English and Urdu language to check the translated questionnaire. Thus, we ensured that no biases should be there in the questionnaire due to translation. Once the questionnaire was finalised, we used it for data collection.

3.2 Data Collection

As done in the earlier studies like Saif et al. (2024) and Zameer et al. (2020), data was collected from consumers in three major cities of Pakistan: Lahore, Karachi and Islamabad. The respondents were asked to respond to their exposure to online green advertising, perceived greenwashing, green

brand trust and green skepticism and their intent to purchase. The potential consumers were merged and the key persons were reached out via WhatsApp, Facebook, Email and personal connections. We took the support of city specific marketing professionals to reach the regular users of the platforms.

We first took data from 50 consumers for pilot testing. After the pilot testing, necessary changes were made in questionnaire and again sent to 700 consumers. We used anonymous filling-in approach for confidentiality and integration of data collection. We used the data collected from 385 consumers for analysis.

3.3 Characteristics of the Respondents

As for characteristics of respondents, the questions of demographics were asked which are gender, age, educational level and city of living. The gender-wise results shows that 54% of the respondents were male and 46% female. Most of the respondents (65%) are from 18 to 35 years of age. Majority of the respondents have undergraduate degree (48%). Lastly, in terms of city, 40% respondents were from Lahore, 35% from Karachi and 25% from Islamabad.

4. Results and Findings

The analysis was performed with the help of SPSS and AMOS. The first one is that the study is valid and reliable. In this part, the hypothesis that was developed in the previous sections is tested.

4.1 Measurement Model Assessment

Table 1 shows the factor loading of the confirmatory factor analysis and the same is utilized in the different reliability checks. Table 1 results indicate that all the constructs have factor loading above the threshold level of 0.50, significant at 0.001 level of significance.

Table 1. Factor loadings

Construct and Items	**Std. Loading**
Digital Green Advertising	
I often see environmental claims in digital advertisements	0.71
Digital green ads influence my thinking about the environment	0.68
Digital platforms are my main source of green product information	0.73
I pay attention to environmental messages in digital ads	0.69
Perceived Greenwashing	
This brand misleads consumers with its environmental claims	0.76
This brand exaggerates its environmental efforts	0.81
This brand makes vague or unsubstantiated green claims	0.74
I suspect this brand is not as green as it claims to be	0.78
Green Brand Trust	
This brand delivers what it promises regarding the environment	0.79
This brand's environmental claims are believable	0.82
This brand is trustworthy when it comes to green issues	0.75
I have confidence in this brand's environmental commitments	0.77
Green Skepticism	
Most environmental claims are exaggerated	0.80

Green advertising is intended to deceive rather than inform	0.83
I do not believe most environmental claims	0.76
Companies use green claims just to increase profits	0.79
Green Purchase Intention	
I will consider buying green products in the future	0.84
I intend to purchase environmentally friendly products	0.78
I am willing to pay more for genuine green products	0.71
I will look for green products when shopping online	0.80

4.2 Reliability and Validity

The model is also fit in terms of goodness of fit indexes (CFA, GFI, NFI, RMSEA and RMR). Next is the indicator reliability test. The indicator reliability is checked using factor loadings. Bagozzi and Yi (1991) suggested that if the value of factor loading is greater than 0.5, then it is an indicator that the reliability check of indicators is acceptable. Hair et al. (2010) mentioned composite reliability as a standard to check the internal consistency. Similarly, the value of composite reliability was as per the norms (value should be above 0.7). Similarly, the study achieved the internal consistency. The next step is to check the convergent validity. The convergent validity was checked and confirmed (value more than 0.5) through variance analysis as per Hair et al. (2010). The value of Cronbachs α was also greater than 0.7 and this again confirms the reliability of the scale.

Table 2. Reliability and convergent validity

Construct	**Cronbach's α**	**Composite Reliability (CR)**	**AVE**
Digital Green Advertising	0.81	0.82	0.54
Perceived Greenwashing	0.85	0.86	0.60
Green Brand Trust	0.87	0.88	0.64
Green Skepticism	0.86	0.87	0.62
Green Purchase Intention	0.84	0.85	0.59

4.3 Discriminant Validity

Our scale has demonstrated reliability and validity with factor loadings, composite reliability and variance. The next step is to check discriminant validity. We used the most widely accepted criteria of discriminant validity that is Fornell-Larcker Criterion. The findings (Table 3) indicate that the inter-correlation between the major factors is not higher than the square root of the variance extracted of the factors which basically satisfies the discriminant validity criterion.

Table 3. Discriminant validity (Fornell-Larcker Criterion)

Construct	**GPI**	**DGA**	**GBT**	**PGW**	**GS**
Green Purchase Intention (GPI)	**0.77**				
Digital Green Advertising (DGA)	0.32	**0.73**			
Green Brand Trust (GBT)	0.55	0.48	**0.80**		

Perceived Greenwashing (PGW)	-0.41	0.38	-0.35	**0.77**	
Green Skepticism (GS)	-0.28	0.22	-0.31	0.45	**0.79**

4.4 Model Fit Indices

Following the above analysis, structural model was applied to test the hypotheses. From the model fit results, CFI is 0.97, GFI is 0.95, value of RMR is 0.05, RMSEA value is 0.04 and the value of CMIN/DF is 1.48 which satisfies the goodness of fit criteria for the model.

Table 4. Model Fit

Fit Index	Value	Recommended Threshold	Status
CMIN/DF	1.48	< 3.00	Acceptable
CFI	0.97	> 0.90	Acceptable
GFI	0.95	> 0.90	Acceptable
NFI	0.93	> 0.90	Acceptable
RMSEA	0.04	< 0.08	Acceptable
RMR	0.05	< 0.08	Acceptable

4.5 Direct Effects (Hypotheses Testing)

Table 5 reports the standardized coefficients for the hypothesized direct paths. Hypothesis H1 proposed a positive relationship between digital green advertising and consumers' perceptions of greenwashing. The result shows that there is a positive link between the digital green advertising and perceived greenwashing. It is found that standardized estimate (β) is 0.45 and it is significant at 1% level of significance. So, H1 is accepted. Similarly, it can be said that the higher the digital green advertising, the higher will be the perceived greenwashing.

The next hypothesis (H2) is to examine the effect of perceived greenwashing on green purchase intention. The results of the analysis show that the standardized coefficient (β) is -0.38 and it is significant at 1% level of significance. Thus, H2 is accepted. So, if the consumer thinks of greenwashing, it will negatively affect the purchase intention of green products.

The H3 hypothesis was proposed to show the relationship between online green advertising and green brand trust. Standardized estimates (β) is 0.52 and it is significant at 1% level of significance. So, we accept H3. Thus, we can say that online green advertising is an essential factor to develop consumer trust in green brands.

H4 was used to explain the link between green brand trust and green purchase intention. The empirical analysis shows that the impact of green brand trust on green purchase intention is positive and significant at 1% level of significance with the value of standardized estimate (β) 0.48. Hence, H4 is proven. Similarly, we can conclude that brand trust is a way to enhance consumers' green purchase intentions.

Table 5. Direct effects

Hypothesis	Relationship	β	p-value	Decision
H1	DGA → PGW	0.45	0.00	Supported
H2	PGW → GPI	-0.38	0.00	Supported
H3	DGA → GBT	0.52	0.00	Supported

H4	GBT → GPI	0.48	0.00	Supported

Note: DGA = Digital Green Advertising, PGW = Perceived Greenwashing, GBT = Green Brand Trust, GPI = Green Purchase Intention

4.6 Mediation Analysis

In this study, we used the same mechanism to check the mediation effects. The findings of mediation analysis are shown in Table 6. H5 seeks to find the mediation effect of green brand trust between digital green advertising and green purchase intention. In order to see if it has a full mediating role or a partial mediating role, first we need to see whether digital green advertising has a direct impact on green purchase intention. As we have discussed in the previous section, we know that digital green advertising has a significant impact on green brand trust. Moreover, during the mediation analysis, we also examined the direct effect of digital green advertising on green purchase intention, and confirmed that it has a significant impact on green purchase intention. We can also see the significance of mediation from the results in Table 6. Thus H5 is accepted. In-depth analysis shows mediation is partial.

H6 was proposed to test the mediation effect of perceived greenwashing on the relationship between digital green advertising and green purchase intention. Using the same approach as for other hypotheses, we validated the mediation of perceived greenwashing in the impact of digital green advertising on green purchase intention. Therefore, H6 is supported. The mediation is partial.

Table 6. Mediation analysis

Hypothesis	Relationship	Mediator	Direct Effect	Indirect Effect	Total Effect	p-value	Decision
H5	DGA → GPI	GBT	0.28	0.25	0.53	0.00	Supported
H6	DGA → GPI	PGW	0.28	-0.17	0.11	0.01	Supported

4.7 Moderation Analysis

We used moderation analysis via the PROCESS macro developed by Hayes (2018) to examine the moderating effect of green skepticism on the link between digital green advertising and perceived greenwashing (H7), and on the link between digital green advertising and green brand trust (H8). Table 7 and Table 8 show the results.

Table 7. Moderation Analysis

Predictor	β	SE	t	p-value	LLCI	ULCI
Constant	2.21	0.11	20.09	0.00	1.99	2.43
Digital Green Advertising (DGA)	0.45	0.05	9.00	0.00	0.35	0.55
Green Skepticism (GS)	0.38	0.06	6.33	0.00	0.26	0.50
Interaction (DGA × GS)	0.35	0.08	4.38	0.00	0.19	0.51

Model Summary: $R^2 = 0.38$, $F(3, 381) = 78.45$, $p < 0.001$

The findings reveal that the interaction term (DGA × GS) is positive ($\beta = 0.35$, $p < 0.001$), which means that green skepticism has a significant moderating effect on the relationship between digital green advertising and greenwash. Hence, H7 holds.

Table 8. Moderation analysis (H8)

Predictor	β	SE	t	p-value	LLCI	ULCI
Constant	2.45	0.10	24.50	0.00	2.25	2.65
Digital Green Advertising (DGA)	0.52	0.05	10.40	0.00	0.42	0.62
Green Skepticism (GS)	-0.25	0.06	-4.17	0.00	-0.37	-0.13
Interaction (DGA × GS)	-0.29	0.07	-4.14	0.00	-0.43	-0.15

Model Summary: $R^2 = 0.35$, $F(3, 381) = 68.92$, $p < 0.001$

The findings reveal that the interaction effect (DGA × GS) is negative and significant ($\beta = -0.29$, $p < 0.001$), suggesting that green skepticism has a moderating effect on the relationship between digital green advertising and green brand trust. Hence, H8 is supported.

5. Conclusion and Implications

5.1 Conclusion

Climate change and environmental degradation have emerged as defining challenges of the contemporary globalized era. In response, governments, businesses, and civil society organizations worldwide have intensified efforts to raise ecological awareness and encourage more sustainable patterns of consumption. In the past, some researchers made an effort to understand how to achieve environmentally sustainable consumption. But, these studies have some gaps that need to be addressed. In this context, this study was designed and carried out to examine the impact of digital green advertising, perceived greenwashing, green brand trust and green skepticism on green purchase intentions.

The study concluded that our research is a continuation of previous research and to some extent in line with the studies that mentioned that digital advertising is influential in consumers' behaviour. The study also found that perceived greenwashing and green brand trust by digital green advertising are the predictors of consumers' green purchase intentions. Furthermore, the study also identified the moderating effect of consumers' green skepticism on the relationship between digital green advertising, perceived greenwashing and green brand trust. The results indicated that green skepticism is significant. Similarly, in this study, it can be argued that our study contributes to knowledge.

5.2 Research Implications

This research has implications for both managers and policy makers. Our study has shown that digital green advertising is the precursor of perceived greenwashing and green brand trust that in turn influence green purchase intentions. Similarly, we suggest the managers and policy makers to concentrate on increasing consumers' awareness of new green products through digital green

advertising. Hence, this will lead to green, environmentally friendly purchase intentions, which on one hand will increase firms' profits. And on the other hand, will benefit the environment.

For enhancing green brand trust, the positive effect of green brand trust on purchase intentions suggests that firms should try to build long-term trust with reliable green marketing practices. To avoid greenwashing, the negative consequence of perceived greenwashing on purchase intentions indicate that companies should not greenwash. They should ensure that their claims are scientific.

Limitations and Future Research

There are a number of limitations to this study that point to areas for future research. First, this study adopted a cross-sectional design. Longitudinal or experimental designs should be used. Second, the study used green purchase intention as the dependent variable. Future studies should examine purchase behavior. Third, the study focused on three big cities of Pakistan. Future research should include rural consumers. Fourth, the study did not consider specific digital platforms. Future research should compare the effects of different social media platforms.

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